

**DAKOTA COUNTY**

Capital Planning Project Management, 1590 Highway 55, Hastings, MN 55033, 651.438.4350 tom.burrows@co.dakota.mn.us

**DAKOTA COUNTY HIGH PERFORMANCE DESIGN AND CONSTRUCTION STANDARDS 2017 WORKING COPY**

"A" indicates Appendix, "E" indicates Energy Efficiency Item, "s" indicates a sustainability standard									
Item	CSI	Section	Item	A	E	s	Standard	Reference	Additional Comments
1	0	All	County Vision	A		s	To be a Premier County in which to live and work.		Provide efficient, effective, responsive government.
2	0	All	Goal			s	To provide leadership in the planning, design, construction, operation and maintenance of cost effective and energy efficient high performance and sustainable buildings in Dakota County.		
3	0	All	FM Mission & Goals		E	s	Occupant, maintenance and energy efficient		Facility design should reflect County mission and goals.
4	0	All	Quality Control and Assurance (QA/QC)	A		s	To assure the Citizens and Board of Commissioners of Dakota County that the construction and workmanship used for all County buildings strictly adheres to established design, engineering, material, quality control and sustainability standards.		Establish quality control team - Owner / Designer / Engineers / Contractors / Inspection and Testing. Establish minimum standards of quality, cradle-to-cradle requirements for durability and reuse, selection and specification of materials, independent review and analysis, and value engineering of all systems and materials selected. See separate County Quality Control and Assurance Plan.
5	0	All	Quality			s	Characteristics of a product, project or service that bear on its ability to satisfy specified, stated or implied needs and be free of defects or deficiencies.		Where approved Manufacturers are shown - this establishes a minimum level of quality that must be equaled or exceeded to be considered for use in any project.
6	0	All	Quality Control			s	Critical construction work will be independently inspected daily and construction materials will be sampled and tested for compliance with these standards, project specifications and relevant industry standards.		Inspection and testing agencies submit written and test reports directly to County for all site visits, observations, samples and tests. Weekly or biweekly Owner construction meetings are held with Architect, Engineers, Contractor, major subcontractors, and independent inspection and testing services to review progress, schedule and QA/QC. County maintains photographic record of critical construction stages.
7	0	All	Quality Audit		E	s	A systematic, independent examination and review will be conducted on all major projects to determine whether quality activities and related results comply with stated project objectives and criteria and whether they are implemented effectively and responsibly to achieve planned outcomes. These will include a recommissioning process for mechanical and electrical within the first 5 years of project completion.		"Post - occupancy inspections" are performed annually or more often as conditions warrant for critical structural areas including building envelope and roofs.. Written verification is established that all design and sustainability requirements have been achieved and maintained. MN B3 and/or EPA ENERGY STAR PROGRAM will be used to benchmark and track energy efficiency beginning at time of County occupancy of the facility.
8	0	All	QA/QC Materials Inspection and Testing.			s	Materials sampling and testing of soils, concrete, steel, pavement, masonry and all other critical building materials and components are by Certified Independent professional testing company and laboratory.		

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9	0	All	QA/QC Exterior Building Envelope Inspection and Testing.	A	E	s	Inspection, sampling and testing of steel supports, flashings, masonry, stone, precast stone/concrete, windows, terminations and sealants will be performed by or under the direction of a Licensed Professional Engineering Design and Masonry Inspection Consultant		Appendix includes draft RFP for exterior envelope consulting services.
10	0	All	QA/QC Roofing Systems Inspection and Testing.	A	E	s	Inspection, sampling and testing of roofing membranes, insulation, terminations, flashings, counter flashings, cap flashings, penetrations, drainage and overflow scuppers by or under the direction of Registered Professional Roof Design and Inspection Consultant.		3rd party "on-site" inspection will be provided by Owner during the roof system installation. Owner will perform thermographic evaluation within one year of roof installation.
11	0	All	QA/QC Indoor Air Quality		E	s	Final random sampling, testing, balancing to confirm correct air exchange rates, filtration, volume, pressure, and temperature control by a Professional Independent testing and balancing Agency.		All testing, balancing and functional performance testing is included in the project documents to be performed by and at the expense of the General/Mechanical contractors. Quality Assurance sampling and testing is performed during the new building commissioning or near the end of any renovation project to confirm systems meet or exceed design criteria.
12	0	All	Energy Conservation		E	s	Inserted here as reference. International Building Energy Code and ASHRAE Energy Efficiency Standards are to used as the base upon which to build maximum building energy efficiency.		Included in respective line items.
13	0	All	Space Standards	A		s	County space standards are separate standards and are fully included here by reference only. See also furnishing (FFE) section found at the end of list.		Space standards are used for all interior design and program efforts. Each project must resolve in it's program how to accommodate uses like yoga, tai chi, chapel, prayer rooms, recycling, feet washing, bicycle parking, changing, showers, nursing, etc.
14	0	All	Design for the Future		E	s	The flexibility to adjust to alterations easily must be designed into the building for all new construction since the use of the County buildings will change with County department missions and growth patterns.		Electrical and communications systems will be designed and sized to provide ample capacity for increased load concentrations in the future and to permit modifications to be made in one area without causing major disruptions in other areas of the facility.
15	0	All	Integration of Architectural and Engineering Disciplines			s	To ensure that the design of new County facilities and renovations are equipped with the latest in structural, office and communication technology and in addition are prepared for the evolution of these systems, all County building designs require that a higher level of integration between architecture and engineering systems be achieved than what is usually expected in the industry for office buildings. The AutoDesk Revit® form of BIM will be used to accomplish full integration and coordination of all design disciplines for all County building projects.		Focus design elements and systems are building envelope details, seismic considerations, and PREBID coordination of mechanical, electrical, communication, security and special systems. Refer to submission requirements provided by the Owner for various stages of each project.

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16	0	GBI Title	Green Buildings Initiative GBI	A	E	s	Sustainable buildings initiative is applied across all construction items to promote cost-effective waste reduction, including the purchase of environmentally preferable, recycled-content, renewable and sustainable products; and to incorporate waste prevention and recycling in the daily operations. It is the intent of Dakota County to use wherever possible - materials that demonstrate re-use, recycling or reduction of raw materials and energy during manufacturing. Sustainability guidelines adopted in 2001 edition of these standards are incorporated throughout by reference here. It is the intent to fully incorporate sustainability guidelines into these standards.		Inclusion of materials is upon a case by case basis into these Standards and dependent upon approval and project funding of initial and life/cycle cost impacts as part of the design cost evaluation during the design development process. Use Minnesota B3 Guidelines Version 2.2 or newest and Greening Federal Facilities Resource Guides ( <a href="http://www.eere.energy.gov">www.eere.energy.gov</a> ) for current information and evolving recommendations. Consider use of the LEED - Leadership in Energy and Environmental Design Green Building Rating System to evaluate and improve environmental and economic performance of new buildings by the US Green Building Council (LEED-EB for existing building additions and renovations), BEES - Building for Environmental and Economic Sustainability ( <a href="https://www.nist.gov/services-resources/software/bees/">https://www.nist.gov/services-resources/software/bees/</a> ) National Institute of Standards and Technology for material selections. Also see EPA Environmentally Preferable Purchasing Program ( <a href="http://www.epa.gov/opptintr/EPP">www.epa.gov/opptintr/EPP</a> ) and STATE of MN EPP Guide ( <a href="http://www.rethinkrecycling.com/government/eppg">http://www.rethinkrecycling.com/government/eppg</a> ). Ensure that energy efficiency is addressed in electronic devices and manufacturing processes.
17	0	GBI Planning	Regional/Dakota County Solid Waste Master Plan 2012-2030 (Plan is scheduled to be revised in 2017)			s	<b>9. Non MSW Management Program and Activities (p. 41)</b> High Performance Buildings: The Dakota County Design Construction Sustainability Design Standards are required in County capital building projects to reduce waste generation, increase reuse and recycling, and minimize the County's environmental foot print..... ( <a href="https://www.co.dakota.mn.us/Environment/ReportsStudies/Documents/SolidWasteMasterPlan.pdf">https://www.co.dakota.mn.us/Environment/ReportsStudies/Documents/SolidWasteMasterPlan.pdf</a> )		1. Dakota County will conduct post-occupancy evaluations for County buildings constructed using the Dakota County Design Construction Sustainability Standards. 2. Continue to use and update, as necessary, the County's Design, Construction, Sustainability Standards and the Minnesota Sustainable Design Guidelines in County construction, deconstruction, or remodeling projects, and revise Standards to apply to a broader range of building projects. 3. Provide public entities information on opportunities to incorporate sustainable architectural guidelines in the planning process for construction, deconstruction, or remodeling of public facilities.
18	0	GBI Planning	Reference	A		s	Sustainable Design and Building Guide was developed for Dakota County in 2000.		Chris Hammer, Sustainable Design Resources May 2000. Document is provided as reference and checklists and appendices are retained.
19	0	GBI Planning	Site			s	Consider regional impacts for the proposed development on natural and manmade systems such as surface drainage, geology, vegetation, topography, transportation, infrastructure and historical development patterns, and determine methods to reduce or eliminate negative impacts.		
20	0	GBI Planning	Voluntary Carbon Standard		E	s	Specification for project-level quantification, monitoring and reporting as well as validation and verification of greenhouse gas (GHG) emission reductions and removals. Goal is GHG neutral design and construction.		Requires benchmarking and record keeping along preset criteria determined by Owner, Federal and State regulations. <b>This item is evolving.</b>
21	0	GBI Planning	Energy Conservation Primary Goal		E	s	Optimize Building or Project Energy Performance. County Board goal - benchmark and measure the energy efficiency of County buildings.		Document energy <b>design</b> effectiveness against energy code.

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22	0	GBI Planning	Energy Conservation Utilize Utility Programs	E	s	Contact Xcel Energy (NSP) , Dakota Electric, Center Point Energy, Minnesota Energy Resources and other energy utilities to research alternative funding sources through audits, rebates, loans, grants, design tools or technical assistance for new buildings and renovations.		Current Excel Energy program - Energy Assets which includes computer modeling, consulting services, rebates and interactive tools for new projects for buildings 75,000 square feet and larger. Dakota Electric offers Energy Alternatives providing similar scope as Xcel with consulting, grants, and loans. Dakota Electric Rate 70 Program with automatic Genset load shedding for non-critical operation loads. XCEL Energy also funds energy conservation studies up to 50% and \$25,000 maximum. Verify each case with Xcel account rep.for current programs.
23	0	GBI Planning	Energy Conservation Life Cycle Cost Prediction	E	s	Establish overall budget for building design and operations. Account for equipment cost and operating cost and energy over the expected life (100 years) of the building and consider/provide mechanisms for shifting some energy costs outside construction budget.		Commercial industry standard is 20 year. County uses 50 year life cycle except on mechanical and electrical systems with 20-30 year life cycles. Include time of day tier rate or peak vs. off peak analysis. Life cycle cost analysis will use future increased utility costs as part of the ROI and payback calculations.
24	0	GBI Planning	Energy Conservation Energy Design Teaming	E	s	Establish energy design team. Include Project Manager, Architect, Electrical and Mechanical Engineers, special consultants, Utility Companies, Operations Management Director, Facilities Management and Information Technology Director.		On major new building construction (5,000 SF or greater) , consider use of lighting designer or daylighting specialists. Evaluate case by case for application to renovation projects.
25	0	GBI Planning	Energy Conservation Climate Analysis	E	s	Collect pertinent information on climate such as temperature, humidity, solar inclination, wind and weather patterns.		Historical information is readily available from the National Weather Service. In addition there are numerous on-line fee for service firms that provide heating/cooling degree information in readily useable format.
26	0	GBI Planning	Energy Conservation Micro-Climate Analysis	E	s	Analyze impact of local micro-climate such as landforms, lakes, vegetation, adjacent buildings, industry and groundcover .		All issues to be addressed during site development project phase.
27	0	GBI Planning	Energy Conservation Alternative Transportation	E	s	Provide a minimum of 4 and up to 2% of building's occupant population with secured and conveniently located bicycle storage. Provide changing rooms and showers. (Pending)		Confirm that storage area, changing and showers are consistent with County Employee Wellness Program and based upon facility location and population and whether there is or will be safe bicycle access to site.
28	0	GBI Planning	Energy Conservation Alternative Parking	E	s	Provide conveniently located reserved parking for motorcyclists, carpool and alternative fuel vehicles.		Propane or electric trucks and autos only. Consider requirements as new technologies develop. I.e. 240 volt / 40A for new County vehicles (PHEV)
29	0	GBI Planning	Indoor Air Quality Interior pollutants			s	Identify any planned facility activities, equipment or materials that may impact indoor air quality such as vehicle storage, copy center or supply storage.	
30	0	GBI Planning	Indoor Air Quality Exterior Pollutants			s	Define impact of existing and future local developments have upon the air quality in and around the County facility.	Evaluate CO2 detection.
31	0	GBI Planning	Indoor Air Quality Underground Pollutants			s	Evaluate on-site sources of contamination in soil and ground water such as radon, volatile organic compounds or solid waste. Follow MN Pollution Control Agency Rule 7080 for subsurface sewage treatment systems or solid waste and Rule 7150 for underground storage tanks.	Example: - Limestone foundations and past UG tank or other contamination sources. Brownfield restoration.. On site sewage or water systems. MN Petro fund reimbursement - See current MN Rules

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32	0	GBI Planning	Indoor Air Quality Intake Locations			Air s Locate building fresh air intakes a minimum of 50' from property lines, driveways, streets, highways, and vehicle parking; 50' from wet cooling towers and air exhausts; 20' above landscaped grade; 24" above finished roof grade and 25' from boiler stacks and exhaust fans. Locate all intakes on or above roofs in structural penthouses.		Locate fresh air intakes consistent with prevailing wind directions as published by the National Weather Service to minimize effects of exhaust drift from boiler stacks, cooling towers and building exhausts. Any item on roof that requires regular maintenance or access will be located a minimum of 8 feet from the roof edge unless fixed fall protection is provided such as a handrail. Effective 2009 - all new building air intake and exhaust dampers will have 100% seals to eliminate tempered air loss and coil freeze up.
33	0	GBI Planning	Indoor Air Quality Air Treatment			s Assess the impact of outside air quality upon the design of air filtration and treatment.		Example - Use of HEPA banks in areas with high particulate count. This will also impact the volume and capacity of the air handling system, air exchange rates and carbon dioxide monitoring/control.
34	0	GBI Planning	Indoor Air Quality Mechanical System Commissioning			s Commissioning using ASHRAE as guidelines.		Obtain and use current copy of the Ashrae commissioning guidelines.
35	0	GBI Planning	Water Conservation Greywater Systems			s Explore a greywater system, collect water from roofs sinks and showers and reuse for toilet flushing or irrigation if local code permits.		Note: Dakota County does not have a code. It has adopted the IBC for construction, however, each municipality has its own ordinances and code variations. Special variance by local jurisdiction is needed to implement this type of system. 2007 - 2008 New Spring Lake Gathering Center received special permission (with restrictions) from State Dept. of Health for rainwater to flush toilets. This system is no longer in use due to high maintenance cost.
36	0	GBI Planning	Water Conservation Onsite Waste Treatment			s Explore waste treatment using biological systems such as constructed wetland instead of municipal wastewater treatment plant.		Example: New highway shop outside existing metro or local municipal sanitary and storm collection systems. Prove practicality for use in zoned and existing waste collection areas. 2009 State Law Does Not permit in MUSA.
37	0	GBI Planning	Waste Reduction Existing Buildings Use			s When planning new buildings, consider the reuse and renovation of existing structures instead of building, purchasing temporary and/or demolishing old.		Use existing structures if possible as temporary facilities during construction phase.
38	0	GBI Planning	Waste Reduction Demolition			s For buildings being demolished, establish aggressive goals to recycle or salvage as much as possible. Target 75%		Use Deconstruction versus Demolition methods and Contractor incentives to achieve compliance.
39	0	GBI Planning	Waste Reduction Program Adequate Recycling Space			s Identify materials to be recycled such as paper, aluminum, glass, plastic bottles, cardboard, and food waste. Allocate space for recycling for each floor or area in addition to required space at loading dock.		Integrate recycling containers into convenient locations and build into millwork where possible to maintain housekeeping of work areas. Use "3" container system for waste, paper, bottles/cans. Specific recycling specifications and procedures need to be developed in operations.
40	0	GBI Planning	Waste Reduction Construction Goals			s Program and continue existing County Construction recycling initiative. Project Manager will evaluate local firms compliance with 50% or greater recycled (non-landfilled) goal for each project.		Example: Juvenile Center, Inver Glen and Heritage Libraries. Target is to reach 50% goal of non-landfilled waste. Need to resolve actual recycled amount versus "alternative" landfill cover used by recycling firms.
41	0	GBI Design Phase	GBI - Site Considerations			s Preserve ecologically significant and/or sensitive areas of vegetation, wildlife habitat and topography.		Recognize during site selections that location of site in developed areas may not be conducive to application of sustainable site guidelines.
42	0	GBI Design Phase	GBI - Site Green Spaces			s Provide green space, minimize area of site dedicated to building, parking, and access roads.		Consult with SWCD concerning site development intensity. Maximize open space - be as inclusive as possible.

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43	0	GBI Design Phase	GBI - Site Water Retention	A		s	Use Dakota County Best Management Practices (BMP) for rainwater. Comply with all NPDES requirements. Retain rainwater on site instead of discharging into storm sewers. Use permeable surfaces and limit the amount of impervious surfaces such as parking areas to allow rainwater to penetrate and remain on site. Use and incorporate additional innovative site practices whenever feasible. (See Appendix example - Model Vermillion River Watershed - VRWJPO Standards additional other resources and references.)		Example - 6 story 1/2 acre parking ramp in lieu of 3 acres of pavement. Example of negative impact would be in the case of a perched water table. Fully comply with NPDES Storm-water Permit for Construction Activity - see MPCA website @ <a href="http://www.pca.state.mn.us/water/stormwater/index.html">www.pca.state.mn.us/water/stormwater/index.html</a> . Separate construction permit is required for 1 or more acre of project area. Permit is not required to resurface parking lots - but is required if pavement is completely removed and base regraded. For any major new project site improvements – The Soil and Water Conservation District will be consulted during the following project phases: end of Schematic Design (basically a notice the project is starting), Design Development and 50% construction documents to ensure that current storm water standards are implemented where possible. Low Impact (Storm Water) Development Standards (LID) checklist as adopted by the County Board will be used when appropriate for a project.
44	0	GBI Design Phase	GBI - Site Connectivity			s	Design site to reconnect fragmented landscapes and establish contiguous networks with other natural systems both within the site and beyond its boundaries.		
45	0	GBI Design Phase	GBI - Site Orientation			s	Minimize site disruptions by siting building correctly to create favorable traffic patterns.		
46	0	GBI Design Phase	Building Orientation			s	Preferred main entry orientation is to the south or west for safety during winter. Work closely with fenestration orientation for daylighting.		Coordinate with items 51, 52, 53, 54 AND 55
47	0	GBI Design Phase	GBI - Site Landscaping			s	Use varieties of native trees, shrubs and plants to minimize maintenance, reduce yard waste and decrease water consumption. Use disease and insect resistant varieties.		
48	0	GBI Design Phase	Site - Landscaping			s	Specify plant materials that are native and tolerant to local conditions. Protect and preserve mature trees when possible. Specify MPCA's Best Management Practices for soil erosion control. Specify locally produced yard waste or manure compost for soil amendments. Specify reuse of any onsite materials. Specify that all cleared materials be recycled or chipped and composted for re-use. SWCD – Provide multi-functional landscaping where possible to enhance site water retention. A maximum 25% of landscaped areas will be manicured lawns. Seek variance from local Code as needed.		Focus is upon locally produced materials and native plant species for disease and drought resistance.
49	0	GBI Design Phase	GBI - Water Conservation			s	Use efficient irrigation systems that are no longer needed once plants are established. See also items 48 & 478 in CSI 032000		Minimize use of municipal or well water systems. Use rain gauge irrigation control system.
50	0	GBI Design Phase	GBI - Site Mass Transit			s	If building is located near MTVA or MTA bus stop, future light rail stop or bike trail system, provide a landscaped pedestrian connection between stop shelter and building.		

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51	0	GBI Design Phase	GBI - Site Pest Mgmt.			s	Use integrated pest management system to reduce cost and reduce the environmental effects of chemical applications.		Spot address pest problems when and if they occur.
52	0	GBI Design Phase	GBI - Energy Orientation	E		s	Optimize building placement and configuration to take advantage of solar energy and prevailing winds.		
53	0	GBI Design Phase	GBI - Energy Conservation	E		s	Run a building energy use profile. Right size HVAC equipment and ductwork to take advantage of reduced internal heat loads.		Use this strategy to reduce energy consumption through accurate sizing of boilers, chiller, towers, emergency generators and Information Technology (IT) support mechanical equipment.
54	0	GBI Design Phase	GBI - Energy Daylighting	E		s	Maximize opportunities to daylight the building. Specify skylights, light shelves or light scoops, clerestories, etc. to daylight building naturally and conserve electrical energy. Use only high insulating triple glazed curtain wall systems or R20 Fiberglass Translucent Panels.	Kalwall Corporation - System 7550 Curtainwall. Fiberglass Translucent Nanogel Panels.	For renovations - restore daylighting features. Avoid blocking natural light by changing floor plans or interior spaces.
55	0	GBI Design Phase	GBI - Energy Shading	E		s	Specify shading mechanisms, overhangs, etc. to reduce solar gain during peak cooling months to conserve energy.		Cooling season for commercial buildings is April through September for Minnesota. Shades cannot interfere with window cleaning.
56	0	GBI Design Phase	GBI - Natural Ventilation	E		s	For small buildings (15,000 square feet and smaller), consider natural ventilation using operable windows and skylights. Use only with Owner written approval.		Interlock window contacts with pressurized cooling systems e.g. Air conditioning will not operate unless all windows are closed and latched. All buildings with operable windows will have a full reporting security system installed.
57	0	GBI Design Phase	GBI - Energy Vegetation	E		s	Use plant - vegetation materials to protect building envelope in the winter from wind and solar gain in the summer.		Coordinate with Security initiatives requiring plantings clear of certain structures.
58	0	GBI Design Phase	GBI - Indoor Air Quality Order of Construction			s	Specify that all wet and odor producing work be completed prior to dry work.		
59	0	GBI Design Phase	GBI - Indoor Air Quality Code			s	Specify ventilation systems to meet or exceed current ASHRAE 62.1 Ventilation Standards for Acceptable Indoor Air Quality.		Use most recent or sensible version of adopted ASHRAE standards.
60	0	GBI Design Phase	GBI - Indoor Air Quality Air Filtration			s	Specify air cleaning and filtration systems that meet or exceed the efficiency ratings of ASHRAE Standard 52.1, <i>Method of Testing General Ventilation Air Cleaning Devices for Removal Efficiency by Particle Size</i> Building Air Filtration will meet or exceed MERV rating of 15.		Ventilation system will be sized to compensate for high level filtration pressure-volume drop.
61	0	GBI Design Phase	GBI - Indoor Air Quality Spot or Temporary Ventilation	E		s	Specify that temporary ventilation be used during construction activities and that permanent HVACR systems cannot be used until Owner approves in writing. If permanent heating or cooling coils become dirty - they will be replaced with "new". Permanent spot or special ventilation will be provided as noted. Spot ventilation will be controlled locally and used only when equipment is in operation.		Permanently ventilate blueprint and large copier rooms directly to the outside. Interconnect fan and damper operation to equipment operation. Address ventilation issue when new equipment is added to office areas. Do not relocate specially ventilated equipment until ventilation issues are formally addressed for new equipment location.

