



VP, OPERATIONS-WEST
David Velarde

CHIEF DATA & PRODUCT OFFICER
Noam Reininger

REGION DIRECTOR, NORTH & CENTRAL CAMPUSES
Kyle Asire

REGION DIRECTOR, SOUTH CAMPUSES
Jo Medelman

Program Management

Program Development

Program Management

Software & Data

AREA MANAGER
Carrie Roberts

DIRECTOR OF DEVELOPMENT & IMPLEMENTATION
Kelly Mingle

AREA MANAGER
Maria Martinez

VP, PRODUCT MANAGEMENT
Ted Kail

- CAMPUS PROJECT MANAGERS
- Terry Keys**-UC Davis
 - Zebediah Butscher**-UC Berkeley
 - Elizabeth Grauten**-UC San Francisco
 - Linda Arceo**-UC Santa Cruz
 - Nick Jones**-UC Merced
 - Tyler Benson**-UC Santa Barbara

CONTRACTS & EXECUTION PROCEDURES
Laura Albright
Erica Ventura

- CAMPUS PROJECT MANAGERS
- Farhan Karimi**-UCLA
 - Casey Chung**-UC Irvine
 - Leann Coalgrove**-UC Riverside
 - Kent Pecora**-UC San Diego

JOC Product Team

CONSTRUCTION TASK CATALOG & TECHNICAL SPECIFICATIONS
Paul Cowan
John Melin

Engineering & Cost Research Team

Customer Support Team

Dave Velarde

Vice President of Operations – West Region

19 years of employment with Gordian

Education

- B.S. Electrical Engineering, Texas Tech University

Licensures

- State of Florida Class “A” General Contractors License, #CGCO057291

Relevant JOC Experience

Gordian

As Vice President of Operations, Mr. Velarde is responsible for the development, implementation and continued support for the western sector of Gordian’s client base, including but not limited to the following:

- Alameda County
- University of California
- California State University
- City of Long Beach
- Port of Long Beach
- Los Angeles County Community Development Commission
- Los Angeles County Housing Authority

As the Mountain Region Director, Mr. Velarde was responsible for the development, implementation and continued support of the Job Order Contracting program for the following:

- University of New Mexico
- New Mexico Cooperative Educational Services
- New Mexico State University
- Los Alamos Public Schools, NM
- City of Las Cruces

Davis Monthan AFB, AZ

At Davis Monthan Mr. Velarde served as Project Manager and was responsible for the on-site performance of the account with full authority to commit resources to ensure successful project completion. Mr. Velarde maintained full responsibility and authority to manage the team responsible for planning, designing, estimating, project negotiation, scheduling and execution of the Simplified Acquisition of Base Engineering Requirements (SABER) projects. Completed 334 projects in the 3-year period for a contract value of \$10 million.

White Sands Missile Range, NM

As the Project Engineer at the White Sands Missile Range, Mr. Velarde was responsible for all areas of JOC Construction Management including construction quality control, estimating, scheduling, testing and closeout procedures. Mr. Velarde processed all construction invoices and submittals, and solved all on-site problems while still ensuring project completion.

Other Experience

Roy Jorgensen Associates, Inc., MD

Project Director overseeing 102 Toyota Motor Sales, USA facilities nationwide, totaling 6.5 million square feet and \$15 million in maintenance activities and \$40 million in construction. Responsibilities included development of a strong customer service relationship with the client and solving related problems. Developed and implemented programs to incorporate all aspects of facilities management, day-to-day operations, negotiate contracts, long range planning, expense and capital budgeting, and construction management.

NBD/BankOne, MI

As Director of Facilities overseeing 602 Branch Banks for NBD, renamed BankOne, across Michigan and Indiana, Mr. Velarde's responsibilities included the initial startup of the NBD contract in Southeast Michigan and two subsequent increases for Indiana and the remainder of Michigan branches. The startup included the hiring and training of 85 employees. Maintenance included full facilities components, utility management, bank equipment maintenance and project management of the capital budget.