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62	0	GBI Design Phase	GBI - Indoor Air Quality Carpet			s	Specify carpet and flooring materials that are off-gassed prior to installation to reduce emissions. Use factory-cured water based carpet adhesive or no/low VOC adhesive products only.		
63	0	GBI Design Phase	GBI - Building Materials			s	Specify building materials and products based on their full environmental life-cycle. Use County sustainable materials specifications.		Include all environmental requirements in the bid documents. Require that Manufactures certify in writing that materials comply with these requirements.
64	0	GBI Design Phase	GBI - Building Materials	A	E	s	Architects and Engineers should always make environmentally responsible choices regarding new building materials and the disposal of discarded products. Safe use of recycled materials need to be maximized to the fullest extent practical within the project requirements. Evaluate building materials and products based on full environmental life cycle. Use recycled content building materials; wood from sustainably-managed forests; materials from renewable resources and avoid materials from scarce or nonrenewable resources; materials from manufacturing plants that are energy and water efficient, reuse waste in production and reduce air emissions; minimal packaging; local manufacturers when possible; paints, adhesives and sealants that are low emitting; durable long-lasting materials.		Use County furnished detailed material guideline organized by CSI divisions. To reduce transportation energy costs and emissions, 1st choice will be manufacturers or local products within a 200 mile radius of Dakota County. This includes brick, stone, concrete products, interior finishes and furnishings.
65	0	GBI Design Phase	GBI - Waste Reduction			s	Specify construction waste recycling. Use County standard specification.		Adapt County specification to specific project conditions.
66	0	Accommodation	HC Door Operators				Provide hardwired electric push button type door operators on all main entrances that are open to the general public. Do not use "pressure sensitive and dependent pull type units."		
67	0	Accommodation	Lactation Areas				Provide designated private area for nursing mothers to use lactation equipment. Provide a sink, area for a table and chair and 120 volt receptacle. No toilet if possible. Provide "OCCUPIED - VACANT" lock actuated signage unit or Hanging hotel type for Do Not Disturb.		Identify in space program for new buildings and major renovations.
68	0	Accommodation	Lavatory Reinforcement				Provide adequate supports in public restroom vanities and lavatories to accommodate the same weight per lavatory as waterclosets in the event persons climb onto them.		
69	10000	All	Alternates				Use "deductive" alternates unless Owner specifies otherwise.		Deductive alternates are recommended and included as part of value engineering.



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70	10000	All	Bid Advertisement and Official Notice				Owner Furnishes and Advertises. Use/Modify Owner furnished - adapt to project. Bid notice must include basic project scope, bonding requirements, bid date and time and County or Consultant contact. Competitive bids will be advertised for three consecutive weeks in the official County designated paper. All projects over \$50,000 are advertised 2 consecutive weeks. - Major Projects minimum 3 consecutive weeks with bids due one week following last advertisement.	2009 - Owner's Project Manager will send bid notice to publisher. Bids will be advertised three (3) times in consecutive weeks. Bids will be opened one week following the last official notice. Include in the Bid Notice the date when it is anticipated that County Board action will be taken for award.
71	10000	All	Bid Form				Use Owner furnished - adapt to project.	Owner will determine how many bid packages there will be. At its option, Owner may bid sitework, electrical or mechanical work separately.
72	10000	All	Bidder Instructions				Use Owner furnished only.	Owner will provide Instructions to Bidders and General Conditions for Project. Specifications section 10000 must reflect this.
73	10000	All	Building Permit				Contractor obtains and pays - unless Owner specifies that Owner will pay for the permit directly to permitting agency. Included in Owner General Conditions.	SAC/WAC charges will be paid by the County directly to the local authority unless combined with the Building Permit.
74	10000	All	Housekeeping				Sites to be kept clean and safe at all times. Specific requirements will be included in Owner General Conditions.	All cleaning during construction is by the General Contractor. All construction areas will be thoroughly cleaned up to the Owner's satisfaction prior to the end of the work shift every Friday. Final cleaning following construction is by Contractor. Final building cleaning prior to occupancy will be contracted separately by the Owner. Once Owner has begun furniture installation, housekeeping is performed by the Owner for completed areas. The Project Manager notifies operations staff when Owner permanent cleaning should begin.
75	10000	All	Close-out				Contractor/Architect complete and submit Owner checklist	County furnishes check list of project closeout requirements to A/E & GC
76	10000	All	Closet - Maintenance Storage				Owner provides standard layout for design by Architect and as prescribed in the building program.	Program space to be defined by Owner building by building.
77	10000	All	Closet Custodial				Prescribed in building program. Owner provides standard layouts for design by Architect. For new construction and major renovations provide custodial closet and separate storage adjacent to restrooms.	Program minimum of 100 square feet per 25,000 square feet of space. For multistory buildings in excess of 75,000 square feet, a 150 square feet County closet will be located on the main floor with trench drain and volume hot water access.
78	10000	All	Closets Data/Telecom				Owner provides standard layout for design by Architect - building by building as prescribed in the building program.	Program minimum of 150 square feet per 25,000 square feet of space or floor. A central dedicated telecom/data secured and 100% environmentally controlled 7X24 powered main room will be provided. Size and location will be determined by Owner.
79	10000	All	Closets Equip. Storage				Exterior access for gasoline powered maintenance equipment. Consider indoor bicycle parking area for staff.	Owner approves location and size.
80	10000	All	Code - Building				International Building Code (IBC) and State of MN Building Code or its supplements - use most current Edition approved by State for design prior to bidding for code compliance. Use most stringent current code in effect if not yet approved by State.	Use current IBC - International Building Code. Use current version of the applicable MN Department of Corrections (DOC) code requirements for all secured prison or detention center construction.

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				Standard			Reference
81	10000	All	Code - Disability				Refer to local building official, local code or ordinance - local requirements may be greater than ADA rules. Note that State has separate rules that must be followed. Check if ADA requirements apply to any other areas of the building during all renovation projects. Include addressing ADA requirements in the scope of work for all Architect and Engineering Proposal requests.
82	10000	All	Code - Electrical		E	s	Energy efficiency in equipment i.e. transformers or motors and conductor ampacities will generally exceed code requirements.. ARC flash study and plan will be completed by Architect.
83	10000	All	Code - Plumbing				All new construction requires separate plan review submittal to and approval by the MN State Public Health Department. Submittal is made by consultant and application fee paid directly by County to State unless otherwise noted in the RFP for consultants.
84	10000	All	Code - Mechanical				
85	10000	All	Code - Energy		E	s	Exceed code in most applications with County standards.
86	10000	All	Code - Fire			s	Fire sprinkling density is determined by local code and County Insurance Company requirements. 2009 County insurance carrier is Affiliated Factory Mutual. Independent Owner Insurance Co. plan review is required for construction documents and Contractor submittal drawings.
87	10000	All	Code - Life Safety				
88	10000	All	Code - Safety				
89	10000	All	Code - Factory Mutual - FM			s	Review and implement all FM design recommendations unless specifically waived in writing by the Owner. All new construction design will be built to FM requirements even if FM is not the current insurance carrier. Design consultants must be thoroughly aware of all FM standards.
90	10000	All	Code - EPA Requirements				Include provisions in all project bid documents to comply with this requirement including construction of non-County buildings.
91	10000	All	Commissioning by Owner	A	E	s	Owner - Facilities Management staff performs new building commissioning. Commissioning standards are a separate document. Note: HVAC Functional Performance Testing (FPT) and Testing and Balancing (TAB) is performed separately from commissioning. Mechanical Engineer provides bid document from final design documents. Commissioning protocol to be developed by Owner.

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92	10000	All	Construction Limits				Architect and Owner - concurrence		Adjust if needed for Contractor construction or storage requirements
93	10000	All	Construction Methods			s	Construction means and methods are Contractor responsibilities unless specified otherwise in bid documents.		Exception is Owner furnished equipment. Any special Owner requirements concerning contractor construction methods are defined in the bid document prior to receipt of competitive bids.
94	10000	All	Construction Contract Type				General Contractor (Design-Bid) no multiple contracting direct with Owner unless prior approval is received from Owner.		Bid - Design - Build - General Construction Contract may be used for specialty projects i.e. storage buildings. Decision to use Construction Manager is by County Board.
95	10000	All	Coordination M & E				Contractor reviews and fully coordinates Mechanical & Electrical submittals for completeness of systems.		Contractor furnishes, installs, provides all drives, power and control wiring, programming, startup and initial operation of all mechanical and electrical equipment for a complete system.
96	10000	All	Deliveries				Owner will not receive any materials for Contractor		State within bid document General Conditions
97	10000	All	Drawings - As-builts			s	Contractor submits to Owner through Architect - Architect thoroughly reviews for completeness and revises for correctness. Final Revit file of as-built is required from Architect and Engineers.		Flashdrive + (2) each full size 30"x42" (4) each 1/2 size prints (Cad for all A,S,M, L, C and E) Owner required drawing standard size is 30"x42".
98	10000	All	Drawings - Design Working				Architect/Engineer Submits Acad 2013 and Revit or newer to Owner A.S, C, L, M, E - All Drawings will be 30" x 42" in size.		Submitted to Owner Project Manager prior to start of construction, revised during construction to incorporate all addenda and approved changes and final set submitted to Owner prior to final payment at end of project. RFP's for architectural and engineering consulting services will include a specific line item cost for this work.
99	10000	All	Equipment Start-up				7 calendar day advance notice to Owner		
100	10000	All	Floor Finish			s	Architect specifies product when product is not provided by Owner.		Contractor strips, seals and applies finishes to hard floor including terrazzo, vinyl tile and linoleum. Product and application to be reviewed and approved by Owner at time of application.
101	10000	All	General Conditions				Use only Owner provided General Conditions for Construction in the Bid Document.		Owner will provide Instructions to Bidders and General Conditions for Project. Specifications section 10000 must reflect this.

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				A	E	s		
				Standard				
102	10000	All	Hazard Notification				Contractor responsible - Confined space, lock/tag-out	Includes multi-employer work place regulations. OSHA Standard 1926 Construction; OSHA Standard 1910 General Industry; US Dept. of Labor Directive CPL 2-0.124 Multi-Employer Citation Policy
103	10000	All	Hazardous Materials				Certification and licensing to handle, place or remove. Specify that MSDS sheets will be provided to Owner for all Hazardous Materials incorporated into each project.	No asbestos, PCB or other hazardous materials will be used in any part of the building without prior notice to the Owner. Hazardous materials will not be used in the interior of the building.
104	10000	All	Design Inspection				Architect performs weekly inspections and submits Weekly Observation Reports to Owner Representative / Project Manager	Refer to Quality Control and Assurance sections. This section includes civil, structural, mechanical and electrical Engineering Observation Reports. This requirement is Included in the RFP for consulting service and final AE contracts.
105	10000	All	Interpret Design				Design Professional - Provide notice of any Design Interpretation directly to Owner Representative prior to any transmittal or issuance to contractor.	
106	10000	All	Interruption				72 hour advance notice of adverse impact to existing operations.	
107	10000	All	Keys				This section has been included in Item 239	
108	10000	All	Liquidated Damages				Decision to use liquidated damages will be made by Owner. When used, amount of damages will be specified by Owner.	Case by Case - Generally not used unless corresponding incentive or bonus is used. Use of liquidated damages can create indefensible liability for Owner and Consultants and prevent recovery of actual damages.
109	10000	All	Meeting Pre - bid				At least 7 calendar days prior to receipt of bids	Owner schedules with Architect
110	10000	All	Meeting Preconstruction				Owner schedules within 20 days of notice to proceed	Contractor provides all communication and critical delivery info
111	10000	All	Meeting Progress				BI-Weekly on - site unless otherwise required by Owner. Weekly for major new building projects during critical construction phase.	
112	10000	All	MSDS sheets				Prior to introduction of any chemical or compound onto County property, Contractor furnishes (3) copies directly to the Owner cc: Architect for all materials to be used in construction or on County property. Contractor must keep 3 ring binder with all MSDS sheets readily available at the site project office.	Copy of each to Project Record - all materials used during construction. Standards: 1926.59 Hazard Communication Construction and 1919.1200 Hazard Communication General Industry

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				Standard			Reference	Additional Comments	
113	10000	All	O & M Manuals				See current Owner General Conditions for specific section - <b>GC26</b> Operation and Maintenance Manuals - Two copies of all O & M information will be furnished by the Contractor and included with shop drawings and ALL project submittals at the time of submittal to the Architect. Contractor will provide all information on either 8½ by 11 or 11 by 17 inch paper. Do not punch any documents. Information will be unbound and unpunched and clearly marked and referenced by the bid document specification sections and drawings as O & M materials. Owner will provide all binders and master indexing system.  Contractor will furnish all operation and maintenance information necessary for the Owner to install, operate, maintain, repair or replace all component/s and equipment in the facility. Provide two complete sets of information, two originals or one original and one copy fully indexed.		Architect reviews for content and completeness and approves TWO (2) complete copies formatted on 8.5 x 11 sheets fully indexed with section tabs. Minimum of 2 weeks prior to training and following Architects review. <b>GENERAL CONTRACTOR WILL INCLUDE O &amp; M MANUALS IN THE PROJECT SUBMITTAL SCHEDULES.</b> Goal is to have all O&M Manuals including new projects loaded and accessible on County EDMS On-Base system prior to occupancy of new space.
114	10000	All	O & M Training				Contractor provides to Owner. Training in scheduled 2 weeks in advance. Includes Warranties, training, spare parts in General Contractor submittal schedule.		Include specific training requirements in document. Identify additional training needs for sophisticated systems e.g. HVAC controls. Requirements are included in Owner General Conditions
115	10000	All	Occupancy Permit				Obtain final (CO) or partials (TCO) to meet Owners needs. Request for partial Occupancy permits will be solely at the Owner's direction		Contractor obtains/pays for CO or TCO(s) prior to issuance of certificate of substantial completion.
116	10000	All	Permanent Utilities				Contractor/Utility installs and connects. For new construction - Contractor initiates and opens all accounts and pays connection fees. General Contractor will provide complete as-built drawings of all utilities to the Architect. Architect reviews and corrects and submits to Owner. As-Built utility drawings will be submitted in AutoCad 2005 or newer with one hard copy to the Owner. Owner will provide final survey of improvements for accurate locations. See also item 121 - Project Utility Record.		Contractor notifies County 6 weeks in advance of need for permanent utilities including natural gas, electricity, water, sewer, & storm sewer. Note: Utility may require that the new service be in the Owner's name. If this is required, the Contractor will still pay for the new service connection and all temporary power use for project construction.
117	10000	All	Photography initial				8 x 10" of existing conditions prior to project		Owner provides and pays
118	10000	All	Photos - Progress				Weekly progress photos -Owner will provide all progress photography.		Owner provides and pays
119	10000	All	Photos - Final				Architect provides and pays for photo series of exterior and interior shots. To be included in all new construction RFP for professional services.		Includes commemorative photos (a minimum of 10 and more as size of project increases - combination of interior and exterior shots) and final condition documentation.
120	10000	All	Prevailing Wages				Prevailing wages apply to all projects greater than \$25,000. Contractors will submit directly to Owner.		Architect incorporates Owner's language. County Board Resolution 95-55 regulations - include reference to prevailing wages in three locations in all bid documents - 1. Advertisement for Bids 2. Invitation for Bids and 3. On the Bid Form.

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				Standard			Reference	Additional Comments	
121	10000	All	Project Record				Maintain on site all Contract Documents for Owner. Consultant to review for accuracy, then transmit complete to Owner at end of Project. Owner will use a 3rd party electronic document submittal system. This includes printing and issuance of bid documents.		Include complete all changes, as-builts, test records - legible in all detail and dimensional changes
122	10000	All	Project Utility Record				Separate drawing showing all AS -BUILT utilities to include both public and private systems. See also Item 115.		Final official survey of utility points will be provided by Owner.
123	10000	All	Project Sign				Owner will provide standard design, size and color.		Contractor to furnish, install, maintain. County logo will be used.
124	10000	All	Punch List Preliminary				By Architect/Engineer completed prior to Substantial Completion		Contractor notifies Architect/Owner is substantially complete.
125	10000	All	Punch List Final				By Architect/Engineer 4 weeks prior to occupancy.		
126	10000	All	Reports - Daily				Contractor completes daily report - work force and activity and submits to both Architect & Owner. Owner will provide standard report template to be used by Contractor. To be included in General Conditions		Include weather, equipment, manpower, subs, inspections, exceptions
127	10000	All	Reports - Test				All Test Labs cc: Owner, Architect, Contractor, Sub/supplier and Building Official.		Includes soil tests, concrete tests, and all field or laboratory tests
128	10000	All	RFI Information Request				Contractor submits to Architect and hard copies Owner at time of initial submittal and each resubmittal or communication. Electronic document submittal system will be used for new building construction projects.		Architect responds to Contractor and Owner project manager at same time.
129	10000	All	Safety				Contractor is responsible for project site safety.		Refer to Standard General Conditions and Standard Assurances
130	10000	All	Sanitary Facilities				Contractor provides unless project is in existing building.		Contractor may use existing providing all areas are kept in clean condition
131	10000	All	Schedule -Completion				Owner provides for inclusion in Construction Bid Documents		
132	10000	All	Schedule -Construction				Owner provides to Contractor and Architect.		Show all major or critical construction phases including long material or equipment delivery lead times prior to award of project.
133	10000	All	Schedule of Values				Owner provides minimum requirements list to Contractor and Architect prior to preconstruction meeting.		Use AIA G703 follow specification section format
134	10000	All	Schedule Phased Work				Owner provides "Owner - Contractor Action lists"		This involves renovation or tie-in to existing buildings only.
135	10000	All	Shop Drawings		E		One (1) electronic (pdf) copy of each transmittal including final to Owner when sent to Contractor. Submittal record is developed and provided to Owner and Architect by Contractor, submitted to Architect and Owner for Owner Approval. Submittal record is reviewed at end of project prior to final payment to ensure that all submittals to Owner have been received. Owner will place drawings on EDMS system (On-Base) Following On-Base convergence - hard copies will be transmitted to Owner's operations staff.		All shop drawings will be provided on 11 x 17 or 30"x42" paper depending upon the legibility of the information. Any other size is subject to written approval by the Owner Project Manager.
136	10000	All	Site - Assessment			s	Environmental Assessments - completed by Owner		May use separate contract. For renovation projects, this will include asbestos and mold investigations by Owner.
137	10000	All	Site Survey				Provided by Owner.		County Survey and Land Information

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				Standard			Reference
138	10000	All	Soil Borings			s	Structural PE determines locations. Design Professional assists - Owner contracts direct and pays for all soil boring and geotechnical evaluations.
139	10000	All	Spare Parts				Contractor inventories, Generates transmittal lists and transmits to Owner prior to Occupancy
140	10000	All	Storage Temporary				Contractor and Owner agree at Pre-construction meeting
141	10000	All	Substitutions				Owner "only" approves any substitutions to specified standards. See Owner General Conditions.
142	10000	All	Temporary Heat		E		Contractor provides enclosure and equipment. Owner pays for temporary heating fuels (natural gas and propane) for building enclosure only.
143	10000	All	Temporary Construction Utilities				Contractor furnishes, installs, and pays for installation.
144	10000	All	Testing Independent				Independent - Architect specifies - Owner contracts/pays
145	10000	All	Testing Special				Contractor is responsible for any testing that Owner or Owner's representative requires prior to approval of substitutions. This is only when the specified item is no longer available.
146	10000	All	Unit Pricing				Bid unit pricing Includes all labor, material, equipment, OH, profit, sales or use tax, insurance & bond.
147	10000	All	Warranty				Contractor notifies Architect or in the absence of an Architect, the Owner in writing of date requested for the warranty to begin. Warranty will be a minimum of one year. Landscaping and special construction will be two years.
148	10000	All	Warranty Inspection				End of year inspection/walk through w/Contractor/Arch/Eng.
149	10000	All	Waste Disposal			s	Dumpsters at adjacent Owner structures will not be used by Contractors
							Shamrock Disposal, Blaine MN, Atomic
150	10000	All	Waste Reduction	A		s	Contractor will follow Owner recycling/waste guidelines
							Owner furnishes to Architect for inclusion in project documents