NationsBank of Florida

As the Director of Facilities at NationsBank of Florida, Mr. Velarde was responsible to oversee the startup and day-to-day operations of 475 Branch Banks and remote ATM locations across Florida. While there, Mr. Velarde helped develop and implement all related programs to incorporate all aspects of facilities management, routine maintenance, preventative maintenance, negotiate contracts, construction management, disaster planning, cost accounting, and quality benchmarking. Further, Mr. Velarde developed and adhered to operating and capital budgets, conducted on-site facility inspections to benchmark overall quality of services performed by Jorgensen and subcontractors.

Dieter & James, Inc. TX

As the Project Engineer at Dieter Mr. Coffey was responsible for the complete overview of the project engineering aspects from estimating to the closeout of projects. Quality control of on-going projects such as: scheduling and its control, submittal review and distribution, direct contact with owners representatives for specific requirements, all inspections, punch lists, as-builts and operations and maintenance manuals. Completed 17 projects totaling \$14.6 million. Some examples of these projects include: Hoover Vacuum's 112,000 SF tilt-up plastic stamping plant, Paragon Cable's 40,000 SF tilt-up offices, Two Home Club's exposed aggregate 120,000 SF tilt-up buildings and International Paper's 140,000 SF tilt-up building.

Professional Associations

International Facility Management Association - Associate Member

Kyle E. Asire

Region Director – North & Central Pacific Region

18 years of employment with Gordian

Education

A.A., Greenville Technical College, Greenville, SC

Relevant JOC Experience

Gordian

As a Director of Procurement Operation for the PacCentral region of Gordian, Mr. Asire is responsible for the oversight of all development, implementation and support of over 70 Job Order Contracting Program. His duties include directly supervising and training all personnel assigned to all accounts.

With a long history at Gordian, Mr. Asire has worked as Territory Manager for Northern CA, Senior Account Manager for the Bay Area as well as the Program Manager for California State University and University of California. He has coordinated and participated in the JOC program implementation at over 30 agencies in California including many campuses of CSU and UC.

His extensive JOC experience includes over 10 years as an Account Management for a variety of clients including UCSF Medical Center, San Jose State University, Stanford University, the City and County of San Francisco, County of San Mateo and Santa Clara County, to name a few. He has a strong customer service background with extensive supervisory experience.

As a Cost Estimator with Gordian, Mr. Asire also provided oversight of cost estimating and was responsible for gathering and processing data for use in the development of Construction Task Catalogs. This included review of crews and materials, and the following:

- The development of client specific Construction Task Catalogs
- Collecting and assimilating pricing data for the development of unit prices for the tasks in the Construction Task Catalog
- Cross checking Construction Task Catalog tasks with specifications
- Providing research of current trends within the construction industry
- Providing continual review of crews and materials necessary to accomplish tasks
- Monitoring cost trends for construction around the country and utilizing this information when developing customized Construction Task Catalogs for clients

Joann Medelman

Regional Director – Southern California

9 years of employment with Gordian

Education

- B.S. Business Administration; University of Phoenix

Relevant JOC Experience

Gordian

As a Region Director for Southern California, Ms. Medelman is responsible for the overall development, implementation and continued support of the Job Order Contracting Program. Her duties include directly supervising and training all personnel assigned to the various client accounts.

Ms. Medelman has served as a former Owners Representative/Construction Manager working on projects from Architect and Engineer selection thru project close-out.

She has also served as a JOC Territory Manager responsible for oversight of the development and implementation and management of the JOC program in Southern California. She was the point of contact for all Southern California JOC and ezIQC clients. Her tasks include assisting with coordination and development of the pre-bid, advertisements, and development of contract terms and conditions. She worked closely with owners and our marketing group to develop and execute marketing and community relations activities related to the program.

Other Experience

Gerald Martin Construction Management

Owners Representative/Construction Manager that managed over \$287 million of work as an Owner's Representative from pre-design to post occupancy. Responsibilities included; Architect and Engineer selection, document review, preparing and leading pre-bid conferences, contract review and procurement, leading weekly construction meetings with project team, developing and delivering daily, weekly and monthly reporting and project close out.