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151	24000	Existing Conditions	Demolition	A		s	Supplement Architects standard demolition specification 02060 with Owner's Model Specification - Salvage and Reuse and Recycling. See Appendix F of the Sustainability Guide		Prior to initiating any demolition project - Complete the Building Demolition Plan Checklist - Appendix C of the Sustainability Guide
152	32000	Exterior Improvements	Snow storage areas			s	During site design, identify plowing scheme, allow for heavy equipment, designate areas to stack snow, surmountable curbs and treat snowmelt run off.		If snow stacked on landscaped areas - allow access etc. in landscape plan. Load snow for slow melt into ground for recharge of aquifers. Sodium and potassium chlorides are solubles that cannot be addressed. Model is new rain garden located at the Employee Parking lot north of the LEC addition.
153	32000	Metals	Reinforcing steel			s	Architect / Structural Engineer to specify.	North Star Steel	Maximize amount of reclaimed / recycled steel content. Goal is 100% recycled content for all reinforcing steel.
154	33000 33100	Concrete	Structural Cast in place			s	Use 4000 psi concrete as minimum for all areas. Increase fly ash content from 20 to 25% in Portland cement - providing strength and durability are not compromised.	Fly Ash - NSP Power Plant	Exterior concrete will be broom finished concrete. Above grade concrete will be 4,000 psi or greater. All roofs at or above 3 stories will be cast in place reinforced concrete deck with a minimum design load of 60 psf "not" including roof system and insulation. Discuss the use of water reducing agents, plasticizers and other add mixtures with owner prior to specifying or approving use. Water to cement ratio must be controlled for all project concrete without adding water or admixtures at the job site. Test cylinders will be specified to be taken only after any additions and from the final 1/3 of the truck load.
155	33053	Concrete	Sidewalks			s	Use minimum 3500 psi concrete with air entrainment and granite chip aggregate to reduce effects of pit run aggregate degradation and pop out. Apply penetrating concrete sealer to all side walks. Standard reinforcing is to be 6" WWF.	Same as cast in place.	Exposed aggregate finish is prohibited from exterior walks, curb cuts, ramps or traffic crossings. Use granite chip aggregate for sidewalks to eliminate freeze damage from standard pit run aggregate. Fiberglass reinforcing is acceptable as Owner approved option.
156	33500	Concrete	Finishing				Broom finish only for sidewalks. Interior concrete finishes will be steel troweled smooth.		
157	33519	Concrete	Colored				Color will be mixed throughout concrete. Surface color topping is not permitted.		
158	33529	Concrete	Tooled				Smooth tool 4" around all sidewalk sections.		
159	33533	Concrete	Stamped				Can only be used with Owner written approval.		No exterior stamped concrete.
160	33800	Concrete	Post-tensioning			s	Do <b>not</b> use cast-in-place post tensioned floor slabs		Precast post tensioned or prestressed concrete plank and tees are permitted with Owner approval.
161	33923	Concrete	Concrete Curing Compounds			s	Use Low VOC form release agent and curing compounds.	Seal Tight Duogard II, BioForm, AquaForm	All membrane curing compound will be pigmented unless a colored concrete highly finished surface is approved by the Owner.
162	34100	Concrete	Precast concrete - plank/stone, columns and beams.			s	ACI 318 - fully self supporting - per manufacturer's installation recommendations. Bottom (interior side) of all precast plank will be "steel trowel" smooth finished. Precast concrete post, wall, roof, beam construction will be used for all high security installations and high wind resistance such as dispatch, jail, courts, etc.		Fabricate to $\geq 1/8$ " tolerance - square ends and matching surfaces



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163	34500	Concrete	Precast - wall panels			s	<p>For shops, garages, cold storage, free standing garages etc. (Wall insulation requirements in this section apply to all new exterior wall systems)</p> <p>FabCon, Wells</p> <p>Meet minimum exterior wall insulation value of <b>R20</b> - polyisocyanurate 2.5" laminated. <b>R20</b> Wall value is not averaged and applies to prefabricated panels only. R20 is minimum requirement for all other wall systems. When calculating R values - use method that combines Isothermal (Series-Parallel Path Method) Analysis and Thermal Dynamic Building Envelop Analysis. Both methods are provided in ASHRAE Handbook of Fundamentals and from ASHRAE/IESNA Energy Standard 90.1-1989 (Model Energy Code). Use Mass Analysis to determine "true" thermal performance of precast panels including the C-value or conductance of the material. IN LIGHT OF ENERGY CRISIS - all new construction design will consider adding additional wall insulation to increase the actual (versus averaged) exterior wall R value beyond R20. All designs will pay particular attention to location and amount of all fenestration.</p>
164	38000	Concrete	Cutting & Boring				<p>All openings in existing concrete will be neatly cut. Roto drills / jack hammers etc. will not be used to create openings in permanent structures. Only saw cut straight lines and cores are permitted.</p>
165	40000	Masonry	Inspection			s	<p>Adhere to Owner's Quality Control and Assurance Policy</p> <p>Independent consultant may be used under direct contract with Owner</p>
166	40000	Masonry	High Wall / Low Roof			s	<p>Owner has and provides approved details for masonry terminations including all high wall/roof intersections</p> <p>Use only approved spring flashing detail to be used to accommodate future roof replacement without loss or damage to existing flashings.</p>
167	40500	Metals	Embedded - Masonry			s	<p>All embedded metals, supports and anchors \ for stone, masonry or precast stone façade components will be stainless steel. Only stainless steel masonry ties are permitted.</p> <p>Other materials than stainless steel may be consider on a case by case basis by Owner.</p>
168	40513	Masonry	Mortar and grout				<p>Architect to specify - compatible with brick.</p> <p>Subject to approval by Owner independent consultant.</p>
169	40519	Masonry	Unit masonry anchors			s	<p>Double eye and pintel installed maximum of 16" on center. horizontal and vertical for 8" nominal materials; <b>16"</b> for large brick, otherwise every other head joint. All masonry anchors will be stainless steel.</p> <p>Dur-o-wall</p>
170	40523	Masonry	Flashing Thru-wall			s	<p>EPDM Flashing and end dams - EPDM - continue to visible surface and 1/4" past finished façade surface all locations.</p> <p>Firestone, Carlisle SynTec</p> <p>No pvc - use Firestone Flashguard or equal. Provide flashing dams at all interruptions in flashing with 4" minimum turn up.</p>
171	40523	Masonry	Limestone	A		s	<p>Limestone will be Minnesota native Kasota stone <b>only</b>. Quality of finish will be veine cut with sawn finish. Color range will be cream - no dark brown or gold. See appendix for balance of requirements.</p> <p>Limestone is to be used for vertical wall sections only. Limestone parapet or wall caps are not permitted.</p>
172	40523.1	Masonry	Vertical Expansion Joints			s	<p>Provide continuous vertical 1/2" minimum vertical expansion joints in brick and backer block where designated by Architect on drawings. Provide within two feet of both sides of outside corners, at inside corners, between dissimilar materials and spaced at no more than 20 horizontal feet on center. Provide all other horizontal expansion joints in masonry structures where appropriate.</p>

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				Standard			Reference
173	40523.2	Masonry	Embedded Flashing			s	Use Owner provided details for all embedded flashing.
174	40523.2	Masonry	Weeps & vents			s	Rope - cotton only maximum 24" on center horizontal joints. All weeps will be a minimum of 6" above grade. Mesh cavity protection will be used to ensure weeps are functional after wall construction is complete. The goal is to prevent the wall cavity from being filled with mortar.
175	42100	Masonry	Unit masonry			s	Architect to specify - maximum 2 brick colors, subject to approval by Owner.
176	42300	Masonry	Glass Unit				No glass masonry will be used for any exterior surface.
177	42200	Masonry	Concrete Unit				May be used for interior load bearing walls and sound insulation.
178	44100	Stone	Dry Placed				May only be used for exterior and interior landscaping.
179	44200	Stone	Exterior Cladding				With Owner permission only.
180	44300	Stone	Masonry				Mankato Kasota Limestone is used to a limited extent only at the Hastings Government Center site.
181	50000	Metals	Recycled Content			s	100% - all specification sections
182	51200	Metals	Structural Steel			s	Architect/Structural Engineer to specify.
183	52100	Metals	Steel roof joists			s	All steel roof joist designs will be 50% greater than code. All steel roof joists will be hot-dip galvanized.
184	53100	Metals	Decking - metal			s	Architect to specify that all steel decking will be primed and painted both sides. That units will be secured to supporting members with fusion welds. Weld metal will penetrate all layers of deck material and will have good fusion to supporting members. Structural supporting members will not be damaged by welding procedures or burn-throughs. All steel roof decking will be a minimum of 16 gauge. All metal roof decking will be reviewed by and conform to Factory Mutual requirements. 2011 - Use 10' wide sheets and increase thickness to resolve FM90 uplift issues. This will reduce the number of decklaps and welds.
							See also Specifications Section 75100 and 75323 www.sdi.org/manuals.htm
							No holes through deck are permitted from welding process. Provide metal closure strips for complete support of roof insulation where rib openings in top surface of deck occur adjacent to edges and openings. Weld all closures into position. Wire brush, clean and paint all scarred areas, welds and rust spots on top and bottom surfaces of deck and supporting steel members. All roof deck material will be 16 gauge and hot-dipped galvanized. Use local code fireproofing and Factory Mutual requirements. If not specified, all roof deck systems will have a minimum fire resistance rating of 2 hours. Ribs will be 1.5 inches deep. Structural concrete roof deck is required at building height at or greater than 30 feet. Use most recent ANSI approved standards for composite steel floor deck and steel roof deck. USE Steel Deck Institute Best Practices Manual - Design Manuals for Composite Decks.
185	54000	Metals	Cold formed framing			s	Architect and Structural Engineer to specify.

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186	55200	Metals	Handrailing - Interior Stairways			s	Architect to specify. Custom handrailing will be specified only in public areas. Comply with current OSHA and ADA railing requirements. Maximum opening spacing between horizontal or vertical members is 4" or as specified by OSHA.		All handrail members are to be smooth and round aluminum or steel only. NOTE: Handrailing can be used as barrier to 30'. Any area above 30' must have a full barrier to prevent accidental falling or jumping. Handrailing above open areas will be at least 48" and designed to be "non-climbable".
187	55200	Metals	Handrailing - Exterior Only			s	Architect to specify. "All exterior handrailings supported by concrete will be designed so that the vertical supports can be side bolted to the exposed concrete structure. No handrail sleeves or vertical penetration of the concrete structure is permitted for any exterior application of handrailing. All exposed railings and attachments will be unpainted 316 stainless steel with 1/2" by half round anti-skateboarding ribs attached at 4 foot intervals on the top horizontal surface."		All handrail members are to be smooth, round and 316 or marine grade stainless steel only. NOTE: Handrailing can be used as barrier to an exposed height of 30'. Any area above 30' must have a full barrier to prevent accidental falling or jumping. Handrailing above open areas will be at least 48" and designed to be "non-climbable".
188	61000	Wood/Plastic	Rough carpentry			s	Architects standard for Design - Use only FSC Lumber (FSC accredited, independent, "third-party" certification bodies or "certifiers" certify forests. They assess forest management using the FSC principles, criteria, and standards. The FSC runs the only credible forest certification program as an independent, international nonprofit organization with more than 500 members from environmental groups, progressive companies, forestry professionals, social scientists, and representatives from labor, church and indigenous people.)		The Owner gives purchasing preference to wood and paper products from Forests that are independently certified as well managed per the Forest Stewardship Council (FSC) - FSC Certified lumber will be used if available. FSC lumber bears the FSC logo. For chain of custody certificates visit <a href="http://www.fscus.org/certified_companies">www.fscus.org/certified_companies</a> . Sustainable Forestry Initiative (SFI) is a lumber industry label and not a certification. SFI cannot be substituted for FSC. Research all wood sources to ensure that wood products used in County buildings are not from old growth or endangered forests.
189	64023	Wood/Plastic	Architectural woodwork			s	Use FSC certified lumber only. Use oak, maple, birch or cherry - stain to match - no exotic or special cuts. Design and manufacture sections in modules so they can be moved and re-used. Utilize wheat board as approved by Owner.		All wood used in projects must be certified and guaranteed that wood is harvested by selectively cutting rather than clear cutting to protect rivers, streams and wildlife habitats. Adhere to FSC requirements. Other species subject to Owner approval. There will be no soffits above any millwork unless approved in writing by the Owner.
190	64023	Wood/Plastic	Architectural woodwork hinges pulls			s	Cabinetry hinges will be heavy duty concealed self closing for all cabinetry doors. Extra heavy standard door hinges will be used for all heavy or oversized doors. Pulls will be stainless steel standard wire pulls.	Blum CLIP	
191	64023	Wood/Plastic	Architectural woodwork drawer slides			s	Cabinetry drawer slides will be medium (90-100#) or heavy duty (150-500#) depending upon application and drawer width/size and loading. Custom file drawers will have only HD 150# or heavier slides. Drawers will be full extension with lever disconnects for drawer removal.	BHMA A156.9 Grade 1HD-200 Knape & Vogt KV8800 Series HD 200 lb.	

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192	64116	Wood/Plastic	Plastic laminate			s	Vertical and non - wear surfaces can be standard color plastic laminate. Specify only Corian for window sills and restroom composite lavatories and vanities. Schar's Bluff has used Paperstone. Paperstone is manufactured by Klip Bio Technologies, LLC from 60% recycled paper and water based resins according to claims at www.paperstoneproducts.com If performance and embodied energy evaluations are favorable, paperstone may be considered for other applications. Wheat Board can be used in certain approved applications. Sunflower Board in general should not be specified in County buildings.
193	70000	Therm-Moist Protection	Sealants - interior				ASTM C920, Type S, Class 25, Grade NS
194	70000	Therm-Moist Protection	Sealants - exterior				ASTM C920-87. Fed Spec: TT.S 00230C. Use appropriate grade for floors/walks. Since sustained adhesion, durability and weatherability continue to be issues, verify the correct exterior sealant with Owner prior to specifying or approving for installation.
F	70600	Therm-Moist Protection	Roof Design Review				Owner will retain under separate contract an independent roofing consultant.
196	70600	Therm-Moist Protection	Roof Inspection				Under direct contract with Owner
197	70600	Therm-Moist Protection	Roof Fall Protection				OSHA and ANSI requirements apply. 1) Skylights / covers must meet OSHA 1910.23 to resist at least 200 lb. force. Skylights must support 2X maximum anticipated load of worker. 2) fixed ladders are required from one roof surface elevation to another. Ladders require cages or wells if fall distance is greater than 20 feet (OSHA 1910.27) 3) If roof does not have parapet or handrail at 42 inches - roof tie-off systems are required. Tie off points must be installed for arrest or restraint systems. Installation must be certified with 5,000 lb. static strength. (OSHA 1910.55 Appendix C) 4) roof access - direct walk-out door preferred. If hinged door hatch, standard handrail must be around opening (OSHA 1910.23) Hinged roof access doors must be a minimum of 6 feet from the edge of the building.
198	71300	Therm-Moist Protection	Sheet Waterproofing				Flashing for both Butyl Rubber and EPDM will be non-vulcanized EPDM sheets that will conform to their backing and fully cure to attain the elastic properties of fully cured materials. NO Hypalon (chlorosulfanated polyethylene) or PVC (polyvinylchloride) waterproofing will be used.
199	71500	Therm-Moist Protection	Sheetmetal Waterproofing				Fully adhered ice & water shield with aluminum counter flashing will be used. Fastener system will be stainless steel and 100% watertight.
200	71923	Therm-Moist Protection	Masonry Water Repellent			s	Unless instructed otherwise by Owner, application of water repellants will be done independently of the Construction Contract and at a date within 5 years of completion, but not prior to two years from final payment. Just prior to the end of the two year period, a complete inspection will be performed to ensure integrity of the masonry and precast systems prior to any application. Apply only Owner approved water repellent. Use appropriate product for each system.

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201	72113	Therm-Moist Protection	Insulation Wall			s	Closed cell extruded polystyrene (XPS) minimum R value R5 per inch - 2.5" minimum thickness with all joints caulked and sealed. Polyisocyanurate may be used with Owner approval.	Cavymate, Amofoam SB, Certifoam 25, Dow	Emphasis on recycled content and no use of CFC's in production.
202	72113	Therm-Moist Protection	Perimeter Foundation Wall Insulation				Minimum 3 inch thick closed cell extruded polystyrene (XPS) to a minimum of 4 feet depth below exterior grade or deeper if required by code or application. Oversize lower foundation wall and provide 3" wide step in foundation wall to fully support and stabilize insulation during backfilling. Board will be minimum 25 psi and R-value of 5 per inch.		Required for all perimeter walls and between slab on grade and exterior walls at or near grade. Insulation thickness may be reduced to 2" between slab on grade and exterior walls. Formed concrete or unit masonry walls must be true and smooth enough to adhere the insulation board. Insulation board will be installed horizontally below slab on grade a full four feet from the exterior wall.
203	72216	Therm-Moist Protection	Roof Insulation			s	Use 25 psi XPS polystyrene. Fully anchored to roof structure to prevent uplift. Approved materials will have an "aged" R value of 5 per inch. XPS with greater compressive strengths will be used for high and heavy traffic areas. Design roof insulation value will be <b>"non-averaged" R-38</b> - Consultant to coordinate w/ wall values. No long runs to roof drains are permitted. All areas must completely evaporate within 24 hours after rainfall. All corners and perimeter low spots will have crickets formed with tapered insulation installed to assure positive drainage. Use of polyisocyanurate (polyiso) requires written approval from the Owner. Tapered insulation systems will not be used for new construction. See additional comments.	Styrofoam, Diversified, Dow, GAS EnergyGuard Ultra ISO with Ultrashield Facer. www.gaf.com	Tested stabilized R values are 4.8 at 1.5 pcf for XPS and 5.8 at 2.0 pcf for polyiso. XPS uses HCFC-142b and Polyiso uses HCFC-141b as its blowing agent during manufacturer. As of 2008 there are no alternatives in the process without increasing flame spread and lower insulation values for both types. Both systems require cover boards for fully adhered/mechanically fastened requirements. XPS has a stable and long term R-Value. The only reason to use Polyiso in lieu of XPS is to reduce cost. Quality will be reduced proportionately. Polyiso does not provide the long term R value that XPS does. Polyiso has a water absorption rate 5 times greater than XPS. Maximum compressive strength of polyiso is 18 psi with facers when new - requiring additional protection board cover. If permitted by Owner, polyisocyanurate (polyiso) insulation may be considered as an alternate providing that 100% fiberglass facers are used - no cellulose facers are permitted. Prior to specifying or installing any polyiso - verify that the material fully meets ASTM E 180 and UL 790 standards. For extremely low traffic areas Polyisocyanurate can be used with a minimum 1" perlite (100% recycled content) fiberboard cover for low traffic. All other areas require 1.5" of protection board. A thermal barrier board is required to meet FM Class 1 or UL Class A roof installations.
204	72600	Therm-Moist Protection	Air and Vapor Barriers - Above Grade				USE AIR BARRIERS - See also Item 272 - Exterior wall gypboard application. Provide a true, impermeable vapor barrier that is rated 0.10 perm or less on the warm side of the insulation. Ensure vapor barrier continuity at the interior plane of insulation around the entire building envelope especially at penetrations, corners and junctions. Liquid applied or continuously seal all laps and penetrations. Do not apply vinyl or any other non-permeable finish to exterior wall boards.	Liquid applied is acceptable for block walls and other applications if approved by the Owner.	The fundamentals of creating a proper vapor barrier include developing the thermal section of exterior wall or roof; determine the dewpoint for the interior environment, locating the dewpoint within the wall construction; verifying the vapor barrier location and the thermal performance of the insulation relative to the dewpoint location. The psychometric chart is used to determine relative temperature, humidity and dewpoint readings. There are three classifications - 1. Vapor Retarder - 0.1 perm or less 2. 1.0 perm or less and greater than 0.1 perm. 3. 10 perm or less and greater than 1.0 perm.
205	72600	Therm-Moist Protection	Vapor Barriers - Below Grade				Provide horizontal air and vapor barriers for all concrete slabs on grade unless approved in writing from Owner.		Provide under-slab vapor barrier sheets using polyolefin membranes (no polyethylene) Continuously seal all laps and penetrations. Place the vapor barrier directly under concrete slabs on grade.
206	72700	Therm-Moist Protection	Air Barriers				See standard for air and vapor barriers above grade.		
207	75000	Therm-Moist Protection	Roof Slope			s	Minimum slope of actual roof deck to be 3% or greater. Adjust parapet freeboard to accommodate as needed while still maintaining roof rating of FM90 or greater. See separate roof parapet standard.		Construct slope in roof structure so that insulation can be installed flat at R38 without averaging. Crickets formed with tapered insulation may be used to drain corners and ponding water with approval by Owner.

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208	75000	Therm-Moist Protection	Roof Drains			s	See CSI Section 221426.		Roof insulation can be reduced to R20 only within 24" of roof drains to provide drainage pocket. Roof drains will be 100% insulated with minimum 2" fiberglass insulation below deck.
209	75000	Therm-Moist Protection	Roof Design			s	All roof types and roof accessories including substrate, parapets, screenwalls, equipment and skylights will be designed to withstand a <b>120 mph sustained wind</b> without tear-off or failure. All roof structures will be designed to 50% greater than current code for live and dead loads. All roofs will be designed to exceed Factory Mutual wind requirements and / or SPRI Wind Design Standards.		Design to most current version - FM 90 rating with a minimum 42" combination high parapet wall system. Safe parapet wall height can be achieved with an integral railing no higher than 12" above parapet wall. Railing can only be mounted to the roof side vertical wall of the parapet - providing it does not interfere with any lightning protection.
210	75000	Therm-Moist Protection	Roof System Alternatives				Other roof systems may be considered for certain buildings. Approval to use other than BUR or EPDM requires full research and justification for variance.		Choices are: Coal-tar, Modified Bituminous (Atactic-polypropylene or Styrene-Butadiene or Self Adhering modified membrane), Elastomeric (Chlorinated-Polyethylene or Chlorosulfonate-Polyethylene or Polyisobutylene) Thermoplastic (Copolymer-Alloy or Ethylene-Interpolymer or Polyvinyl-Chloride or TPO -Thermoplastic-Polyolefin or Nitrile-Butadiene-Plymer) Fluid Applied Roofing, Coated Foamed Roofing, heat applied Roll Roofing, tile, slate, or asphalt shingle. Note: Robert Trail Library in Rosemount has TPO roof system installed in 2008.
211	75000	Therm-Moist Protection	Roof Installation & Inspection				3rd party On-Site inspection will be provided by Owner during the roof system installation. Owner will perform thermographic evaluation within one year of roof installation.		
212	75000	Therm-Moist Protection	Roof warranty				Provide a minimum 20 year no dollar limit (NDL) roof warranty by Manufacturer and installing roofing contractor. A maintenance bond may be substituted for the warranty in the Bid Document if future solvency of the installer or the manufacturer(s) is in question. Include responsibility to repair damages caused by roof leaks if due to material failure or faulty installation. Roof membranes will be maintained consistent with manufacturer requirements.		Particular attention must be paid to the actual warranty specified in the Contract. Request that a copy of the Manufacturer's Owner sign off sheet be submitted with the shop drawings for "OWNER REVIEW" !! Do not sign anything that changes the contract warranty requirements. Note: Most roofing manufacturers require sign off by the Owner for acceptance of the roofing system. It is generally combined with the Warranty Registration sheet. The Warranty Registration sheets have conditions specified in them that may not comply with the Contract requirements.
213	75100	Therm-Moist Protection	Roof Built Up				4 Ply Glass Fiber <b>Type VI</b> Felts - Hot mopped Asphalt with 20 year No Dollar Limit total roofing system Warranty to run from date of substantial completion. A vapor / heat barrier must be specified and installed when hot applied built-up asphalt roof are specified on metal decks to resolve fire rating from below. Issue is that when the asphalt melts through the roof weld holes or other roof penetrations, it fuels the fire. Cold applied adhesive that is Factory Mutual approved must be specified for protection board that must be installed below the insulation and actual roof membrane materials. Use of built-up roof systems will be Owner decision.	GAF Gafglass Ply 6 Owens-Corning Perma Ply-6	See CSO 75323 - Roof design for wind and uplift ratings are the same for all roof systems - BUR or EPDM. Gravel surface will be minimum of 4 lbs./sf. A 42" high perimeter parapet wall is required. Waterproofing and flashing of the parapet will be pre-approved by the Owner prior to inclusion in the design. Increased height parapet must be structurally designed to handle increased wind loading.
214	75100	Therm-Moist Protection	Roof Built Up Electrical				Pitch pockets are not permitted. Use min. height 12" curbs with weatherproof "dog houses" around electrical penetration.		Make all attempts to keep penetrations in vertical surfaces rather than in horizontal roof system surfaces.

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215	75323	Therm-Moist Protection	Roof EPDM	E	s	60 mil (or 90 mil for specific high traffic or green roof applications) <b>100%</b> fully adhered <b>and</b> mechanically fastened - fully recyclable EPDM membrane with 20 year No Dollar Limit total roofing system Warranty to run from date of substantial completion. Roof Assembly will be UL Class A fire rated. Roof finish to be white to reduce heat island effect.. (Also refer to ANSI/SPRI WD-1-2007 Wind Design Standard Practice for Roofing Assemblies and Factory Mutual requirements. SPRI (Single Ply Roofing Industry) has been working with ANSI on improved wind ratings, edge terminations, etc. Website= www.spri.org)	Firestone, Carlisle SynTec	Design to most current version - FM 90 rating with a minimum 2' high parapet wall system. Use white coated EPDM to decrease heat island affect. Colored acrylic coating can be direct applied to EPDM with manufacturer's prior approval or specify white or light coated EPDM. Determine impact by coating upon recycling of the product. In August 2002 - the Oak Ridge National Laboratory completed a study for the SPRI "The Field Performance of High-Reflectance Single-Ply Membranes exposed to 3 Years of weathering in Various U.S. Climates." They determined that the reflectance of the materials deteriorated from 30 to 50% in 3 years. 90% of original reflectance was achieved on some membranes with washing. Report is on file with CPPM and includes Mpls. For clean white membranes, the energy cost benefit of high reflectance roofing drops from \$0.03 @ R5 to \$0.006 @ R30 per SF. County standard is <b>R38</b> . Fully evaluate potential energy cost savings with soiled roof at <b>R38</b> against cost of investment and maintenance of high reflectance membrane.
216	75323	Therm-Moist Protection	Roof EPDM - Mechanical Fasteners	s		Membrane Roofing Fasteners will be stainless steel and sufficient length to properly anchor the roof system to the roof deck to achieve FM90 or greater wind load rating. Pullout tests will be conducted prior to the installation of the fully adhered membrane.		Perform a minimum of 10 pullout tests for up to 50,000 square feet (4,650 square meters) or portion thereof on each roof elevation or change in substrate. Perform the pullout tests at random areas of the roof including corners, perimeter and field to provide a representative sampling of overall roof performance. The location of the pullout tests will allow for 50% more tests in the corners and perimeter than in the field. It may be necessary to perform additional pullout tests beyond the minimum number required. This includes but is not limited to occasions when 1. pullout values vary significantly 2. tests are performed in substrates that are inherently less consistent such as lightweight concrete, tectum or gypsum 3. there exist multiple questionable areas 4. local building codes require additional tests 4. roofs with high wind loading will have additional pullouts tests conducted in all corners. Ref - Form A - Pull out Test Report ANSI/SPRI FX-1-2001 dated May 2, 2001.
217	75563	Therm-Moist Protection	Vegetated Protected Membrane Roof		s	Requires Owner written approval		Resource - NRCA Green Roof Systems Manual 2007 - www.nrca.net. Consider fire issues during drought conditions.
218	76100	Therm-Moist Protection	Roof Metal/Copper	E	s	Metal or copper roofs can be specified providing a minimum 20 year roof is provided and a "non-averaged" insulation minimum value of <b>R38</b> is used. Metal roof attachment must provide 100% thermal break from interior roof framing etc.		Roof design must be meet or exceed <b>FM 90</b> rating. Match requirements for EPDM system. Copper roofs are to be designed to 50 years. Locate boiler stacks to prevent roof metal corrosion from exhaust gases.
219	76526	Therm-Moist Protection	Sheet flashing		s	Flashguard or EPDM as approved by the Owner.	Firestone	Through wall flashings. Flashing will be fully supported by galvanized sheetmetal to prevent sagging. Minimum 20 gauge Kynar coated steel will be used if any part of the flashing is exposed to the exterior façade of the wall.
220	77000	Therm-Moist Protection	Roof Elevations	E	s	New buildings will have no more than 3 contiguous roof levels. Minimize number of roof levels, separations and types		For "high wall/low roof" terminations - use Owner furnished standard detail. Ensure constructability of all flashing designs.

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221	77000	Therm-Moist Protection	Roof Top Equipment Wind Allowance			Refer to section 233000 for standards regarding anchoring rooftop equipment for wind loading. Minimum standard protection is for sustained 120 mph wind.		
222	77116	Therm-Moist Protection	Roof parapet cap sheet metal flashing		s	24 gauge steel with Kynar finish. Aluminum only if approved by Owner. Anchor in vertical areas only at center of sections for full thermal expansion. All corner pieces will be prefabricated units w/o lap, mitered or field joints on corner.		Use only manufacturers who use 50% or greater recycled materials. Membrane will be installed to completely cover parapet and extend down exterior wall prior to cap flashing installation. Keeper strip and flashing will not be anchored to brick. Brick fascia will operate independently of parapet blocking. Allow 1/2" or greater vertical brick expansion. Top brick mortar joint will be reinforced 16" o.c. horizontally with stainless steel eyes and pintels. Also see comments concerning structural integrity required for all parapet walls to 42" and 120 mph sustained wind loading.
223	77116	Therm-Moist Protection	Roof parapet flashing			Run roof membrane complete up and over parapet - match roof. Spring form counter flashing will be used for all roof membrane terminations.		Spring form counter flash min. 24 gauge prefinished with sealant @ drip. Ensure that brick façade is not anchored or connected to structure or block backer wall to permit independent differential movement. For built up roof (BUR) installations a special detail will be prepared for parapet flashing and counter flashing to be approved by the Owner.
224	77126	Therm-Moist Protection	Reglets			Reglets will not be used. All terminations at roof wall intersects will be fully developed in wall flashing systems.		Complete details will be developed for approval by the Owner for all roof / flashing / wall terminations.
225	77133	Therm-Moist Protection	Roof parapets - through wall scuppers		s	Through wall scuppers will be constructed of one piece 1/8" steel plate - 100% hot dipped galvanized - installed in opening oversized 1/2" about for sealant with a minimum lip extension of 4" beyond finished wall.		Use only for overflow drains and roof drains for areas without internal roof drains. E.g. elevator, stairwell and mechanical small area penthouse roofs.
226	77200	Therm-Moist Protection	Roof Cant & Wood Blocking		s	<b>Untreated</b> - fully cured FSC hardwood dimensional lumber per project detail. Architect will address local fire code issues prior to specifying.		Do not specify or use fiber cant or blocking or treated lumber. Roof parapet cap flashing will be sloped a minimum of 1.5" per linear foot from exterior wall to drain onto roof. Fire resistant wood blocking may be used only if required by local code. In general - the roof system will be considered to be outside the fire rated zones of the building.
227	77200	Therm-Moist Protection	Roof Curbs		s	All roof curbing will be fully detailed to provide wind load pull out requirements. Specify that all roof curbs are to be installed by the General Contractor only. Comply with 120 mph sustained wind rating for all exterior mounted items and finish panels.		Mechanical will furnish pre-made curbs to General. ID equip. in specs. NOTE: Elimination of roof penetrations is a priority. Whenever possible - vent exhaust through the exterior wall away from any air intake in lieu of penetrating the roof.



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228	77200	Therm-Moist Protection	Roof parapets			s	Parapet walls will be a minimum of 42 inch above roof deck and roof insulation to improve roof uplift to 100 mph and provide fall protection at building perimeters. Use fire resistive wood for parapet blocking only if required by local code official.		Provide safety from falling at all roof edges that are over six feet (6') above adjacent surfaces. If parapet height is less than OSHA guardrail requirements, supplementary guardrailing or fall protection system must be installed. If handrail or guardrail is used in lieu of a perimeter parapet structure - the railing must withstand 250 lb. of force. No stone, masonry or precast parapet caps. Fall protection will fully meet or exceed OSHA requirements at the time of installation.
229	77226	Therm-Moist Protection	Roof Ridge Vent		E	s	For gabled roofs - provide roof ridge vent detail same as for Thompson Park Center Project in West St. Paul.		
230	77233	Therm-Moist Protection	Roof Access		E		Provide internal stairways / ships ladders to roof areas. Minimum roof opening size to be determined for each project Place roof access openings minimum of 8 feet away from roof edges in strict conformance with OSHA requirements. Hatches will be fully insulated to R20 (R38 preferred), high security and structurally rated to exceed roof rating for wind uplift and minimum dead weight snow load of 40 PSF.		Roof uplift rating will be FM90 with roof access structure rated to R38 INSULATION VALUE. No vertical ladders. Owner to approve make and model. Type and Model to be confirmed with Owner.
231	77246	Therm-Moist Protection	Roof walkways			s	Provide access walkways to all roof mounted equipment that protect the roof membrane and system.		Compatible with roof system. Walkway pads must be and remain firmly attached to the roofing system. Need recommendation from consultant on what to use that will stay in place and not crumble.
232	77253	Therm-Moist Protection	Snow Guards				Snow / avalanche guards will be provided on all steep slope metal roofs.		
233	78116	Therm-Moist Protection	Applied Mineral Fiber Fireproofing				Gypsum - Cementitious type as defined by UL. Spray fireproofing is required for standard steel beams and columns, bar joists and metal decking, lintels and structural steel in bearing or exterior walls. All materials and construction practices used will be listed by Underwriters Laboratories for hourly rating requirements. Conform to ASTM E605-77(82) for thickness and density test methods.	Grace Monokote Isolotek Intl CAFCO 300.	Building determines 2 hour and 4 hour fire rating requirements. Minimum requirements are 2 hour for steel beams, columns, bar joists and metal decking - and 4 hour for lintels/structural steel in exterior bearing walls. Materials will be provided from a single manufacturer. Must be Factory Mutual approved. Any material that may have questionable content or is manufactured outside the United States <b>must be domestically tested and certified</b> to be free from any contamination or hazardous materials. Fireproofing materials will be made from post-industrial and post consumer recycled materials when available.
234	78123	Therm-Moist Protection	Intumescent Mastic Fireproofing				Intumescent paint type fire-proofing may be used in high traffic and visible areas only if it can be demonstrated to the Owner that a smooth high quality cleanable finish can be achieved.		Must be Factory Mutual Approved and UL Rated.
235	78400	Therm-Moist Protection	Firestopping				Specify product suitable for application and approved by local code official.	3M, Grace	Fire stopping will be Installed at all penetrations through fire rated partitions. Firestopping must achieve the partition fire rating. There are a number of products including putty, pillows, sealants and foams. For cable trays use removable type barrier pillows such as 3M intumescent fire barrier pillows.

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**DAKOTA COUNTY HIGH PERFORMANCE DESIGN AND CONSTRUCTION STANDARDS 2017 WORKING COPY**

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Item	CSI	Section	Item	A	E	s			
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236	79000	Therm-Moist Protection	Sealant - exterior				With foam back rod - up to 3/4 inch compatible with sealant.	Dymonic by Tremco	ASTM C920-87. Fed Spec: TT.S 00230C. Use appropriate grade for application. Since sustained adhesion, durability and weatherability continue to be issues, verify the correct exterior sealant with Owner prior to specifying or approving for installation. No sealant will be installed when ambient is below 32 degrees.
237	79000	Therm-Moist Protection	Sealant - precast / masonry				With foam back rod - up to 3/4 inch compatible with sealant.	Dymonic by Tremco	Same as for exterior sealant.
238	79113	Therm-Moist Protection	Preformed Compression Seals				Also known as Bridge Seals. Use preformed compression seals in wall joints greater than 3/4" that are installed with very straight lines.	MM Systems Corp.	
239	79123	Therm-Moist Protection	Preformed Backer Rods				Used closed cell backer rods only.		
240	79126	Therm-Moist Protection	Preformed Joint Fillers				Preformed closed cell neoprene expansion joint fillers may be used in wall construction for areas such as building addition intersects greater than 3/4"	MM Systems Corp.	
241	79513	Therm-Moist Protection	Expansion Joint Cover Assemblies				All expansion joint covers will be aluminum.	MM Systems Corp., Nystrom @ www.nystrom.com	Architect design must be approved by Owner.
242	80671	Opening- Door	Locks				6 - pin - Owner specifies, provides and installs	Schlage	Contractor provides construction keys and cores
243	10000	All	Keys				6 Pin - high security - master keying scheme provided by Owner	Schlage Primus	Owner provides final lock cores and keys under separate contract.
							Keys - Contractor supplies "0" cut Primus and Standard Keys for permanent cylinders		
							Contractor supplies construction keys if construction cylinders are used for new construction or renovations that include complete lock cylinder replacements.		
							Permanent key blank will be specified for all locks per project.		Contractor provides two (2) keys per new lock with (0) cut.
							Owner makes final key cuts under separate contract.		
							Contractor provides construction cylinders if needed.		County owns 40-50 temporary cores and keys that can be used. Verify number and availability with Owner.
							All cylinders are provided by Contractor		
							Keyway will be specified for each project by Owner.		
							Exterior doors - Contractor will provide Schlage Primus, IC core, 6-pin, side pinned per Owner's Schlage Primus Facesheet.. Keyed to "0" (sub-assembled).		
							Interior doors - Two types will be provided based upon application:		
			1. Schlage Primus - Same as for exterior doors.						

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						2. Schlage standard 6-pin cylinder keyed to "0" (sub-assembled)	
244	80671	Opening- Door	Magnetic holds			To be specified and Installed on all meeting rooms, non-secured corridors and assembly rooms.	Use magnetic holds whenever there is a great potential for doors to be propped open for convenience.
245	80671	Opening- Door	Panic Hardware			Owner to specify manufacturer, make and model	VON DUPRIN ONLY Focus on least amount of maintenance - provide with electric strike. <b>Do Not Use Precision/ Stanley</b>
246	80671	Opening- Door	Stops			Provide stainless steel door stops for all doors to protect walls etc.	Private offices may have wall stops. All others will be firmly anchored to the floor or an integral part of the door hardware.
247	81000	Opening- Door	Passage			Maximum door opening heights will be 7'-0" unless approved by Owner. Combination transom and side lights will be provided for all interior doors at perimeter of building to borrow daylight into interior spaces.	All managers and supervisors private office doors will be individually key locked.
248	81000	Opening- Door	Exterior Vestibules			Minimum 20 feet depth for exterior entry vestibules or building connections. Revolving doors will be used for high traffic large buildings. Bi-parting electric doors will be used for libraries. See special matting requirements for this area.	Design will eliminate loss of tempered air when interior and exterior doors are opened simultaneously.
249	81100	Opening- Door	Finishes Exterior			Anodized or powder color coated aluminum or 316 stainless steel. Main entrance doors will be stainless steel only.	No coated ferrous metal / steel or field painted doors except for prison areas. Any exception must be approved by Owner in writing.
250	83116	Opening- Door	Access panels			24 x 24 inch - into all non-accessible areas i.e. restrooms	All locking. Access panels will be handled case by case. Access doors for prison area plumbing chases and all public ganged toilets will be full height.
251	83413	Opening- Door	Garage Service Doors			3" thick energy saver with window at eye level	Midland Garage Door Co. Midland door will be used for small dock openings.
252	83413	Opening- Door	Large Door Openings			Types of large door specifications will be handled case by case, be very energy efficient with multiple doors interlocked to conserve energy and retention of tempered air.	Bi-Fold Doors Large Truck access doors will be high insulated biparting with hydraulic operators or high energy efficient high speed roll-up doors. Light weight doors are not to be used for high security areas or prison vehicle sally ports.
253	84119	Opening- Door	Exterior Entrances			Stainless Steel Framed Entrances, storefronts and doors - Stainless steel will be type 316 only.	Heights over 8 feet require Owner written approval.
254	84229	Opening- Door	Main Entrance			Automatic 2 piece center parting with air lock vestibule. Note - Air lock vestibules will be provided between buildings or building sections that are independently ventilated.	Horton Specify Linear Drive Type Only. No belt or chain drives. Provide "no - fool" proximity sensor (use new type with memory)
255	84233	Opening- Door	Main Entrance - High Security			Security revolving doors - Use specification for Judicial Center check point entry.	

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256	84400	Openings - Window	Window Frames			s	Window Curtain Wall System to provide minimum R-value of 7  Wausua or Kawneer  Specify glazing installation and reglazing from the interior for 3rd story and above. Verify need for interior "removable-type" stops. Interior stops only will be used for all window installations above 30 feet.
257	84400	Openings - Window	Curtain Wall and Glazed Assemblies				In general - all exterior window systems in County buildings will be curtain wall assemblies having an integral 100% thermal break. Only premium high performance systems will be specified from each approved manufacturer. U-Factor to be less than 0.30 for all installations and less for large installations. Type of glazing will be determined by the County Project Manager based upon the security needs of the facility. Highest performance in 2009 is triple glazed with Argon or Krypton gas fill.  Wausau, Kawneer (Alcoa Co.)  Wausau - HP-WALL w/triple insulated glazing/ 2 low e panes (no neoprene) Kawneer - 7500 Wall w/triple insulated glazing/ 2 low e membranes. Laminated glass may be needed for storm proof high impact applications above 100 mph. Verify acceptable manufacture systems with Owner during design. Note: Visionwall 3 and 4 element units are not options at this time.
258	84400	Openings - Window	Curtain Wall and Glazed Assemblies - Sun Control				Owner to approve case by case. These refer to external sustainable design components that provide building and interior shading.  Each window system manufacturer has various types of sun control (shelves, awnings, blinds etc.) that can be specified as part of the curtainwall system. Verify with Owner during design. Any approved system cannot interfere with window cleaning above 2 floors. Note: Exterior shades are highly susceptible to wind and hail damage.
259	84500	Openings - Window	Translucent Panels			s	Translucent panels may be used only with Owner approval. Minimum requirement is that all panels be 100% thermally broken and have a U value of 0.05 or less (R value of 20). Maximum light transmission will be 20%. NOTE: NO GLASS BLOCK IS PERMITTED IN ANY EXTERIOR WALLS.  Kalwall Corporation  Translucent faces shall be manufactured from glass fiber reinforced thermoset resins specifically for architectural use. Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable. The full thickness of the exterior face shall not change color after five (5) years outdoor exposure. Panels will have a full thermal break. Faces shall conform to FM 4411 Class 1 wall system approval. Nanogel (Kalwall) with 20% light transmission provides R20 per Manufacturer. Panel design must equal or exceed 120 MPH sustained wind rating for new construction. Typical installation for translucent panels is clerestories.
260	85000	Openings - Window	Borrowed Light			s	Interior windows will be provided to allow natural daylight to reach interior occupied spaces. Windows will be a minimum of 24" above finished floor or grade and at least 24" below finished space ceilings.