Intrawest – Director of Property and Construction Management

Managed multiple luxury resort properties for international development firm. Managed staff of 50+, contractor and subcontractor workloads to ensure all construction projects were identified, procured and managed.

Professional Associations

- Member: Center for JOC Excellence

Carrie Roberts, CPEng

Area Manager

3 years of employment with Gordian, 10+ years' experience in the Construction Industry

Education

- Master of Engineering, University of Technology Sydney, Australia
- Postgraduate Certificate in Engineering (Project Management), University of Technology Sydney, Australia
- Bachelor of Civil Engineering, University of Sydney, Australia

Relevant JOC Experience

Gordian

As an Area Manager, Ms. Roberts oversees the Bay Area accounts, manages multiple contracts, clients, projects and Account Managers. Ms. Roberts is responsible for maintaining client relationships at a high level, support the Regional Director with new client start-up, budget and development, and lead Account Managers in the development, implementation and support of the JOC program.

She has over 10 years of experience in the construction and engineering field, and extensive experience working collaboratively in multidisciplinary teams for global consultancies, with clients including government agencies, developers and tier-one contractors to deliver both large infrastructure and commercial projects.

Other Experience

Engineering Design Coordination & Management, S. Sydney Freight Line, Australia

Ms. Roberts was responsible for managing design registers and updating programmes, liaising with internal and external clients to ensure the project ran accordingly. Also, tracked project financials and assisted in resolving issues in a timely manner.

Construction Support, Newcastle Coal Infrastructure Group, Australia

Extensive experience in providing onsite geotechnical construction support. Responded to RFI's, communicated with clients and contractors on site to assist in resolving issues in a timely manner.

Maria T. Martinez

Area Manager

4 years of employment with Gordian, Over 18 years of Project Manager experience

Education

- M.S., Civil and Environmental Engineering, Stanford University
- B.S., Environmental Engineering, University of California at Riverside
- B.A., Spanish, University of California at Riverside

Relevant JOC Experience

Gordian

Ms. Martinez, as Area Manager for the Southern Region Campuses, is also a Senior Account Manager with Gordian. Ms. Martinez is responsible for JOC client management and consulting services in the Inland Empire and Orange County for various government and public agencies, consisting of County of Riverside, County of San Bernardino, Orange County Sheriff's Department, Orange County Public Works (two JOC programs), and also the University of California, Irvine. She understands the clients' programs and needs and offers solutions to effectively achieve their JOC program objectives. She provides training and education to client and contractor stakeholders, and custom-tailors training sessions to their current needs. She provides Job Order Development and Construction Management services on an on-needed basis for Owner-managed JOC programs. Her duties include, but are not limited to, coordinating and administering Joint Scope Meetings; preparing Detailed Scope of Work; resolving issues with project plans; issuance of RFPs; handling price proposals and performing proposal reviews.

Ms. Martinez has successfully held construction management duties with Riverside County on several JOC projects. Construction management duties routinely performed by Ms. Martinez include review of construction documents; conducting pre-construction and weekly meetings; aid in obtaining permits prior to construction; review of contractor schedules and RFIs; perform site visits to monitor the work in-progress and the JOC contractor's compliance with site-specific requirements; rejection of sub-standard work and work not conforming to project documents; address unforeseen conditions; analyze and process supplemental job orders utilizing same procedures used to develop initial job order if changes to the original scope are necessary; review of project costs; review of a JOC contractor's applications for payment; preparation of project documents (meeting agendas, meeting minutes, site visit reports) and completion of project close-out.

Other Experience

Pueblo Construction, Inc.

Worked as the Project Manager who effectively executed public works job orders for two competitively-bid JOC contracts with the County of Monterey. Often traveled to attend out of town pre-bid and weekly meetings.

WEBCO

As a Project Manager simultaneously managed various federal and state public works contracts and simplified purchase orders. Attended joint scope meetings and weekly meetings. Performed the duties of a full-time on-site US Army Corps of Engineers-certified Quality Control Manager for several federal projects, as assigned, verifying the completed work was performed in accordance to the contract's governing documents. Performed the duties of a full-time on-site Superintendent and Safety and Health Officer as assigned, ensuring the day to day progress and safety of the projects was appropriate.