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261	88000	Openings - Window	Glass	A	E	s	Use triple glazed high impact resistant glass with 2 premium low-e surfaces, 1 3/4" to 2" max depth and lowest U value attainable in industry (0.15 summer or less). Laminated section to sustain 120 mph or greater. Airspace gap to be 5/8" with 90% Argon fill. Exterior Low "E" (emissivity) - For new Construction use clear with effective UV reflectance to minimize UV to <1%. For existing buildings use - green, blue or gray tint to match. In all cases, Owner will specify exterior glass color. In general, existing glass color will be matched to original buildings for additions unless directed otherwise by Owner representative. For entrance doors, borrowed light and public counters - All interior glazing at public level will be a minimum 1/4" tempered plate glass including entrance doors and sliding service windows. 1/2" laminated tempered glass or special impact resistant security glass will be used for all stationary counter windows. All exposed glass edges, including tempered glass will be polished.	Custom Glass Products or Equal	Maximum acceptable U-Value of insulating glass is .18 Winter and .15 Summer. U values to be calculated based upon a 70 degree variation from inside to outside 70/0 degrees with outdoor air velocity of 15 mph for winter and 75/89 degrees with 7.5 mph outdoor air velocity for summer. Glass to have Solar Heat Gain Coefficient SHGC of less than 0.30. Visible Transmittance (VT) greater than 0.55. All glass will have Glazing Luminous Efficacy (Ke) of more than 1 (Ke = VT/SHGC). ANSI Z97.1 Standard and Federal Standard CPSC 16 CFR 1201. Federal Standard CPSC 16 CFR 1201, as well as state and local codes, require safety glazing material where the glazing might reasonably be exposed to human impact. NOTE: 100% post manufacturing glass is recycled at the plant. NO recycled glass from consumers is used at any float glass plant due to cost and potential for introduction of contaminants into the molten chrome float process. Average pay back ROI is 30+years. If a new or improved insulated glass system is to be considered, successful use and return on investment must be accurately demonstrated.
262	88000	Openings - Window	Testing			s	Windows and complete window systems will be tested as directed by the Owner. Testing Method B will be used from AAMA 502-90 Voluntary Specification for Field Testing of Windows and Sliding Glass Doors. Method B requires testing of the window, perimeter sealants and wall assembly conditions. Do not specify Method A. If testing sample areas fail - then all exterior window systems will be flood tested in accordance with AAMA - 30 psi "Hose Test".		At a minimum, Contract Documents will require two Owner provided random tests of each type of window system used for new construction. Retesting of failed tests will be at Contractor's expense and Contractor will reimburse Owner for associated independent professional inspection and review costs. AAMA (American Architectural Manufacturers Association) has developed "Voluntary Guideline for Forensic Water Penetration Testing of Fenestration Products." As of Feb 2008 - it had not been adopted. This test method would apply to the Warranty period of the window system - and will be considered as part of these standards. Also evolving is the use of clear fluorescent penetrating dye and black light to examine parts for defects or damage. The water soluble dye creates a path from the exterior to the interior without damaging finishes.
263	88000	Openings - Window	Glass		E	s	No operable windows for security and energy efficiency reasons.		Operable window will only be considered if specifically required by a monetary grant received by the Owner. Any request for consideration of operable windows in County buildings in the future for sustainability or energy efficiencies can only be approved by the Owner.
264	88800	Openings - Window	Glazing - High Insulation Value				Item held for future potential alternatives.		
265	88819	Openings - Window	Glazing - Hurricane Resistant		E	s	120 MPH SUSTAINED (hurricane glass) will be considered for all new construction and used for all weather or security sensitive program areas in all buildings.		
266	88853	Openings - Window	Glazing - Security				Use impact resistant high-security glass in all high security areas including cell blocks, dispatch centers, etc.		
267	88856	Openings - Window	Glazing- Ballistics Resistant			s	Glass and frame assembly will withstand up to 9 mm high caliber rifle shot.		

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268	92000	Finishes	Wall Gypsum Board			s	5/8" interior - 5/8" water and mold resistant Type XP all walls. Consult with Owner regarding installation of exterior wall insulation and ventilation/vapor barrier protection of exterior walls. Use only compatible "mold resistant" joint and taping compound. Water resistant - wet application Cement Board or Nyboard only will be used in wet applications including restrooms, locker rooms and janitors closets. Adjoining spaces will have cement board or Nyboard installed for the first 4 feet above finished floor. The 5/8" air gap will be provided at the bottom of all cement board.	Gold Bond XP, National Gypsum Permabase Cement Board Nylon Board	Use no vapor barrier. Leave 5/8" air gap / anti-wicking space between structural floor and sheet rock. Extend vinyl base to meet finished floor. Where raised access flooring is used, Extend sheetrock only to top of raised flooring at all perimeter walls. Design all rooms to standard gypboard widths and lengths to eliminate construction waste. Standard gypboard sizes are 4'x8', X9', X10' and X12'
269	92000	Finishes	Wall Gypsum Board			s	5/8" paperless, mold-resistant soundproof drywall. This standard may be substituted for XP Board perimeter sheathing applications. Provide 5/8" gap between floor and wall board.	DensArmor Plus	Sound transmission rating of 50 to 58. Standard 5/8" sheetrock is 75% or less sound rating. Dens is a Georgia-Pacific product - www.gp.com. Consider Densarmor Plus 528 for rooms needing sound insulation. Consider new "non-gypsum" product magnesiapore in lieu of cement board for wet applications. This product will not support microbial growth. See www.magnesia.com
270	93013	Finishes	Floor & Wall Ceramic Tile			s	Standard tile size for floors is 6" - 12". Standard tile size for walls is 4" to 12". Includes all restrooms/convenience station/ and drinking fountain back splashes. Other sizes may be considered by Owner at the request of the Architect and adequate justification.	National Gypsum, Georgia-Pacific Building Products	Restrooms- all floor to ceiling in public restrooms. Can be reduced for cost reduction of project to local code requirements in staff convenience restrooms. Use 7/16" Wonderboard, DensArmor, DensGuard Tile Backer, Durock as Ceramic Wall Tile Substrate. Bullnose all corners. Specify that tile case lots be randomly mixed prior to installation.
271	93016	Finishes	Floor Quarry tile			s	Full set 6" minimum - dark grout - limit use of quarry tile and provide only when requested by Owner.		Use 50% or better post consumer - recycled materials. Special tile and grout sealer is required. Use Brickform Masterseal premium lacquer-based acrylic sealer by Rafo Products, 11383 Newport Drive, Rancho Cucamonga, CA 97130.
272	95123	Finishes	Ceilings Acoustical			s	3/4" thick 2' x 2' square ASTM C635 intermediate duty. Tiles will have recycled content to be determined by Owner. Ceiling tiles will be recycled for all renovation projects. Specify only 1" grid. <a href="http://www.armstrong.com/commceilingsna/article10790.html">http://www.armstrong.com/commceilingsna/article10790.html</a> - Product to be Guaranteed for 30 years against sag, mold, mildew and bacteria. Fire Rating to be UL Class A.	Armstrong Optima 3150 (Robert Trail Library)	Wire minimum 12 gauge pre-stretched. Provide 10% spares to Owner and include recycled content certification. Provide for minimum noise reduction coefficient NRC>.90 and lighting reflectance rating of 0.90 or higher for indirect lighting. Product must have recycled content of 70-75% and an expended materials recycling program in place at time of purchase. Note: High reflectance fiberglass panels will not support speakers, antennas or friction collar type light fixtures. Separate structural panels area required for these items.
273	95123	Finishes	Ceilings Concealed Spline			s	Interlocking, concealed spline ceilings are not permitted in any location.		
274	95323	Finishes	Metal Acoustical Suspension Assemblies.				SPECIFY ONLY 1" Standard width for exposed metal grid.		
275	96000	Finishes	Recessed Floor Mats @ Entry Vestibules				Recess entire vestibule floor area 3/8" and provide wall to wall knock off matting - modular tile type. Color to be charcoal.		Owner to provide specification for specific carpet/matting to use.

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276	96513	Finishes	Floor Cove Base			s	4" vinyl - standard color - low Voc adhesive - 60% + Recycled		Flat vinyl wall base will be specified except in public accessible areas - where carpet base will be installed. NO carpet base will be installed at exterior walls - only vinyl will be used. For all detention areas, security caulking will be used in lieu of base flashing. No base will be installed if a 5/8" gap is not present between the floor and the wall board. Base installer will remove all 5/8" spacers.
277	96519	Finishes	Floor Resilient tile			s	Use linoleum only - preference given to recycled materials content , long life cycle and 100% recycle potential. Sheet linoleum may be used with written Owner approval. A vapor barrier must be installed below all slab on grad applications of linoleum.		Janitor closet - convenience stations 3' minimum. This material to be applied in areas that have the greatest potential for damage by activity I.e. food, coffee, duplicating equipment, laboratories, etc.
278	96613	Finishes	Floor Terrazzo			s	Full depth terrazzo. Use in High Traffic entry and gathering areas only. Pattern will be standard size 2 (¼") or as approved by Owner. 20% recycled glass will be included in the terrazzo chip mix. Terrazzo system will be 2" bonded including .5" terrazzo topping on structural concrete slab. Concrete slab will be minimum of 5". Terrazzo dividers will be brass 1/8" wide or as approved by Owner. Contraction and expansions joints will be placed so that no cracking occurs in the terrazzo field. Use only white Portland Cement.	Grazzini Brothers & Company, 1175 Eagan Industrial Road, Eagan, MN 55121	Create avenues of terrazzo in large atria or lobbies. Carpet for balance of floor. Follow recommendations from the NTMA - National Terrazzo & Mosaic Association, Inc.
279	96813	Finishes	Floor Carpet Tiles			s	Unitary back - 100% Nylon 6 or 6,6 face materials. Face density will be 6,000 or greater. Design selection will be only from existing manufacturers standard patterns, designs and colors. No custom colors or patterns. Self releasing adhesive will be used for carpet tiles in all areas. Owner to determine schedule for use of carpet squares and roll carpet for special applications such as stairways with Architect. Custom colors may be used to match existing if necessary but only with approval by Owner. Adhesive: Adhesive must be water based - releasable and have low to no calculated VOC's. It must also be nonflammable and water-resistant. Carpet must pass Federal Flammability Standards and be CRI Green Label Certified.	Interface, Collins & Aikman, Mohawk Infinity, Shaw , Blueridge, Mannington.	Carpet will be specified from a minimum of 3 Manufacturers for all projects. Carpet density will be equal for each product selected. Minimum carpet density is 6,000. Factory cured - warranted for 15 years, non-prorated against edge ravel, delamination, zippering, loss of resiliency and excessive surface wear. Minimum of recycled content is 28% - target is 40-50%. Prove recycled content and recycling of old carpet materials. As of 10/10/00 there is an evolving issue concerning pvc carpet backing flame spread and safety. VERIFY RECYCLED CONTENT IN EACH and gain prior approval from Owner prior to proceeding with pattern and color selections. Four (4) or less carpet patterns/colors will be used per facility or renovation project. For Shaw carpet- specify "ecoworx backing" and "ecosolution face yarn." DESIGN /LAYOUT WILL MINIMIZE CARPET WASTE. Note: A new Gridlock type carpet tile has been developed that requires no adhesive. It has solid dimensional backing and interlocks wall to wall as on carpet unit. Manufacturer is Interface FLOR, Inc.

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280	96813	Finishes	Carpet Recycling			s	<p>ALL CARPET purchased will have the capability to be recycled or disposed of by alternative methods except landfilling. Specify recycled nylon backerboard in appropriate applications. If Custody chain for recycling cannot be established - use local waste to energy plant with verifiable delivery receipts for all disposed Dakota County carpet. For REUSE there is The Reuse Center 612-724-2608. Bro-TEX, Inc. recycles residential and commercial carpet and separated foam or fiber padding (with seaming tape and glue removed) into other products. This is basically for woven carpet and EXCLUDES carpet tile, rubber backed carpet and other rigid flooring. Website - www.brotex.com/carpetrecycling.aspx.</p>	<p>NYCORE'S Production Facility is located in Medford, MN just north of Owatonna.</p>	<p>RECYCLING OF CARPET INTO NEW CARPET OR OTHER PRODUCTS - The 1st Goal is to maintain installed carpet as long as possible to get full value of the installation and reduce the need for disposal. If carpet is in very good condition, there are a few companies in the Metro that reuse carpet. Various manufacturers offer recycling programs at the end of the life of their carpet. A few also offer recycling of the carpet being replaced. There is a careful balance between the cost and consumed energy in the recycling process since most of the mills are in Georgia. Each option must be carefully researched and benefits analyzed for each purchase. CERTIFY THAT THE RECYCLER OR REUSE IS NOT JUST A STOP ON THE WAY TO A LANDFILL. On the downstream end of Carpet recycling is "Ny-Board" nylon board that is manufactured from recycled carpet. Nycore, Atlanta Georgia markets nylon (recycled carpet) backerboards that can be used in wet applications such as showers, restrooms, exterior soffits, janitors closets etc. in lieu of durock or XP Board. Website - info@nycore.com 770-980-0000.</p>
281	96900	Specialties	Floor - Raised Access			s	<p>24" by 24" all office areas. Consider re-engineered after market panels for re-use from panel recycler. Use bolted stringer type system only for all raised floor applications. Minimum floor load capacity will be 1500 lbs. concentrated loads. Specify the correct floor load and type of flooring for the particular application.</p>	<p>Donn Corporation Floating Floors, Inc. Tate Access Floors, Inc.</p>	<p>Flooring will provide 12" to 18" clear height to permit underfloor air plenum. Floor panel system will include occupant adjustable registers, receptacles with 5' flex conduit for distribution of power, and cable trays for data, security, fire and telecom wiring. All underfloor wiring will be supported from the stringer and pedestal support system. No conduit, ductwork or wiring will be installed within 1½" from floor.</p>
282	99123	Finishes	Wall Paint Interior Surfaces			s	<p>NO - Voc interior - use color schemes from manufacturers standard palette to eliminate addition of VOC pigments. Evaluate use of recycled paint on a case by case basis.</p>	<p>Glidden, Benjamin Moore, Sherwin Williams</p>	<p>Eggshell or semi-gloss finish - no flats - Manufacturer and contractor must demonstrate 100% recycling of buckets - no land fill disposal. When considering recycled primer - a test area must be coated and allowed to completely cure prior to Owner approval for use to ensure the material is suitable for the application. Specify that contractor will remove all leftover paints, sealants and adhesives from site. No Owner attic stock.</p>
283	101000	Specialties	Visual Display Surfaces				<p>Marker Boards and tack boards will be specified by the Architect. All items will be hung on carrier hardware or wood furring. <b>No items will be directly glued to any gypsum board surfaces.</b></p>		
284	101400	Signage	Interior Signs				<p>All sign material will have recycled content. Signage will be included under separate contract to the Owner. Signage specification will be prepared by the Project Architect and approved by the Owner.</p>		<p>Signage standard will be the same as the Northern Service Center. Also see comments in Furnishing section.</p>
285	102113	Specialties	Restroom Partitions			s	<p>100 % recycled plastic for water closets and urinals. Use only stainless steel heavy duty continuous piano hinges. Use only 316 Solid Stainless Steel Hollow Pin Torx Fasteners with 5 year guarantee against any corrosion.</p>	<p>Yemm &amp; Hart, Santana</p>	<p>Partitions will be structurally supported from the ceiling. Floor mounted partitions can only be used with Owner written approval. For large ADA toilet enclosures - provide solid walls between adjacent unit to partition door. Avoid Polly Solid Plastic by Metpar Corp. Research structural integrity of solid plastic partitions prior to specifying. Yemm &amp; Hart used at Wescott main level restrooms.</p>



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286	102226	Specialties	Operable Partitions				Use specification for Northern Service Center as standard.  FM confirms that NSC partitions are working OK. Installer has been responsive to maintain partitions.
287	102613	Specialties	Corner Guards				Provide at all corridor and high use area corners. Corner guards will be surface mount only with 3" X 3" 2 piece snap on design.  Tepromark  Color - silver/gray. Do not use recessed type - See LEC med-unit spec. for this example. Use Tepromark 110 series aluminum retainer, pvc impact absorber, vinyl cover with end caps.
288	102813	Specialties	Restroom Towel Dispensers - Cloth			s	For each public restroom, provide one cloth towel dispenser and one electric hand dryer per every two sink location. Provide a minimum of two cloth towel dryers per restroom independent of sink quantity.  Use same unit as Schar's Bluff if unit operation remains satisfactory.  Dispensers provided and mounted by Owner. Where full time custodian is to be present during the business day - number of roll towel dispensers may be reduced by 30%. Place high velocity hand driers in "non-noise sensitive areas only.
289	102813	Specialties	Paper Towel Dispensers			s	Provide stainless steel slim line - multifold (3 Fold) paper towel dispensers in all laboratory and public health examination rooms.  New wall mounted dispensers provided and mounted by Contractor
290	102813	Specialties	Soap Dispensers				Owner provides soap dispensers.  Convert to volume fed foam type dispensers to eliminate waste.
291	102813	Specialties	Waste Receptacles				Provide recessed stainless receptacles with 12" deep by 18" wide stainless steel convenience shelf above.  Owner may provide free standing units in lieu of built in units.
292	102813	Specialties	Mirrors				Provide mirrors from top of vanity to light fixture or ceiling. Mirrors are to be mounted with concealed security fasteners.  Use best quality impact resistant glass for all courts and high traffic areas. Mirrors will be sealed between frame and glass to prevent chemical damage to mirror during cleaning.
293	102813	Specialties	Toilet Paper Dispensers				Provide Bobrick B-2740 unit. Use 2 units in each stall for 4 rolls in large volume areas.  Bobrick B-2740
294	102813	Specialties	Napkin Disposal Receptacles				Provide hard surface "cleanable" disposal units with disposable liners. Mount all units ahead of water closet. No receptacles will be mounted behind or below toilet. Stainless steel box receptacles with uncleanable interior corners are not acceptable.  Evaluate type that empties from bottom similar to hospital installation.
295	102813	Specialties	Baby Changing Stations				Provide in both male and female public restrooms. Units will be plastic and surface mounted.  Koala Bear Kare KB100
296	111313	Equipment	Dock Bumpers			s	Constructed of 100% recycled "post consumer" tire rubber material.  Durable Corporation
297	111319	Equipment	Loading Dock Levelers				Specify same electric - hydraulic unit installed at Northern Service Center  Rite-Hite  Provide for buildings 100,000 sf or larger.
298	112300	Equipment	Laundry				Commercial Washers and Dryers. Washers and dryers will be considered case by case. Residential type washers and dryers are not installed in County Office Buildings due to water damage and venting problems.  Industrial washers and dryers for Jail, JSC. Parks Dept. provides laundry mat type at Camp Grounds.

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				Standard			Reference	Additional Comments	
299	122113	Furnishings	Window Blinds			s	Standard is 1" aluminum horizontal louver blinds. Color chosen by Architect and approved by Owner.	Levelor	Manufacturer must demonstrate commitment to sustainability and provide accurate data on the amount of recycled content used in the manufacture of all blinds systems. If a wood horizontal louver blind is approved by the Owner for a specific application, the manufacturer must demonstrate that only FSC certified lumber or equivalent is used in the finished product. No exotic species will be used for any wood application. Wood will be oak, cherry, maple or poplar.
300	123600	Furnishings	Countertops			s	Countertops will be 1/2" Corian® solid surfacing unless otherwise designated by Owner. Consider PaperStone™ with recycled content as alternative. All counter tops will be provided with 2.25" radius corners that are exposed and 4" integral backsplash. All grommets will be field located and cut. Heights being used at Wentworth Library 2008 and acceptable to them are 39" at Reference and Circulation Desks with 34" for ADA Requirements section. 30" at Children's Desk. Designers will confirm counter heights with Owner prior to bidding <u>and</u> prior to approval of shop drawings.	Corian by Dupont; PaperStone by Paneltech Intl., LLC, Houquim, WA	Isolated counter casework will be free standing and finished on the back so that it can be relocated and re-used in the future. Units will be made in sections that are movable and be no more than 30" deep. Corian is manufactured from 2/3 trihydrate of aluminum (white clay) + methyl methacrylate (acrylic resin) with edible pigments. Paperstone comes in 50% postconsumer recycled content and 100% for PaperStone Certified using a water based resin. Corian comes in 100 colors and has been around for 25 years and is highly durable and seamless. PaperStone is a relatively new product with limited color selections. Seams are visible and manufacturer cautions placing seams near sinks or water sources. Corian is 3/8 and 1/2". Paperstone is 3/4" thick and thicker. Paperstone is not bleach or drain cleaner resistant.
301	124813	Furnishings	Rugs and Mats	A			Provided by Owner except for entry vestibule knock off mats. Exterior Entrance Floor Mats and Frames will be specified and approved by Owner. Contractor will provide both as part of construction contract.		See also section 096000 for entry vestibule matting requirements.
302	125513	Furnishings	Detention Bunks				Free-Standing Double Bunk Beds. Bottoms: Two 10 gauge perforated steel sheet, front and back flanged 2" down and up, will all corners rounded. Frames: 2" x 2" x 3/16" steel angle welded securely to legs and bottom pan. Legs: Four 2" x 2" x 3/16" steel	Chief Industries	NO GAPS BETWEEN BUNKS AND WALLS. May 2008 Current mattress dimensions are 26" x 75-1/2" - For new cell block construction - address issue of single occupancy initially and double bunk retrofit in selection of bunks.
303	125516	Furnishings	Detention Desks				Top: 10 gauge stainless steel, flanged 1-1/2" at back and down in front, with 15" galvanized steel towel bar. Top - 36" x 15-1/2". Seat: 12" diameter, 16 gauge stainless steel with arm to swivel under desk. Shelves: 2 shelves with sides, 12 gauge.	Chief Industries	No gaps between bunk and wall.
304	125519	Furnishings	Detention Stools				Seats: 12" diameter, 16 gauge stainless steel. Seat Supports: 2-3/8" diameter black iron pipe support and mounting plate with security screws. Height: 18". Shop primed.	Chief Industries	
305	125523	Furnishings	Detention Tables				Table Top: 10 gauge stainless steel. Supports 3" x 3" x 3/16" and 4" x 4" x 3/16" steel tubing, shop primed. Seats: 12" diameter, 16 gauge stainless steel.	Chief Industries	

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306	125526	Furnishings	Detention Clothes Hooks				Auto Release Clothes Hook(s). 14 gauge Type 304 stainless steel, all welded construction. Security screws. Acorn Model 1830 - Single Hook. Model 1828 - Four Hook Panel
307	125583	Furnishings	Detention Mirrors				Type 2 - 16" x 12" Rear mounted mirror. Frame: 14 gauge Type 304 stainless steel. Mirror: 20 gauge Type 304 stainless steel polished to a No. 8 architectural finish. Bradley Corp Model SA01- Rear/Chase Mount. Model SA03 - Front Mount.
308	125583	Furnishings	Detention Toilet Paper Holder				Type 2 - Seamless recessed cylinder. Type 304 stainless steel. Security Screws. Acorn Model 1840-FA.
309	125583	Furnishings	Detention Grab Bars				Type 2 - Straight and L-shaped corner extruded aluminum bars, with integral continuous angle mounting profile and grip and radius edges. Safebar Through wall fastener anchors only. Fasteners will be 316 min 3/8" diameter thru bolts.
310	125583	Furnishings	Detention Cuff Rings				Stainless Steel Bob Barker Model BBCR
311	129200	Furnishings	Interior Planters				Service Centers will have permanent interior planting beds.
312	129300	Furnishings	Bicycle Racks				Install 316 stainless steel ribbon loop racks. Number of racks will be decided by Owner case by case.
313	131900	Special Construction	Kennels & Animal Shelters				There will be no interior or exterior accessible animal kennels in any County building.
314	133123	Special Construction	Fabric Structures				For salt and large area outdoor storage that requires roof protection for environmental run off potential - Tensioned Fabric Structures with 20 year minimum warranty will be specified. Cover-All Building Systems 1-800-268-3768 Manufacturer is required to confirm the roof truss structural design with a 3rd party independent Professional Structural Engineer acceptable to the Owner. Fabric Roof must be retention each spring.
315	142000	Elevators	Construction			s	Emergency power off with auto return to main level. All passenger elevators will be high speed and have high efficiency center parting doors. Freight elevators will be oversized for height and side parting oversized doors. Only Geared Traction freight and passenger elevators will be used for new or renovated construction. Cars will gently return to main floor on power off and door opens. Owner requires center parting doors on all passenger elevators. California style vandal resistant call stations will be used in public lobbies and elevator cars. Provide for traveling communications and security wiring in elevator design. Clarify requirements with Owner during design. 2008 - eliminate all potential for UG petroleum leaks. Consider new-type traction elevator that requires no head house for retrofits.
316	148413	Conveying Equipment	Window Washing Scaffolding			s	Install permanent swing stage transport and dolly at roof lines for all buildings over 3 stories.
317	211313	Fire Suppression	Fire Life Safety				All areas will be 100% sprinkled. Density of sprinklers will be determined by Factory Mutual standards and Current Owner Insurance carrier recommendations with Owner approval. 2009 insurance carrier is Factory Mutual (FM) Provide concealed pop-down heads in all public areas/ meeting rooms. 2003 State of MN adopted International Building Code. All buildings 5,000 square feet or larger will be 100% fire sprinklered. Buildings smaller than 5,000 square feet unless required by local code official or Owner. If IBC has changed prior to adoption by State of MN - Use most recent or stringent code requirements.