MTM Engineering & Contracting Services, Inc.

Full owner since incorporation in August 2005 through August 2016. Served as President and qualify RMO for California State Contractors License. Provided consulting services to larger prime contractors to manage and execute a variety of their projects involving maintenance, repairs, alterations, renovations, and construction of various government facilities.

MG Mako Inc.

As a Project Manager, was involved in acquiring contracts, daily management of projects, coordination of resources, and managing projects from initiation through completion, including close-out.

Terry Keys

Campus Project/Account Manager

3.5 years of employment with Gordian

Education

- B.S., Accounting and Business Administration, Central Washington University
- A.A., Business, Highline Community College

Relevant JOC Experience

Gordian

As an Account Manager, Mr. Keys responsibilities include handling day-to-day development, implementation and support of the JOC program. He assists in training staff in the proper execution of the JOC program and use of the eGordian system, developing project assignments, scope identification, contractor proposal accuracy, and overall contract compliance.

Other Experience

City of Bellevue

As a Buyer for Public Works advised customers/clients on public works procurement requirements and strategized to facilitate and expedite the public works procurement process. Responsible for overseeing the development and preparation of complex bid documents. Assisted in the procurement process by processing quotes, requisitions, preparing and publishing bids, scheduling bid openings, coordinating/leading pre-bid conferences, reviewing and analyzing contracts. Reviewed bid and contract documents for compliance with state and local laws, policies, procedures, and other legal requirements associated with public bidding and contracting. Supported and promoted vendor participation in public bidding, encouraging OWMBE and small business participation. Acted as liaison with department staff, contractors, vendors and the general public. Oversaw JOC program and implementation including the development, training and issuing of complex solicitation documents for consulting and construction contracts.

Washington State Auditor's Office

As the Assistant State Auditor 2 assisted in accountability, financial, state and federal grant audits to ensure entity compliance with audit requirements. Gained understanding of controls, process over areas of compliance, tested controls, and tested entity's compliance to controls. Conducted risk-based audits while documenting findings within audit reports. Maintained positive relationships with open and frequent communication to all entities audited. Communicated with other auditors and managers about findings, audit complications, and audit budgets ensuring to complete audits within the allotted timeframe.

Zebediah Butscher

Project Account Manager

4 years of employment with Gordian

Education

- B.A., Architecture, Minor in City & Regional Planning, University of California, Berkley

Relevant JOC Experience

Gordian

As an Account Manager, Mr. Butscher is responsible for ensuring day-to-day development, implementation and support of the Job Order Contracting (JOC) program. Mr. Butscher assists various Public Agencies and Contractors with expediting contract procurement which includes the development of project scopes, reviewing contractor's price proposals for accuracy and providing oversight leading up to and during construction. He also provides training for both Client's and Contractor's staff in the proper execution of the JOC program. He brings more than 23 years of Architectural Design and Construction Industry experience, including 6+ years of experience in Job Order Contracting.

Other Experience

Murakami Nelson Architectural Corporation

He previously served as an Architectural Designer, Project Manager and Construction Manager working in all phases of Design and Construction of projects while employed at Murakami Nelson Architectural Corporation. He has also served as Project Manager, Inspector of Record, and Construction Manager at San Francisco State University.

Certification and Professional Associations

- ICC Certified B2 Commercial Building Inspector
- Completion of the Architectural Registration Exams (ARE) for California Architecture License (only California Supplemental Exam (CSE) remaining)

Elizabeth F. Grauten

Project Account Manager

17 years of employment with Gordian

Education

- B.A. Industrial Arts, California State University-Long Beach, CA
- Civil Engineering Course Work (3.5 years), California State University-Long Beach, CA

Relevant JOC Experience

Gordian

As an Account Manager, and previously Project Manager, Ms. Grauten has responsibility for the implementation and continued support of the Job Order Contracting programs for several Agencies and Metro areas in the San Francisco Bay area. Some of her clients include:

- San Francisco State University
- City and County of San Francisco Public Works and Public Utilities Commission
- Sonoma and Contra Costa County

Her duties include assisting with development and implementation of the JOC program, preparation of execution procedures, preparation of contract documents, schedule and participation in pre-bid conferences and assisting with training and technical support.

Other Experience

Department of Public Works, Long Beach, CA

As a Public Works Project Manager for the City of Long Beach, Ms. Grauten was responsible for the development and implementation of the Long Beach JOC program. Responsibilities included development of the contract documents, terms and conditions, and the execution and oversight of the program.

Consulting Manager for Facilities and Construction, CA

As an independent consultant, Ms. Grauten provided facility and construction services to commercial building owners. Projects included ground-up construction, tenant improvements, manufacturing layouts, high voltage electrical, mechanical and civil construction services.

Linda Arceo

Project Account Manager

4 years of employment with Gordian, 26 years of experience in Project and Construction Management

Education

- B.S., Environmental/Occupational Safety and Health, California State University, Fresno

Relevant JOC Experience

Gordian

As an Account Manager, Ms. Arceo responsibilities include handling day-to-day development, implementation and support of the JOC program. She assists in training staff in the proper execution of the JOC program and use of the eGordian system, developing project assignments, scope identification, contractor proposal accuracy, and overall contract compliance.

Other Experience

M³ Environmental Consulting

As Director of Environmental Services provided hazardous materials recognition, assessment, remediation design needs, and regulatory compliance consulting as a California Certified Asbestos Consultant (CAC) and California Department of Public Health Department (CDPH) Lead Certified Consultant to various commercial, institutional, and residential clients. Conducted, cross-trained, and managed field staff in performing hazardous material investigations/assessments. Project managed and supervised to ensure supervision and employee performance reviews. Developed and reviewed technical reports, operation and maintenance plans, specifications and business response plans. Monitored and ensured implementation of project protocols, quality control, and provided technical consultation to staff and clients. Performed public and private sector regulatory compliance seminars. Prepared cost estimates, proposals, budgets, and bid documents. Conducted contract negotiations.

Wald Ruhnke & Dost Architects

Provided construction management services, project management, logistical coordination, resource planning. Scheduled costs analysis and budget management, as well as conducted site supervision during the construction phase to keep the project on schedule and within budget. Interacted with the owner, architects, engineers, consultants, and contractors during project programming, concept, design development, contract negotiation, bidding and construction phase. Reviewed proposals, drawings, material submittals, and construction schedules.

Certifications

- Certified EPA Renovator
- DOSH Certified Asbestos Consultant (No. 92-0760)
- CDPH Certified-Lead Related Construction Inspector/Assessor, Supervisor, Project Monitor, and Designer (No. 532)
- Certified NIOSH 582 Analyst
- Certified Scitech Advanced XRF Operator and Radiation Basic Safety
- Certified Scitech Radiation Safety Trained
- Certified in RMD LPA-1 XRFF Lead Paint Inspection System
- Certified 40 Hour Hazardous Waste Operator & Emergency Responder

Nicholas Jones

Project Account Manager

5.5 years of employment with Gordian

Education

- B.S., Landscape Architecture, California Polytechnic State University, San Luis Obispo, CA

Relevant JOC Experience

Gordian

As a Senior Account Manager, Mr. Jones provides Job Order Contracting leadership to a robust combination of central valley clients by leaning on his construction industry experience in the areas of design, project management, and estimating. He currently provides JOC program management and Job Order development services for the following:

- Kern County
- Fresno County
- City of Fresno
- University of California – Merced.

Other Experience

Staples Construction Company

As a Project Superintendent worked with JOC procurement, maintenance and renovation construction for public agencies, to include California Administrative Offices and California State University campuses. Responsibilities included coordinating subcontractors, developing scope of work, subcontractor bids and negotiations, estimating and building price proposals.

Mark Scott Construction Co.

During the initial JOC contract for Stanford University, Mr. Jones as the Assistant Project Manager assisted in managing the team in the renovation of several historical residences now incorporated as part of Stanford University. He worked through purchasing, logistics, RFI's and submittals for dormitories, and assisted with subcontractor quotes and buy-outs.