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318	220000	Plumbing	SAC/WAC			s	Contractor completes forms - Owner pays (NIC) unless otherwise directed by the Owner. Past SAC/WAC site credits will be transferred from any existing buildings on the site and be applied to new construction.		Limit number of units to minimum possible to reduce impact upon environment. Contractor pays for building permit and all other permitting fees. For the required State Dept. of Health plan review - the Architect submits application and Owner pays..
319	220553	Plumbing	Identification tags/signs				Valve tags - Brass 19 gauge or Plastic 1-1/2" with fasteners		Provide ID valves above suspended ceilings with color dots - blue=domestic water/red=heat
320	220553	Plumbing	Identification tags/signs				Valve schedules - 8.5 by 11 laminated copies in holders		Provide in each mechanical room and janitor's closet.
321	220553	Plumbing	Identification tags/signs				Piping - words and arrows at least 1/2 pipe size , minimum 1/2"		
322	220553	Plumbing	Identification tags/signs				Piping - Underground ID at floor - direct bury tape above all underground utilities.		
323	220719	Plumbing	Insulation - Piping Exterior			s	Full metal aluminum or stainless jackets are required for all exterior insulated piping		
324	221100	Plumbing	Pipe Cleaning - all water			s	Owner 7 day notification is required. Piping systems will be cleaned and flushed in the presence of Owner's maintenance staff.		Owner maintenance staff must confirm that all systems are clean prior to operation.
325	221319	Plumbing	Drains - floor				Ensure all floors slope to drains. Recess entire area to be sloped by a minimum of 2" for correct installation of sloped floors to drains.		Eliminate flat floors in wet areas. Provide recesses as necessary in structural deck. Recess finished floor elevations 2" to achieve positive drainage within and to all restroom and mechanical rooms. Areas not installed correctly will be removed and replaced prior to Owner acceptance. Exception - warehouse storage areas will be dead flat except in drive lanes. Drive lanes only will be sloped to trench drains.
326	221426	Plumbing	Roof Drains				Provide only interior drains w/secondary overflow scuppers. Overflow scuppers will be one piece and project a minimum of 3" beyond finished wall face. Scuppers will be one piece minimum 1/8" steel with epoxy coating. SWCD - Roof drainage will be managed in a way to reduce irrigation requirements, filter runoff, and minimize storm water impacts. Roof drainage will not be conveyed across parking areas, walkways and the like because the relatively clean water will contribute to the movement of pollutants (sand, salt, oils, etc.).		Drain below grade vs. surface. No primary exterior downspouts. Exception - For small areas such as elevator head house, stairs to roof, clerestory and mechanical penthouses - use only scuppers to drain onto adjacent roofs. SWCD 2008 - for water retention purposes, use new Lakeville Liquor Store water infiltration / irrigation for model. (160th St East of Cedar Avenue.)
327	221616	Plumbing	Pipe Soil and Waste				All cleanouts will be easily accessible without moving furniture, equipment, mechanical or structural elements.		Locate logically. Cleanouts must be easy to locate and to clean out with a drain cleaning machine.
328	23000	HVAC	VFD Drives/Harmonics				Special consideration will be given to the location and proximity of all equipment that may produce transient harmonics or be sensitive to it. i.e. computer equipment, broadcasting equipment, transformers, VFDS, UPS, fluorescent lighting, LEDs etc. Fans and Pumps - Electrical Systems and VFD drive protection will be designed to prevent harmonic distortion from VFD Drives. A formal harmonic analysis will be performed if VFD drive loads are expected to be greater than 10% of total building power load.		Attention will also be paid to "reflected harmonics" and the potential for high voltage harmonic distortion is possible when large or multiple Uninterruptible Power Supplies are specified and the building includes an emergency generator. Total electrical system will be designed to accommodate and/or resolve harmonic issues and UPS failure events. New elevator systems will be shielded to prevent RFI affects in the surrounding building and neighborhood.

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329	223116	HVAC	Ductwork interior and UG (underground)			s	Allow adequate vertical and horizontal space to accommodate all ventilation and piping requirements in the building space program. No direct buried underground ventilation ductwork unless approved in writing by Owner.		The use of Revit MEP for Mechanical, Electrical and Plumbing will be used to eliminate this problem.
330	223116	Plumbing	Water Softener			s	Use system with brine tank style only. All make-up water for mechanical systems will be softened.		Provide secondary overflow containment and positive drainage connection to sanitary sewer for all water softening systems. Provide separate closet area for brine tank separate from mechanical room for bulk salt delivery to eliminate salt dust on mechanical systems. Locate tank closet at exterior wall.
331	223313	Plumbing	Water heaters restrooms			s	Instant on - point of demand spot heaters - hard wired when approved by Owner. Install recirculating domestic hot water system where applicable at Owner's discretion.		Water heater efficiency standard was increased in 2009 as part of Federal Stimulus grant. Verify current standard at time of design.
332	223436	Plumbing	Water heaters janitors			s	Provide both instant on and 30 gallon high volume.		Locate this unit in mechanical room near drain.
333	224213	Plumbing	Plumbing Fixtures			s	Water Closets - Minimum of two per each public restrooms - except in unisex and family restrooms. Water closets will be wall mounted unless directed otherwise by the Owner.		Women's and Men's - No residential water closets. Commercial tank type units may be considered in noise sensitive office space areas. Meet or exceed minimum Federal gallons/flush regulations for water conservation. For new building construction - privacy areas for nursing mothers may be adjacent to restroom, but access must be totally separate.
334	224213	Plumbing	Plumbing Fixtures			s	Urinals - Specify 1 Pint per flush units. Urinals will be wall mounted unless directed otherwise by the Owner.		When there are 2 or more unisex restrooms in one area, provide a urinal and a toilet in one unit.
335	224213	Plumbing	Plumbing Fixtures				For all gang toilets/urinals - configure back to back and provide door access for clean-out and maintenance of plumbing via large accessible plumbing chase.		Where possible, provide secure access into plumbing chase with 2'-6" to 3' especially for public accessible restrooms.
336	224216	Plumbing	Plumbing Fixtures				Lavatories - no wall hung - in counter only. Restroom vanity or counter surface will be Corian. Lavatory Counters will be custom structurally designed with structural steel knee supports for each application.		All restrooms. With owner approval - single units may have wall hung lavatories. For public restroom standard - use Wold Architects detail for the Northern Service Center public restrooms.
337	224236	Plumbing	Plumbing Fixtures				Laundry sink - provide in each mechanical room		Provide 1 - Sink per "nonboiler" rooms 600 SF or larger.
338	224243	Plumbing	Plumbing Fixtures			s	Flush and lavatory valves. Public water closets, urinals and sinks will be provided with automatic valves for ADA compliance and public health. Fixtures and valves will be designed, installed and adjusted so they work correctly, will not misfire or get occupant wet. Design valve configuration for ease of maintenance.	Sloan	Provide infrared automatic valves.
339	224526	Plumbing	Plumbing Fixtures				Provide eye wash/shower stations in boiler rooms		Provide in all Boiler rooms and elsewhere when required by OSHA and Owner (County Risk Management.)

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340	224713	Plumbing	Plumbing Fixtures				Water Fountains - Elkay all stainless - no lead. Water Fountains are required in commercial buildings per code. (Confirmed 2008)	See Chapter 29 IBC and cat cut for specified unit.	Specific model to be approved by Owner. Water fountains will have "built-in" connections to conceal and accommodate installation and replacement of renewable water filters.
341	230000	HVAC	Intake and Exhaust			s	Set at adequate height, orientation and location to eliminate snow blockage. Install plate type or recovery wheel heat recovery units (HRU) on exhausts to recapture embodied cooling and heating energy. Adequately size air handling rooms to achieve installation and maintenance of HRU.		Locate intake upstream - NW of boiler stack or above boiler exhaust. Heat recovery units are mandatory on County facilities. Goal is to maximize capture of embodied heat / cooling to the greatest extent possible and reduce overall facility energy use and expense. For retrofits and new construction provide closed loop glycol heat exchanger.
328	230000	HVAC	Maintenance & Safety				Provide and maintain service space around all equipment. Manufacturer's recommendations will be considered the minimum requirements.		Boilers, pumps, vav boxes, valves, etc. above ceilings and rooftops. Provide space around air handling units and variable air volume boxes to service the equipment and to remove coils. For VAV's in hallways with cable trays - keep cable tray to one side - do not place in center of hallway.
329	230513	HVAC	Motors - Electric			s	95% or greater efficiency - power factor corrected to 100% Evaluate and specify NEMA Premium motors. Efficiency and ampacity ratings will be shown on the nameplates of all motors that are provided with packaged equipment such as cooling towers, fans etc. This applies to fractional horsepower motors also. Motors controlled by VFDs will be rated as an "inverter duty motor." VFD's will have an integral filter or internal design that reduces reflected waver harmonics into the power distribution system. VFD's will be located within site of the motor or as close to fan housings and pumps as possible.		Motors 1/2 HP and above are 3 phase high energy efficient. Highest available energy efficient at all HP - 3 year warranty part/labor. Note that average energy used by a motor in one year is 5 times the purchase cost of the motor. Use current version of MotorMaster (4.0 or newer) to determine motor efficiencies for new and replacement units. US Dept. of Energy at <a href="http://mm3.energy.wsu.edu/mplus/mmdownload/register.cfm">http://mm3.energy.wsu.edu/mplus/mmdownload/register.cfm</a>
330	230523	HVAC	Piping - Hydronic				Valves - locate above ceilings in open office areas.		Provide surface marker signs for all concealed valves.
331	230523	HVAC	Valves				All valves will be ball or butterfly. Specify 3-way control valves at all coils. (Verify use of 3-way valves with Owner)		Ball valves will be full flow for size of pipe served without restriction in size. No globe valves will be permitted unless required by code officials.
332	230553	HVAC	Identification tags/signs				Ventilation signage will be a minimum of 2" wide with arrows to show direction of flow.		Clearly state system - MUA, Return, Supply, Relief, Mixed, etc.
333	230553	HVAC	Identification tags/signs				For Piping - words and arrows will be at least 1/2 pipe size , minimum 1/2"		
334	230553	HVAC	Identification tags/signs				Piping - Underground ID at floor - direct bury tape 12" above UG piping and ductwork if permitted.		
335	230553	HVAC Equip.	Identification tags/signs			s	Engraved Plastic Laminate Signs - Specify recycled content		Provide and identify each major piece of equipment.
336	230553	HVAC	Insulation - Ductwork			s	Exterior insulation only - all joints sealed. All ductwork interior will be smooth cleanable surfaces.		Exception - transfer units to private offices and conference rooms.
337	230553	HVAC	Identification tags/signs				Valve tags - Brass 19 gauge or plastic 1-1/2" with fasteners		ID valves above ceilings with color dots - blue=domestic water/red=heat
338	230553	HVAC	Identification tags/signs				Valve schedules - 8.5 by 11 laminated copies in holders		Provide in each mechanical room and janitor's closet.

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339	230566	HVAC	Air Purification			s	Ultraviolet Air purification in Air Handling Units to eliminate microbial contaminates.	Consider for pandemic potential.
340	230593	HVAC	Testing & Balancing - Air and Water			s	Notify Owner 7 days in advance if Contractor is providing testing and balancing. For QA testing and balancing and functional performance testing - Owner will contract directly with and provide the services of an independent testing and balancing firm for all new building construction projects and major interior renovations. Major renovation is defined as any change that significantly modifies the building air and heating water distribution systems.	Owner Maintenance staff to be present during complete process when this service is provided directly by the construction contractor.
341	230630	HVAC	Fan Schedule Design Considerations			s	All fans will be sized and designed to provide the maximum energy efficiency, stability and service life possible.	Adequate fan installation and maintenance space will be provided at floor level and designed into and around each unit. Calculate annual energy cost to determine maximum energy efficiency and fan sizing by the following method: $\text{number of hours/yr.} \times \text{power (bhp)} \times 0.746 \text{ kW/bhp} \times \text{dollars/kWh}$ .
342	230713	HVAC	Ductwork - Supply airtightness			s	All ductwork must be airtight prior to any insulation and have a high HVAC Transport Efficiency. Ductwork joints must be airtight and designed to hold the maximum fan pressure without damage or joint separation.	ASTM Standard E779 (ASTM 1999) Duct thickness and method of joining will be capable of handling no less than 2 inch water gauge (500 Pa) For VAV systems with AHU & VFDs use 4 inch water gauge.
343	230713	HVAC	Insulation - Ductwork			s	Interior only if required - hard cleanable surfaced.	Approved by Owner - case by case. NO compressed coated fiberboards.
344	230719	HVAC	Insulation - Piping Exterior			s	Full metal jacket all exterior insulated piping	Non - ferrous
345	230923	HVAC	Building Automation Systems			s	A computer based building automation system (BAS) will be designed that monitors and automatically controls lighting, heating, ventilating and air conditioning to efficiently operate County office buildings. Systems integration concepts can be used, EXCEPT that fire alarm and security systems will function as "stand-alone" systems with a monitoring only interface to the BAS.	N/A

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346	230923	HVAC	Automatic Temp Control Part 1			s	Full DDC - fully compatible with existing Owner systems and communications protocols.	Owner will provide system requirements.	The system will provide full color graphics at the site. The Hastings Government Center will also have real time full color graphics via modem communications or if new technology allows or is presently feasible the County's Intranet will access this system with password protection. The decision as to which manufacturers will be installed in the facility will be made by Facility Management staff who will also write the performance specifications for the Architect and not by the mechanical contractor for Division 15 or the construction manager. The low bidder may or may not be awarded the project. This will be accomplished by a break down cost analysis on the bid form with all temperature control bidder submitting total job cost separately from division 15 bidder or the construction manager. <b>Alarms</b> deemed critical by the Owner will be sent to the Hastings Facilities Management dispatcher during normal business hours and to a cell phone and alphanumeric pager after normal business hours. Language shall be clearly decipherable and easily understandable.
347	230923	HVAC	Automatic Temp Control Part 2			s	Full DDC - fully compatible with existing Owner systems and communications protocols.	Owner will provide system requirements.	<b>Control Devices:</b> EMS system shall control all functions of the air handlers; i.e. mixed air dampers, heating valves, cooling valves, VFD's, static pressure and stop start. Status Indication: Will be accomplished utilizing clamp on current sensors . No flow, immersed paddle or duct mounted switches will be used. <b>Laptop Communications:</b> For off site monitoring and diagnostic analysis will be required. The successful bidder will provide any and all software needed to accomplish this. If memory space is not adequate in the County's existing laptop computers the contractor will provide one new laptop capable of this task. All systems will be fully BacNet compatible.
348	230923	HVAC	Automatic Temp Control Part 3			s	Full DDC - fully compatible with existing Owner systems and communications protocols.	Automated Logic Allerton	<b>Meeting Rooms:</b> will operate independently, heating or cooling by occupant over-ride. <b>Facility Pressure:</b> System will alarm and optional shut down if facility goes into negative pressure. System will have effective means (demonstrated to Owner) to control facility pressure. <b>County Network Compatibility:</b> The BAS (EMS) will be able to operate on the County network, being accessible from any connected P.C.



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349	231313	HVAC	Fuel Systems - Any Hazardous Fluid Handling System Including all Petroleum Products.			s	<p>Fuel oil tank and piping systems for boilers and generators will be installed within the building footprint with full containment liner for all contents of tank. Tanks will be classified as above ground tank with access for inspections. All building piping will be exposed - no underground. For above ground tanks in bunker vapor detection will be provided in room with complete sump monitoring for fill, fill pipe, etc. Install a liquid spill monitor in a depression in the bunker floor. When approved by the Owner, direct buried underground double wall tanks will have tank monitoring probes), complete vapor detection between shells, and sump monitoring sensors. Dispensers - Gilbarco high hose with lighted panels. Provide tank level indicators and auto leak testing function in tank management requirements. This section includes all hydraulic hoisting systems.</p> <p>Eidsen BMT, Gilbarco, Gasboy</p> <p>Direct buried tanks may be considered for maintenance shops providing they are double wall ACT-100 (UL 58 and Sti-P3 - 30 year warranty) fiberglass coated with interstitial and external leak detection with limited underground pipe runs and well sloped fill areas to keep water out of the systems. Current manufacturer for leak detection systems is Gilbarco. Fuel management system will be Gasboy fully compatible and connected to existing Owner system. Minimum standard for direct buried fuel or any petroleum product piping is 2" Environ Geoflex piping system with primary/secondary containment pipe and a 4" corrugated underground rated plastic containment/protection pipe sealed watertight below grade and opened so any discharge will go into the sumps. Mount sump containment tanks e.g. Environ MBS3642 on top of UG tanks. Use fuel resistant concrete for all slabs and structures for fueling islands. Installing tank contractor will immediately complete MPCA registration forms and transmit to Owner.</p>
350	232123	HVAC	Pumps				All pumps will be direct drive - dual system - redundant Bell & Gossett
351	232213	HVAC	Boilers			s	Provide isolation valves all equipment piping connections
352	232516	HVAC	Water Filters			s	<p>Provide high efficiency sand filters on condenser water return from cooling towers, heating hot water loops and chilled water loops. Owner will specify whether to use sand or other filters.</p> <p>Process Efficiency Products Inc., 322 Rolling Hills Rd., Mooresville, NC 28117-9920</p> <p>Reduce fouling materials acquired from the atmosphere and corrosive nature of systems on piping and components. Extends life of coils, pumps and tubes.</p>
353	233000	HVAC	Licensing Requirements				Effective 7/1/2003 anyone who installs gas piping, heating, ventilation, cooling, air conditioning, fuel burning or refrigeration equipment must post a \$25,000 bond with the Department of Administration, Building Codes and Standards Division. Require proof of the bond from all HVAC installers on project. See also Standard Assurances for Construction Contracts - contractors have to certify compliance. New statute is Minn. Stat. Sec. 326.992
354	233000	HVAC	Rooftop Equipment Anchor Requirements.				<p>All equipment and anchoring systems (knee walls, blocking, curbs, etc.) will be designed to withstand all lateral and wind-uplift loads during a 120 mph sustained wind event. A minimum safety factor of 3 is required for all County buildings. Effort will be made to move all HVAC equipment intake and exhausts to vertical surfaces. All exterior mounted equipment including stands, supports, anchors and fasteners will be nonferrous, stainless steel or steel with a minimum G-90 hot-dip galvanized coating. Lightning protection systems will be mechanically fastened to vertical sections of parapets with #12 stainless or system compatible screws that have a minimum 1-1/4" embedment. Use only looped connectors. Pronged connectors will not be used. For direct installation on a built-up roof - fasten connectors with asphalt roof cement. Use a liquid sealer compatible with the membrane for single-ply roofs.</p> <p>Determine wind loads using American Society of Civil Engineers (ASCE) 7-05 for minimum rooftop equipment design requirements. All design efforts should be made to eliminate roof top equipment and penetrations. <b><u>A mechanical penthouse will be constructed to shield vital equipment.</u></b> There will be no exposed ductwork on any roof. Equipment spring vibration isolators and all anchors will accommodate <b><u>uplift resistance</u></b> in addition to lateral resistance. All equipment supports, sleepers, and curbs will be anchored directly to the structure. All fans and condensers will be structurally anchored to the curb (for fans at least two stainless steel screws each side.) All doors on rooftop equipment will be hinged and not removable. Cowlings less than 4' feet in diameter will be attached to the curb with 1/8" diameter stainless steel cables. Larger than 4' will use 3/16" stainless steel cables.</p>

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355	233233	HVAC	Ductwork Return			s	Use ducted returns for all mains.		Reduce potential for stirring up materials in open ceiling plenums used for air return. Explore use of return air ductwork or wall cavity for air return grilles at floor level to circulate heat to floor and prevent "short-circuiting" of supply air to ceiling returns.
356	233313	HVAC	Dampers - Fire	A			Install with actuators outside ductwork. Provide adequate access to service damper and actuator while maintaining fire rating of wall assembly. New 2008 - all fire dampers will be motorized and fully addressable so they can be tested.		At dampers provide access hatches with plexiglass viewing ports for viewing damper without opening ductwork.
357	233616	HVAC	Air terminal units				As directed by Owner.		This includes constant volume single duct terminal units, variable volume single duct terminal units, variable volume single duct fan-powered terminal units and dual duct terminal units, ceiling induction terminal units (with Owner permission only), series fan powered variable air volume terminals, reheat units, unit ventilators and energy recovery devices.
358	233616	HVAC	VAV Actuators			s	Direct couple control motors to damper shaft.		No linkage rods.
359	233616	HVAC	VAV Controllers				Factory stamped position arrow on damper shaft protrusion		Must show true position. Field markings, etc. will not be accepted
360	233616	HVAC	VAV Reheats			s	Provide removable access covers for cleaning.		Install in obstruction free areas for maintenance access.
361	234100	HVAC	Air Filters			s	Spares - replace all filters prior to Owner occupancy. Three sets are supplied by Contractor - 1 for start-up, replacement set at occupancy and one complete spare set.	FM to provide name of Manufacturer	Provide one complete set of replacement filters for all filter banks.
362	234100	HVAC	Air Filters			s	Gauges - provide manometer type 0-3" wg		
363	234133	HVAC	Air Filters			s	2" prefilter - high efficiency 4" primary	AAF - Amer-frame	Disposable S media MERV 15 or Higher. Fabricate frames from not lighter than 1.6 mm / 16 gauge sheet metal with rust proof coating. Each air filter will be equipped with a suitable filter holding device. All frame seats will be gasketed and all joints between filters, housings and walls will be airtight.
364	235216	HVAC	Boilers - Condensing			s	Multi staged units as required - generally two to three units staged, modulating and condensing boilers to handle complete load. Design system to return low temperature water to boilers.	Condensing - Aerco	Provide redundancy w/ one spare unit to guarantee load. Boilers for large buildings will be dual fuel. Rated efficiency of lead or main winter boilers will exceed 80% and high efficiency shoulder season boilers will exceed 92% rated efficiency. Minimize size of high energy efficiency condensing boilers will be 60 hp unless approved in writing by the Owner.
365	235216	HVAC	Boilers			s	Control only through Energy Management System		Boilers must also be able to run manually and independent of building automation system.
366	235300	HVAC	Expansion Tanks				No bladder types. All tanks with viewable site glass from floor.		

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367	235500	HVAC	Direct Fired Units				If permitted by Owner - provide standard outdoor air intake required by manufacturer.		Use only with Owner approval.
368	236400	HVAC	CFC - Refrigerants			s	For all refrigerant systems - use HFC-134a	Dupont SUVA 134a	Use of CFC's are banned. HCFC's are to be phased out. Do not specify any refrigerant that is scheduled at the time of bid to be banned before Year 2020.
369	236400	HVAC	Chillers			s	Two or three individual units, one or two to handle full load. Design load will be calculated to include <b>R38</b> non average roof insulation and <b>R20</b> walls.	Trane	Specify highest quality energy efficient/environmentally safe systems. Provide for light and staged loads with 100% system redundancy.
370	236400	HVAC	Chillers Redundancy			s	All pumps, towers and equipment to be redundant.		
371	236400	HVAC	Chillers			s	Provide isolation valves all piping to equipment		
372	236400	HVAC	Chillers			s	Pumps - condenser - install lower than tower or dry coolers. Wet cooling towers will be located a minimum of 50 feet from any air intake or occupied staff area. Cooling tower drives will be adjustable speed to maximize energy efficiency.		All pumps designed for self priming - non-cavitating. Where site permits - locate wet towers 100 feet from building.
373	236400	HVAC	Chillers + Data Equip			s	Provide 24 hour - 7 day per week spot-cooling for data closets and special use rooms. Systems are smaller and run cooler. Cooling requirements will be evaluated on a case by case basis.	Owner (IT staff) will provide requirements.	Provide free-cooling option for winter operation where needed. Typically only for large data center.
374	237200	HVAC	Energy Recovery Equipment			s	NEED TO SPECIFY TYPE AND MANUFACTURER PREFERRED - IF POSSIBLE. Carnes has new Model WP "Core" type Energy Recovery Ventilator 50 to 5,500 CFM with "Cold Climate" Application.		There are 5 types of HRU units - Heat-Wheel Air to Air, Heat-Pipe Air to Air, Fixed-Plate Air to Air, Packaged Air to Air and closed loop glycol system.
375	237323	HVAC	Custom Indoor Central-Station Air Handling Units			s	Provide functioning freeze stat operation. Fully insulated. Provide full size door for full face access to fan, cool/heating coils, filters and air mixing chamber.		Provide air blenders - longer runs - etc. Designer will review the number, location and layout of all sensors with the Owner during design.

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376	238236 238316	HVAC	Piping - Hydronic - Perimeter Radiant Heating - Fin Tube	E		s	Perimeter radiation at all exterior walls with or without windows. At windows install as part of window opening sill area.		Install where heat loss potential is the greatest along building perimeters. "The perimeter heating loop temperature will be controlled up to 180°F by outdoor exterior temperature boiler/hot water reset. Eliminate false temperature sensor readings. The sensor for the reset function must be in a location that accurately reads the ambient outdoor temperature and is unaffected by the building or operations about the building. The boiler reset function will be programmed to achieve the maximum energy efficiency of operation. Perimeter heating will be thermostatically controlled by a local room thermostat in the same room and within 10 feet of the perimeter heating units. The perimeter heating zone valves will open 1st upon call for heat. If heating needs are not met by the perimeter heating and supply temperature reset, then the room VAV (reheat coil if present) will open to supplement the perimeter heating to achieve the set point of the thermostat. Fully coordinate control of the perimeter heating zones with the VAV and boiler reset temperature controls and functions to prevent hunting and competition issues. To avoid isolated potential for freezing, the perimeter heating hot water return loop temperature will not be used to control the perimeter main hot water loop temperature. This would satisfy the temperature in the supply loops, but may not provide adequate heat at each zone. For new installations – the percentage of fins per length of pipe for each location will be reviewed with the Owner."
377	238413	HVAC	Humidifiers			s	No humidification systems to be provided in new building construction. Abandoned systems will be removed when mechanical systems are upgraded, replaced or modified.	Dri-Steam	Exceptions: Humidification will be maintained at the Robert Trail Library for the wood ceilings and the Historical Museum.
378	260000	Electrical	Clocks				Battery operated only. For multiple clock installations at one building - install clocks that automatically adjust to true time (i.e. atomic) .		No master clock systems.
379	260000	Electrical	Closets Electrical				Owner provides standard design to Architect. Data Closets are not to be combined with electrical closets. Electrical distribution panels will be housed in separate secure rooms.		Reviewed by Facilities Management / base upon size-complexity or square footage. Electrical closets will be dedicated space not shared with other systems such as telecom or data. For multiple story buildings, electrical closets will be stacked. The locations of vertical backbone pathways, horizontal pathways, closets, equipment rooms and utility entrance facilities for electrical and communications distribution equipment will be established before the architectural concept and is finalized. The spacing and number of closets will be based upon distribution need and good electrical engineering in limiting excessive runs of conduit and conductors. Electrical Engineer will demonstrate how the greatest economy in copper cabling can be achieved.

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380	260000	Electrical Energy Mgmt.	Load Shedding			s	Provide capabilities on all projects - non-essential loads		Remote activation and monitoring including on-site demand meter.
381	260500	Electrical	Receptacles - 120 v				Grey receptacles with stainless steel covers.		All receptacles will be UL rated and manufactured from a trusted source.
382	260500	Electrical	Switch wall				20 A <b>quiet</b> , quick make, quick break w/toggle handle totally encl.	Hubbell, Leviton, P & S	Same construction for 3-way and 4-way switches w/stainless covers
383	260513	Electrical	Wire - 600 V			s	All copper - increase all design ampacity by 20% above code		#10 AWG and larger - stranded; #10 AWG and smaller = solid copper
384	260513	Electrical	Wire - Pulling				All wiring must be pulled into the conduit at the same time		All trades and contractors to coordinate work to eliminate damage
385	260513	Electrical	Wire - Splicing				Conductors may be spliced only in ACCESSIBLE junction boxes		
386	260513	Electrical	Wire Testing				Post install - Test all feeders for continuity and insulation Q/A		"megger"
387	260513	Electrical	Wire - Power & Lighting				Minimum wire size = #12 AWG		2009 Emerging technology - DC microgrid for powering LED lighting. This eliminates inverter costs and requires separate DC wiring system for lighting. Wind and PVs are DC.
388	260513	Electrical	Wire - Neutral				Neutral wire to be one wire size larger than lead wires		A second neutral is required for all K type Transformers by Code.
389	260513	Electrical	Wire - Std Circuits				20 A @ 120V and 20 A @ 277 #10 AWG Runs longer than 50'		All others ampacity code +20% - plus voltage drop calculation for run length
390	260519	Electrical	Wire - Control				Minimum wire size = #14 AWG		
391	260526	Electrical	Grounding System				Provide "Custom-designed" grounding system to be specified by Electrical Engineer - Approved by Owner. Include detailed pre-occupancy continuity testing of the complete grounding system. Grounding system will include lightning protection, roof mounted equipment, and bonding to any grounding grids within 180' of new construction.		Primary and secondary - special attention to lightning attenuation to protect sensitive equipment including telecom. data. etc. Provide a custom-designed internal and external grounding system by specific building location and surrounding built environment and topography.
392	260533	Electrical	Boxes - Junction				Locate above accessible ceiling in finished areas only including pull boxes.		Support boxes from structure - not by conduit.
393	260533	Electrical	Conduit				Use only metallic including embeds unless approved in writing by Owner.		Conduit for placement in slab will be approved by Owner and can be other than metallic.
394	260533	Electrical	Conduit				Liquid tight flexible for outdoor, damp, corrosive, HVAC interior or internal Drive		Final 3 foot connection to all sprinkler system valves.
395	260533	Electrical	Junction boxes			s	Locate above partition height in modular office areas.		Also Tstats, fire alarms, etc.

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396	260539	Electrical	Duct - underfloor			s	Run trunks on 20' centers - locate knockouts on floor plan. Use only for slab on grade or in areas where underfloor area is inaccessible.		Owner to provide "standard" ergonomic partitioned layout plan. Fully coordinate with furniture layout plans.
397	260539	Electrical	Duct - underfloor			s	Provide markers in concrete or on raised floor 36" OC and at ends		
398	260543	Electrical	Duct - infloor boxes			s	Provide markers in concrete or on raised floor 36" OC and at ends	Wiremold Co. West Hartford CT	For infloor junction boxes - use Walker Infloor Systems RFB8 High Capacity Recessed Floor Box. Cover plates for telecom and data will be provided by separate cable installation contractor.
399	260553	Electrical	Enclosures				NEMA standard - all locking for security		Address preventing unauthorized access
400	260553	Electrical	Identification tags/signs				Sign all control switches and panels		Color: Fire Red, Characters white.
401	260553	Electrical	Signage			s	All electrical components ID with engraved red/white		Use plastic laminate with recycled content.
402	260900	Electrical	Lighting Control System			s	Will be provided by Owner - Case by Case. In general, all lighting control systems will be fully compatible and controllable by and through the building automation system (BAS) and be fully BacNet Compatible.	GE, Lutron or approved Equal: Firms regularly engaged in manufacturer of lighting control and ancillary equip., of types and capacities required.	Products must have been in satisfactory use in similar service for not less than 5 years. Component pretesting; All components and assemblies will be factory pretested and burned-in prior to installation. System Support: Factory applications engineers will be available for telephone support.
403	260923	Electrical	Lights - controls			s	Provide manual override for all controlled devices or circuits.		Manual over-ride of controlled lighting systems (occupancy or photo-sensor) will be keyed or located remote from occupant or public access.
404	260923	Electrical	Lights - exterior			s	Provide both photo cell and time clock control as minimum. Make use of 2 stage motion sensing egress to control parking lighting. Higher level for 10 minutes then returns to reduced level. Specify LED directional lighting when available to provide highest energy efficiency possible and to eliminate insect attraction.		2009 New Federal Lighting Standard limits the maximum wattage and amount of light that bleeds onto adjacent properties. All parking lots will be lit so that only the parking areas receive illumination. Prior to implementation address any lighting level increases with surrounding neighbors for both urban and rural settings. DCC is example of 2 stage exterior employee parking lot lighting.
405	260923	Electrical	Lights - occupant sensor - general			s	Ceiling mounted motion sensors in all private, open offices, public areas, toilets, etc. 2012 - Watt Stopper DT-305	Watt Stopper	Also store rooms - no wall sensors - all ceiling mount - dual tech. Include contractor requirement to field adjust all occupancy sensors after 3 months of owner occupancy.
406	260923	Electrical	Lights - occupant sensor - meeting rooms			s	Provide occupancy sensors in all meeting rooms - provide manual over-ride - standard switch to turn lighting off during presentations. Watt Stopper DT-305 Ceiling mount only.	Watt Stopper	
407	260923	Electrical	Lights - on/off control			s	Exterior and interior lighting will be controlled for on/off and unoccupied shutdown sweeps through the building EMS/BAS.		Fully programmable through the EMS
408	260923	Electrical	Lights - switches			s	Locate manual switches above wall panels or outside systems furniture installation areas for modular office areas. If occupancy sensors cannot be used in any space, then ADA height requirements will be used in accessible areas.		Or in areas that panels will never be installed. Maintain ADA requirements. Coordinate light switches, fire pulls, extinguishers, thermostats with partitions to prevent interference or covering them up.

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409	260923	Electrical	Lights - timed switches			s	Dial control - maximum on time of 1 hour. Provide one at each entry door into room.
410	262200	Electrical	Transformer			s	High Energy Efficient - specify only K-type or equal. (note that a 2nd neutral conductor is required for all K - type transformers.) GE, ABB, Square D Low temp and high power factor. High-efficiency transformers are those meeting NEMA standard TP 1-1996, which have a 98% operating efficiency. All units must be Energy Star Approved.
411	262413	Electrical	Switch Disconnect			s	Non-fusible quick make/break w/lockable "OFF" GE/Westinghouse/SqD Comply with UL Ratings, NFPS and Electrical Codes
412	262413	Electrical	Switch MCC/Board			s	Solid copper bus bars only GE
413	262416	Electrical	Panel Boards			s	Circuit Breakers only. Eliminate fuses to greatest extent possible. General Electric Provide minimum of 25% spare breakers in each panel.
414	262416	Electrical	Panels				Provide separate rooms for all electrical - no cupboards
415	262419	Electrical	MCCs				Provide H-O-A switches - all panels
416	262419	Electrical	MCCs Starters				To be specified by Electrical Engineer - Approved by Owner Locate starters in MCC panels.
417	262419	Electrical	MCCs Contactor				To be specified by Electrical Engineer - Approved by Owner
418	262713	Electrical	Meter - Owner			s	Owner monitoring meter for buildings larger than 50,000 square feet. Provide submetering of HVAC systems and lighting systems to measure building energy efficiency. GE/Westinghouse/Cutler H. Watt-hour Meter with programmable demand indicator & pulse initiator. In each building, separate submeters will be provided for 1) lighting 2) cooling equipment 3.) balance of building mechanical system and 4.) 120v occupant distribution systems.
419	262800	Electrical	Ground fault receptacles				All restrooms, sinks, convenience stations, kitchenettes or any receptacle within 24" of a water source. Will be resettable locally.
420	262813	Electrical	Fuses			s	All over current protection will be circuit breaker - no fuses
421	263100	Electrical	Photo Voltaics (PV)			s	Solar Panels: - Not economical to consider for MN in 2009. There are a number of issues to consider for using PV panels on buildings. If the modules are interdependent on each other. If one panel fails - are they all off line. Panels are high maintenance. They will not generate power if they are dirty or covered with snow. Due to these shortcomings - there is not wide scale production of silicon high output PV panels so the price remains high with a very high payback in Minnesota. Batteries system is needed if the power is to be stored for light load applications.
422	263213	Electrical	Emergency Generator			s	Buildings 30,000 sq. feet and larger will have full emergency power. Buildings less than 30,000 sf will be handled on a case by case basis to determine when emergency generators will be provided. Provide submeter for fuel on all gensets. Smaller buildings may receive generators only upon written direction by the Owner. Cummins Engine Co., Caterpillar Inc., Katolight Corp. Electricity deregulation - continuous service - emergency shelters. Configure exhaust to eliminate noise from occupied parts of the building and potential for smoke to enter fresh air intakes. Carefully evaluate available technology to achieve the highest fuel efficiency and lowest emissions.

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423	263223	Electrical	Wind Energy Equipment		E	s	Dakota County is not located in optimal wind zone.
424	263313	Electrical	Batteries			s	RE: NEC, UL, ANSI and NEMA standards for material ratings
425	263353	Electrical	Uninterruptible Power				One (1) hour load carry time if generator backup present. Electronics must be located above batteries and capacitors within system housing. Capacitors cannot be located above any control systems.
426	263500	Electrical	Harmonic Distortion				
427	263513	Electrical	Capacitors			s	
428	263513	Electrical	Current Transformer CTs			s	Power factor correction will be installed for all buildings.
429	263623	Electrical	Switchgear - Paralleling				SPECIAL WARRANTY - Contractor will provide 5 year full parts and labor warranty for the switchgear and all required accessories.
430	264113	Electrical	Lightning Protection			s	Verify that the system materials (copper or aluminum) are compatible with roof flashing/parapet coping materials and finishes. This applies to all materials that will come in contact with the lightning protection system. No dissimilar materials. See Section 07500 for additional wind load and anchoring requirements.
431	264123	Electrical	Lightning Suppression				Any building within 180 feet of an adjacent taller structure will be so equipped.
432	264300	Electrical	Transient Voltage Protect			s	Eliminate need for individual suppression at sensitive equipment and work stations.
433	265000	Electrical	Lights - custom			s	No special cost allowances for lighting fixtures will be included in the bid document. If approved by the Owner in writing, the fixtures may be bid separately or provided by the Owner. Unit pricing will generally be used for any specialty item.
434	265000	Electrical	Lights - lamps		E	s	Includes cove lighting, task lighting and lighting in systems furniture. All lamps subject to Owner review and approval. Ensure systems furniture lighting has high energy efficient ballasts and lamps.
435	265100	Electrical	Lights - level office areas		E	s	Use of indirect in ceiling reduces glare.



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436	265100	Electrical	Lights - interior	E	s	See LED comments under lamps above. In the absence of specific direction = fixtures with 2 - 25 watt T8 lamps with 4 lamp ballasts will be used - 1 ballast per 2 fixtures - rigid conduit with 5' whips. NEW Standard is T-5 3000 K - for 4' lamps. Compact fluorescents for spots up to maximum of 42 watts - UL listed w/ballasts Class P with THD less than 15% operating lamps at 20KHZ or higher w/PF above 90%. NOTE: T5 technology has not been proven to be more energy efficient than T8. Owner will evaluate using T5 based upon lumen per watt. For indirect linear lighting - use only 4' lamps evenly spaced or design length to even fixture length - 2' and 3' lamps are not permitted.	Phillips, GE, Sylvania	LEDs (light emitting diodes) - Super Bright LEDs have been developed 2008. They are slowly moving toward wide-spread distribution. Advantages include 15 to 20 year lamp life, no hazardous materials to dispose, light can be easily directed to where needed, 50 to 75% reduced lamp energy use and corresponding reduction of cooling in summer. City of St. Paul in 2008 installed exterior LED street lighting in custom heads manufactured by CREE. All lighting is Owner line item approval and all must be recyclable. The goal for lighting efficiency is maximum 1.0 watt per square foot including ceiling and workstation task lighting. The current fluorescent lamp standard is 3000K. For restrooms provide surface mount light fixtures placed and centered immediately above lavatories and mirrors. Do not use cove lighting for general areas. Provide indirect surface mount fixtures in ceiling.
437	265100	Electrical	Lights - Daylighting	E	s	Provide as much natural light as possible through the interior occupied spaces. Use creative integration of daylight and energy efficient lighting options and effective control strategies to provide for the greatest visual comfort for employee productivity while maintaining the minimum wall insulation R-value.		<b>Use effective</b> design measures and modeling to draw natural daylighting as deep as possible into the interior space of each floor. Maximize number and location of windows to provide quality and visually stimulating environment. Orient building to reflect daylighting strategy. i.e. light shelves, side and transom lites, tube lighting, etc.
438	265100	Electrical	Lights - UL rating			s Each complete lighting fixture must be UL approved.		Individual component UL rating or approval is not acceptable for entire fixture. Entire fixture must be approved - UL rated and UL labeled.
439	265113	Electrical	Lights - ballasts	E	s	Electronic - power factor 95% or greater with full 3 year warranty on parts and labor. Harmonic Distortion less than 10%. Sound Rating less than 10%. No visible lamp flicker. Strike lamps at any light level. Use on Super T-8 and T-5 lamp and ballast combinations. Ballast manufacturer must demonstrate electronic ballast production for more than 5 years and be able to document low failure rates. See interior lighting for compact fluorescent ballasts. HID ballasts will be premium grade, encapsulated, constant wattage, high power factor type. Evaluate each application for conversion to LED technology at time of replacements.	Motorola, Magnatek, or Osram	Fluorescent ballasts for T8 lamps will be electronic type, UL listed Class P with THD less than 20% operating lamps at a frequency of 20KHZ or higher and fully comply with FCC and NEMA limits for electromagnetic and radio frequency interference. Meet or exceed ANSI and IEEE Standards for harmonic distortion and surge protection. For occupancy sensor controlled lighting with delays set at 15 to 20 minutes, carefully consider extra-efficient instant-start ballasts and T8 lamps designed to have long life with instant-start ballasts. Goal is 5 to 15% greater energy efficiency over standard ballasts. Use dimming ballast systems only where they are needed for room application. Turn lamps off for daylight harvesting applications since dimming ballasts generally consume more energy.
440	265113	Electrical	Lights - ballasts remote			s For inaccessible or high bay fixtures - locate ballasts remote in separate room unless catwalk or other access provided in high bay areas. Provide adequate ventilation to maximize ballast life.		Consider upgrade to LED long life technology for all high bay applications.
441	265113	Electrical	Lights - luminaires			s Owner to approve all fixture types and models prior to bidding.		Energy efficient - occupant friendly.
442	265113	Electrical	Lights - reflectors			s High specular -maximize lighting - minimize number of lamps		See other comments concerning indirect and task lighting in work areas. Indirect lighting and high luminescent ceiling panels will be used to the greatest extent possible.