Entre Prises Climbing Walls

Served as Project Manager over the design, fabrication, and installation of rocking climbing walls erected in universities and military complexes, as well as sports complexes.

Tyler Benson

Project Account Manager

5.5 years of employment with Gordian

Education

- B.S., Architecture and Minor in Construction, California Polytechnic State University, San Luis Obispo, CA

Relevant JOC Experience

Gordian

As an Area Account Manager, Mr. Benson draws on his energy and background to seamlessly work on the development of construction procurement programs for various public agencies, including the delivery of construction management, estimating, facility planning/assessment, and planning services. He has experience with contract execution, program implementation, and contractor oversight for millions of dollars in facility renovation, maintenance, and improvement type projects. Direct management of a team of account managers and construction managers. Development of systems, procedures, and process to meet program objectives and create deliverables. Quarterly revenue forecasting and reporting to stakeholders. Pipeline projections and new business creation, including sales and project development.

Other Experience

Vernon Edwards Constructors, Inc.

Served as Superintendent and Project Manager responsible for planning, coordinating and managing the construction of numerous public works projects, both large and small scale. Estimated and bid projects competitively through the design-bid-build process. Coordinated the efforts of numerous contractors and trades in the field. Managed schedules, submittals, and contract compliance of all involved parties. Collaborated with public agencies, designers, engineers, and inspectors to complete projects on time, on budget, and to the satisfaction of all those involved.

Hoffman Associates, Inc

Construction Manager responsible for delivering pre-construction and construction services to numerous public agencies. Performed constructability reviews, estimating, and planning of multi-million-dollar projects. Managed the public competitive bid process and worked with administrators and project managers to ensure code and contract compliance adherence. Actively managed the activities and functions of designers, engineers, and general contractors in the field. Provided change order management and conflict resolution. Worked diligently to provide proactive management to ensure complete owner satisfaction and overall project success.

Professional Associations

- LEED Accredited Professional

Farhan Karimi

Project Account Manager

5 years of employment with Gordian

Education

- M.S., Structural Engineering, UCLA, CA
- B.S., Civil Engineering, UCLA, CA

Professional Affiliation

- California Board for Professional Engineers and Land Surveyors

Relevant JOC Experience

Gordian

As the Account Manager, Mr. Karimi responsibilities include handling day-to-day development, implementation and support of the JOC program. He assists in training staff in the proper execution of the JOC program and use of the eGordian system, developing project assignments, scope identification, contractor proposal accuracy, and overall contract compliance. He collaborates with the Clients as part of their JOC bidding process and works with the Client to develop and finalize their bidding documents; customize the Construction Task Catalog for the Client's specific needs; participates in pre-bid presentations. Additional duties include assisting the Owner with proposal review and ensuring the use of appropriate line items.

Other Experience

Simpson & Simpson Management Consulting, Inc.

Served as Project Manager responsible for planning, coordinating and managing the design and construction of assigned school facilities' projects with school staff, architects and contractors. Closed and certified over 100 construction projects. Procured over 90 construction contracts valued at over \$13 million utilizing job order contracting. Performed value engineering/plan checking and project cost estimating for project budget estimate. Approved requests for progress payments from contractors and architects. Coordinated the bidding of projects with the Purchasing Department and approved bid documents. Attended and provided expertise to meetings with architects and school administrators involving planning issues for on-going and new projects. Met with regulatory agencies on state and local levels as necessary. Provided for proper inspection of projects; managed project schedules; assured timely completion of projects; resolved issues and conflicts. Coordinated project development/construction with other departments as necessary.

Hilti Inc.

Worked as a Field Engineer meeting with architects, engineers, contractors, inspectors and building department officials to assess customer needs and make recommendation of appropriate and cost-effective solutions. Identified schedule and cost variances and corrected negative variances for projects within the program. Ensured strong quality control and quality assurance in support of engineering and construction activities. Worked with project managers in establishing design scope and criteria on various projects.

KPFF Consulting Engineers

As an Associate Engineer and Project Engineer assisted in design and development of construction drawings, the plan review process, and provided construction administration services for the LAC + USC Medical Center replacement project. Served as the Project Engineer for the Diagnostic & Treatment building responsible for all construction and design issues.