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443	265200	Electrical	Lights - emergency			s	Integral with fluorescent fixtures - battery w/o generator		Battery operated w/generator backup in high security areas such as holding cells and court rooms.
444	265300	Electrical	Lights - exit signs			s	Use 2.5 watt light emitting cathode as available in lieu of high resolution Red or Green LED - high energy efficient - meet UL 924 with maximum power consumption of 9.5 watts per double face sign. Unit to be self powered with solid-state voltage limited charger.	Cooper Lighting/Sure-Lites	Sign Warranty 1 year. Battery warranty - 15 year pro-rated. LED lamp with estimated life of 25 years. Housing to be Die Cast aluminum with hinged face plate. Face - no dot effect in lettering. Voltage to be 277 VAC, 60 Hz or dual voltage 120/277 if only 120 is available.
445	265600	Electrical	Lights - exterior			s	Metal halide 175 or 400 watt mogul base only. Consider LED as technology becomes available and economical. All exterior lighting will be directional and illuminate only target County property areas.	Kim, Sterns	480 volt power. Check status of Federal Law and corresponding MN Statute concerning exterior lighting.
446	265600	Electrical	Lights - Lighting Level Parking Lots				5 foot candle @ lot surfaces or less as may be required by code or Statute. Lighting levels will be reduced and carefully directed when near adjacent residential areas		Safety, security, productivity issue. 2008 Code is 1 FC average.
447	265600	Electrical	Lights - parking lot				Locate along perimeter - eliminate exposure to car, trucks & plow		Install directional lighting or specify cut-off shields to control light spill
448	265636	Electrical	Lights - flagpole			s	Provide at 2-3 feet off the ground to allow for snow cover. Preferred lighting location is from adjacent building or structure.		
449	270000	Telecom	Consultant			s	Owner IT department will hire a communications consultant or Vendor.		Voice and data communications systems decisions new construction.
450	270000	Telecom	Fiber Optics			s	Fiber Optics to Closets - CAT 6 cable to desk tops		Subject to change. Confirm with IT.
452	270000	Telecom	Paging - Emergency Communications				Provide paging system when directed by Owner. When Sound masking system is present, it will be provided as part of the paging speaker system for all open office areas to reduce and eliminate sound carry-over cubicle to cubicle. Paging and sound masking requirements will be evaluated on a case by case basis.		Libraries require paging especially in public areas.
453	270000	Electrical	Sound Masking				Sound Masking will be specified for all large open office settings. Paging, when required, will be integral with the sound masking sound masking system. Requirements will be evaluated and approved by the Owner on a case by case basis		Soundmask adjacent offices. Provide local control of soundmasking for Courts areas and large meeting rooms. Paging will be zoned as a minimum by floors, then departments then section. Audio systems in courtrooms and large meeting rooms will be independent of other systems.
454	280000	Special Systems	Security/Cameras/ Duress System				All cabling will be yellow. Duress system will be provided for Courts and other areas as determined from Safety and Security planning. New systems will match and be extensions to existing systems.		Owner will provide direction during design development. Includes all security equipment.

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455	270000	Telecom/Data	Cable Trays			s	Cable tray locations will be developed by the project electrical engineer and approved by Owner. Cable trays will be placed on each floor back to IDF or MDF closets for station and riser cables. Minimum width of cable trays is 12 inches wide. Minimum width for main distribution cable trays is 18 inches wide.		Backbone raceways will be installed to eliminate the need for independent suspension of Telcom and control wiring through plenum ceilings. Electrical Code requires that all wiring in plenum ceiling must be separately supported. Wiring cannot lie on ceiling grid.
456	270000	Telecom/Data	Electrical				All DATA cabling will be blue. Provide at least two 20A double duplex dedicated, isolated ground outlet IDF (Intermediate Distribution Frame) closet. Provide at least four 20A double duplex, dedicated, isolated ground outlets and four standard 20A double duplex outlets in each MDF (Main Distribution Frame) closets. These outlets must be on separate 20 amp circuits. Each closet requires a grounding bus back to main electrical panel or directly to building grounding system. Each closet wired back to a central UPS system.		Confirm specific needs for each situation with Owner
457	270000	Telecom/Data	Lighting				Lighting in the closets to be a minimum of 50 foot candles (540 lux at 3 feet (1 foot) from the floor. Bright lighting in closets is needed for technicians to easily distinguish color coded pairs and tiny fiber optic strands from one another.		
458	270000	Telecom/Data	Temperature Control				All closets will be designed to maintain temperatures between the range of 64 degrees and 75 degrees Fahrenheit 24 hours 7 days per week.		All special cooling equipment will be fully equipped to provide free cooling when exterior ambient temperatures are available to do so. Requirement continue to change. Verify needs with Owner for each project.
459	270000	Telecom	Humidity Control				All closets will be designed to maintain humidity ranges of 30% to 50% humidity 24 hours 7 days per week.		Requirement continue to change. Verify needs with Owner for each project.
460	270000	Telecom	Doors and Ceilings				Doors into Telecommunications Closets will be a minimum of 36 inches wide and 80 inches tall. Doors will open out for 180 degree radois to allow for maximum use of available floor space or additional door swing space will be provided inside the room.		Doors and room heights will be sized to accommodate all special equipment for these rooms.
461	270000	Telecom	Doors and Ceilings:				Provide no suspended or drop ceilings. Minimum clear ceiling height is 8 feet 6 inches. Communications racks are usually a minimum of 7 feet tall. Provide adequate space above 7' for cable trays and cable management.		Meet or exceed local codes, ordinances and requirements including fire protection.
462	270000	Telecom	Closets LAN-WAN Equip				Owner provides standard design to Architect. See separate comments regarding types and sizes of closets.		For new data closets, provide adequate number of conduit runs for future cabling and space sufficient to access data equipment racks from all sides. For multiple level buildings, data and telecom closets will be stacked.

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463	270000	Telecom/Data	Telecommunications Room Specifications				The size of the telecommunications closets should be determined by the area they serve.  Main Communications closet (MDF) 20' x 20' Intermediate closets (IDF) 5000 square feet or less 10' x 7' Intermediate closets (IDF) 5000 to 8000 square feet 10' x 9' Intermediate closets (IDF) 8000 to 10,000 square feet 10' x 11' Intermediate closets (IDF) 10,000 square feet and above 11' x 12'
464	270000	Telecom/Data	Closet Locations				Closet locations are determined by centrally locating within the building floor plate. The rule of thumb is to begin from any extremity and move in about 200 feet and place closet in a nearby location. Using that point as a center reference for a radius, draw a circle and ensure all locations are less than 200 feet. Maximum cable length for any run is 280 feet.  Telecommunications rooms should be exclusively for telecommunications. No electrical or other equipment will be designed for or placed into these rooms.
465	270000	Telecom/Data	Backboards				Each closet will have ¾" electrical grade plywood backboards on three walls, painted with fire retardant paint on both sides.  This will be handled case by case. VOIP is impacting the requirement for this item.
466	281000	Electrical	Security System				Wiegand - local - with central Owner station reporting. 2002 - Facilities Management to provide new standard language consistent with system revisions including standard locations of card readers (ADA), cameras, and other security system devices. - Refer to County Security Policy concerning application and approval of card reader and camera locations. For New Construction - all security system power requirements will be identified and included in the building electrical design. All security systems will have battery back-up. Where available, security systems will be connected to UPS power systems or Generator power.  Lenel  Owner specifies. Security and duress systems specified by Owner will include: Network and stand alone capability; manual override ability; user friendly - simplicity; multi-building control and access; easily added onto; exterior doors fail closed; various alarm functions and have keyed access. Attachment of Security Cameras to the exterior of County Buildings will be reviewed and approved by Capital Projects prior to installation. No camera will be directly mounted on the top of any parapet cap flashing to prevent water intrusion into the wall cavity. All attachment hardware will be 316 stainless steel or approved equal. Any attachment to brick or block masonry will only be made at mortar joints and not in the field of the brick or block.
467	283100	Electrical	Fire Detection			s	100% smoke detected including mechanical rooms/HVAC, electrical and storage rooms. Retrofitted and new installations will be "fully addressable" alarm systems. Replacement systems will be Honeywell Notifier. Changes to fire detection and alarm system, new or replacement must be reviewed by Factory Mutual. All system equipment must be UL approved and the complete finished system UL certified. Note: Central Station must be UL listed/approved via the annual service contract. This includes a UL listed Contractor and UL certified runner to respond to all supervisory and trouble alarms.  Simplex, Honeywell Notifier  For building additions - if existing system is ten years or older and "non-addressable technology", the system will be upgraded to fully addressable for the entire building to ensure accurate alarm reporting and troubleshooting. Separate costs will be identified in the CIP budget process for modifications to existing buildings. NOTE: Honeywell Notifier is proprietary and can only be installed by 4 certified Honeywell local vendors. 2011 - Factory Mutual review comment is for County to provide an FM Approved Central Station monitoring service. The Burnhaven Library was exempted short-term from this requirement.
468	283149	HVAC	CO2 Detection			s	Provide carbon dioxide sensing devices in the ductwork and provide one ambient exterior CO2 detector.  To be used to address IAQ. Coordinate with BAS. CO2 detectors will periodically record readings.
469	310000	Earthwork	Elevator Jack Hole			s	Eliminate hydraulic jacks below grade. All elevators or elevator retrofits will be in shaft traction unit wherever possible.  Eliminate any potential for underground hydraulic oil spill contamination.
470	312316	Exterior Improvements	Excavation/trenching				Contractor notifies Owner and contacts Gopher One-call  Owner provides information for existing sites.

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471	312316	Earthwork	Excavation Rock				Undocumented rock outcropping - specify type and hardness (I.e. ripplable and non ripplable.) Most limestone at Hastings Government Center is nonriplable.
472	312323	Earthwork	Backfill				Compact to 95% of modified proctor
473	321000	Exterior Improvements	Pavement Base			s	Use Class VII (recycled concrete) or recycled CLV aggregate, MN/DOT 3138. MnDOT adopted policy in 1980 allowing use of salvaged concrete for aggregate base and stabilizing aggregate. Type and % of recycled content will be approved by Owner for each project. Base will extend beneath all curb and gutter.
474	321216	Exterior Improvements	Pavement Asphalt			s	Minimum of 1 core per 2500 sy to verify - finish derivation +/- 1/4per 10 ft. and specified compressive strength of the installed pavement. Use as a minimum MnDot percentages of recycled content I.e. crushed glass - sustainable building issue. Use only asphalt suppliers that have a recycled content program and use recycled asphalt materials such as TOSS (tear off roof shingle scrap) or MASS (post manufacturing shingle scrap). In 2008, only MASS was available. Pine Bend Paving is the local supplier. Bituminous tack coat will be per MnDOT Spec 2357.2. When exterior ambient air temperatures drop below 32 degrees F - medium cure (MC) cutback asphalts will be used during early and late construction season.
475	321216	Exterior Improvements	Pavement Bituminous			s	Use MNDOT Shingle Scrap and glass aggregate design mixes.
476	321313	Exterior Improvements	Pavement Islands - Concrete				Eliminate any small islands whenever possible and safe to do so. This provision may conflict with storm water site containment provisions. Options are depressed infiltration basins and islands large enough to support vegetation.
477	321313	Exterior Improvements	Concrete	A			The use of plasticizers is not allowed on any project unless approved in writing by the Owner. Requests to use of plasticizers with the justification must be submitted directly to the Owner for written approval. Finish burlap drag, broom finish or wood float as approved by Owner.
478	321313	Exterior Improvements	Pavement Concrete		E	s	Finish burlap drag or wood float. Provide concrete pads for motorcycle parking - minimum one space for each building. Provide adequate bollards, crash rail, and dock bumpers to protect building at docks and areas directly exposed to vehicles.

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479	321600	Exterior Improvements	Curb & Gutter	A			Specify no curb if permitted by local ordinance. Request variance with justification. If code requires curb - use MnDOT - spec D318 surmountable curb 1st and then B-618 at all pavement edges except HC ramping only if there are no other alternatives. Standard Plate No. 7100H. Ramped curb cuts will be broom finished - no exposed aggregate. Comply with local code when necessary. Check local codes/ordinances to determine if sheet drainage to adjacent planted areas can be used as part of storm water strategy for project.		Finish burlap drag, wood float or broom finish. Install surmountable curbs for areas of rain gardens, snow stacking and parking lot expansions. Define all expansion joints clearly on plans and specify that Contractor is responsible to not have cracks in other locations of curbs. See dot website at <a href="http://www.dot.state.mn.us/tecsup/splate/english/e7000/s7100h_spt.pdf">http://www.dot.state.mn.us/tecsup/splate/english/e7000/s7100h_spt.pdf</a>
480	321723	Exterior Improvements	Pavement Marking			s	Actual parking space width 9' - 0" plus 4" for striping.		HC - blue with white insignia. Curb - yellow to 13538 FS 595A City of Eagan requires 10' wide spaces. Note: For parking code or ordinance requirements use proof of parking and efficient planning and design for new and renovate parking areas. Burnhaven Library is 2010 candidate.
481	328400	Exterior Improvements	Irrigation			s	Porous Pipe subsurface irrigation system. SWCD - Promote the use of native vegetation and functional landscaping to help achieve this standard. The method and extent of irrigation to be used will be determined by the Owner for each project.	Aquapore Porous Pipe, MTI, Plymouth or Rainbird Xerigation Drip Irrigation.	Where possible - use drip irrigation system to conserve water and lower operating expenses by delivering water slowly to the plants root zones. Install rain fall sensors to control sprinkler systems. Use storm water harvesting and recycled storm water for irrigation.
482	328400	Exterior Improvements	Irrigation				Irrigate zoned critical areas adjacent to facilities. SWCD - Plantings and landscaping will be designed to meet multiple benefits (aesthetics, energy conservation, storm water runoff treatment, screening, etc.) and reduce the need for irrigation.	Rainbird, Toro	See Landscaping irrigation.
483	329119	Exterior Improvements	Topsoil - Black Dirt			s	<b>Minimum 18"</b> roller compacted all lawn areas. To keep all areas open and accessible for inspection to ensure slab at grade waterproofing remains undamaged during construction. Topsoil-SWCD – Efforts will be made to avoid soil compaction and preserve existing topsoil. Employ techniques to restore soil structure such as deep ripping to 18" and incorporation of compost. or other approved soil amendment . The objective is to eliminate compaction in non-paved areas.		See sustainability issue regarding low water moisture preservation. Plan soils balance at site to accommodate 18" final topsoil depth during design development. Need to pay special attention to construction compacted soils in non pavement areas including soil amendment. Evaluate what affect freeze thaw have upon materials prior to deep discing. Reduce paved walk areas and provide planted walk areas. Build sidewalks only when mud paths develop.
484	329219	Exterior Improvements	Seeding	A		s	County will provide mix for non-sodded areas		Emphasis will be on native and drought resistant grasses and incorporating soil amendments prior to seeding or planting.
485	329223	Exterior Improvements	Sod				Sod all critical areas adjacent to pavements and buildings. SWCD - Sod shall be used in high foot-traffic areas and native vegetation will be emphasized in most landscaping areas.		Comply with local ordinance 1st.
486	329300	Exterior Improvements	Security				Keep plantings away from immediate building walls.		Eliminate hiding places adjacent to entries and next to building. Provide clear sight lines for security patrols from lots about buildings.

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487	329333	Exterior Improvements	Shrubs	A		s	Use Minnesota Hardy stock - northern climate only		
488	329343	Exterior Improvements	Mulch			s	Install minimum 3' diameter about all new planted trees.		Planting areas will use landscape mulch. Rock will not be used as a mulch.
489	329343	Exterior Improvements	Tree Specification			s	Size - 4 with varieties of hardy local indigenous stock		Mix and random plant 2+ deciduous species and 2+ evergreen
490	329643	Exterior Improvements	Tree Installation			s	Plant to correct depth, cut/remove burlap and banding		Avoid placement of trees is sidewalk areas. Mix of deciduous & coniferous trees to be planted in asymmetrical patterns.
	330000	Utilities	Location of			s			
491	330000	Utilities	Pipe UG Warning Tape			s	Caution water, gas, electric, sewer below - 6" wide by 4 mils thickness.	Allen Sys, Emed, Seton	Bright colored - continuous tape a minimum of 12" above utility line. Provide metal marking signs on steel posts in high traffic areas.
492	330000	Utilities	Utility Separation				Do not cross water and sanitary or storm sewer lines.		Any variance requires written approval from City and Owner.
493	331113	Utilities	Pipe - potable water				All site water will be ductile iron		
494	331113	Utilities	Pipe - Thrust Blocks				Install concrete thrust blocks to address 100 psi minimum water pressure.		All underground systems.
495	331119	Utilities	Pipe - Fire	A			Ductile iron - post Indicator will be as required by local fire code official.		Specify model and manufacturer if a specific model is not required by local code official or Factory Mutual.
496	331219	Utilities	Fire Hydrants				UL246, NFPA 24, AWWA C502	Need to specify	Strictly adhere to local jurisdiction or Fire Marshall requirements.
497	331233	Utilities	Water meter				City Standard - include RPZ (CSI 331213.13)		Provide independent owner meter(s) and multiple City meters for all buildings compatible with BAS for monitor and control of water use i.e. irrigation and boiler water makeup. Eliminate sewer and storm water fees from water bills for irrigation of water that does not enter these systems.
498	333113	Utilities	Pipe - Sanitary Sewer				Minimum building feed 6" - B&G to 8' then code to service		Ductile iron - push joints or fiberglass if permitted.
499	334113	Utilities	Pipe - Storm Sewer				2' and greater - RCP - 18" and smaller PVC or Fiberglass if Permitted		
500	334413	Utilities	Catchbasin covers				Loading - domed cast iron for landscaped areas. Use Heaviest Duty for driving surfaces.		Openings to be small enough to prevent access by children or bicycle tires.
501	334413	Utilities	Catchbasins concrete	A			Precast concrete - cast steps joint sealed. See Owner provided detail.		If permitted by local code, provide weep holes in the sides of the storm water sewer catch basins and manholes to allow water that migrates in the Class 5 base under the asphalt to weep into the storm water sewer system. Place screen over the weep holes to keep the Class 5 from falling into the storm sewer.
502	334613	Utilities	Pipe - Foundation Drain			s	PVC - perforated - filter fabric - 12" aggregate drain bed		Use Pipe product with recycled content when available.
503	334913	Utilities	Manholes - concrete				Precast concrete - joint sealed		

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504	334913	Utilities	Manholes - covers				Heavy duty cast iron ring and cover label "Storm Sewer" or "Sanitary Sewer"	ASTM A48 Class 35 B hot dip asphalt coated
505	335113	Utilities	Pipe - Natural Gas				As specified to meter by Utility	Provide independent owner meter(s) and submeters for buildings 30,000 sf and larger compatible with BAS for monitor and control of energy use. Example - Generators, boilers, etc.
506	337000	Electrical	New Service				480/277 volt Entry - Contractor to initiate request to Owner	Owner provides all construction power.
507	337139	Electrical Utilities	Electrical Lines				Direct buried underground rated - all copper.	All electrical lines will be located within 10' of perimeter property borders and enter the property and building at right (90°) angles to the property line at the shortest distance between the building and property line in order to quickly locate and minimize costs for future improvementsUG tape mark minimum 12" above lines. Lines to be 24" minimum deep unless approved in writing by Owner. All lines will have at least 2 permanent markers designating these lines. UG tape marker is required to be continuous within 12" of the top of the line. Reinforced concrete ductbank may be required by the Owner. Pipe sleeves or concrete ductbank is required under all pavements.
508	338200	Utilities	Communication Lines				Direct buried underground rated - shielded copper and fiber.	All communications lines will be located within 10' of perimeter property borders and enter the property and building at right (90°) angles to the property line <b>at the shortest distance between the building and property line</b> in order to quickly locate and minimize costs for future improvements. Lines to be 24" minimum deep unless approved in writing by Owner. All lines will have at least 2 permanent surface markers designating these lines. UG tape marker is required to be continuous within 12" of the top of the line. Reinforced concrete ductbank may be required by the Owner. Pipe sleeves or concrete ductbank is required under all pavements. A metallic location wire will be buried with all fiber optic lines.
509	FFE	Furnishings	Standards	A		s	Owner standards are included by reference and will be further developed and expanded upon by Owner and Designer on a project by project basis. Use fabrics with recycled content and furnishings that can be repainted, reupholstered and re-used..	Furniture standards by Owner. Percent of recycled content will be based upon product availability and life-cycle cost effectiveness.
510	FFE	Furnishings	Systems Furniture	A		s	Fasten panel ends directly to wall where possible. Furnishings, fixtures and equipment will be developed by Owner and Designer on a project by project basis. Fully coordinate panel systems with power, fire systems, extinguishers and thermostats.	Do not put any panels parallel/adjacent to walls or windows. Consider reconditioned panels for re-use. Attach panels to walls when approved by Owner. Leave walls open and accessible especially at exterior perimeter. Open frame panels are required next to windows where fin tube (radiant heat) exists. Furniture layout plan will be completed prior to and fully coordinated with wall switches, fire pulls etc. Panel system modification will not interfere with final fire system locations approved by local code officials. Need to periodically inventory excess systems furniture for re-use.
511	125900	Furnishings	Systems Furniture				Fasten panel ends directly to wall where possible. Furnishings, fixtures and equipment will be developed by Owner and Designer on a project by project basis. Fully coordinate panel systems with power, fire systems, extinguishers, light switches and thermostats.	As of 2008 - County either purchased "bid" reconditioned systems or new from the U of M Cooperative Purchasing Agreement. Maintain ADA requirements. Coordinate light switches, fire pulls, extinguishers, thermostats with partitions to prevent interference or covering them up.