Casey Chung

Project Account Manager

2 years employed with Gordian, Over 7 years of Project Management experience

Education

- B.S., Business Administration, Cal State University, Los Angeles

Relevant JOC Experience

Gordian

As the Account Manager, Mr. Chung's responsibilities include handling day-to-day development, implementation and support of the JOC program. He assists in training staff in the proper execution of the JOC program and use of the eGordian system, developing project assignments, scope identification, contractor proposal accuracy, and overall contract compliance. Additional duties include assisting the Owner with proposal review and ensuring the use of appropriate line items.

Other Experience

Community Development Commission

Served as a Project Manager specializing in public housing modernization, rehabilitation of public facilities, ADA upgrades, community renovations, and residential sound insulation. Covered all phases of projects from predevelopment to project close out. Managed the rehabilitation of multiple sites to ensure project was complete and met the company's high-quality standards on a timely and cost-effective basis. Oversaw the work of selected general contractors and subcontractors. Successfully managed over 250 public housing units for kitchen and bathroom remodel from start to completion for the Housing Authority of the County of Los Angeles using \$3M of funding provided by the Housing and Urban Development. Spearheaded the procurement of the Job Order Contract program expediting procurement for over \$120M in contracts funded by Federal, State, and County funds for programs. Managed and maintained control of budgets throughout the duration of a project minimizing cost overrun by running quarterly reports and ensuring that funding levels were met. Effectively negotiated contracts and change orders with vendors, consultants, suppliers, architects, and contractors essentially reducing agency expenditures. Supported internal clients with coordinating the procurement for goods and services including development of scope of work, pre-proposal conferences, bid evaluation, vendor selection, and contract execution.

Served as a Labor Compliance Officer with the Community Development Commission for 10 years prior to taking the Project Manager position. Prepared detailed compliance reports, correspondences, and investigative reports to the U.S. Department of Housing and Urban Development and U.S. Department of Labor. Monitored vendor activity throughout the course of construction to ensure vendor compliance with state and federal labor laws including, but not limited to, the Davis-Bacon and related Acts, Federal Labor Standards, Provisions, and Section 3 of the Housing and Urban Development Act of 1968. Developed outreach campaigns for local workers, small business enterprises, and Section 3 businesses. Facilitated training and presentations to educate vendors of labor compliance requirements, state and federal labor laws, apprenticeship standards, prevailing wage requirements, certified payroll reports, and violation penalties. Performed audits to ensure vendor compliance including site visits, employee interviews and certified payroll review.

Leann Coalgrove

Account Manager

2 years of employment with Gordian, Over 14 years of Construction Industry experience

Education

- Certificate in Construction Technology, Norco City College

Relevant JOC Experience

Gordian

As the Account Manager, Ms. Coalgrove responsibilities include handling day-to day development, implementation, and support of the JOC program. She also assists in training staff in the proper execution of the JOC program, developing project assignments, scope identification and clarification. Meet with project manager, contractors and A/E team onsite to perform Joint Scope Meetings. Provide thorough proposal review for projects that include additional services. Perform JOC construction management services on 4 projects for the county, two ongoing and two successfully completed at Riverside United Health Services.

Other Experience

gkkworks

Served as a Project Engineer responsible for reviewing and understanding the construction documents and financial projections for the project. Developed estimates at various stages of plan development and construction change order pricing review. Assisted Project Superintendent in creating project schedules and monitoring contractors to ensure prompt and accurate work. Assisted with field coordination as needed onsite. Created and maintained project documentation including RFIs, CO logs, submittals and as-built drawings. Oversaw field and project engineering, quality control, contract admin, shop drawing review and scheduling. Assisted Project Manager in managing change orders (administering, pricing, submission and tracking). Coordinated and reviewed drawings, submissions, specification, changes and document control. Prepared and tracked progress payments and estimates. Assisted in subcontract administration. Managed project close-out process.

Vanir Construction Management, Inc.

Onsite Field Engineer responsible for the assembly PCO/CO package for owner approval with necessary back-up. Assisted with schedule preparation and review. Conducted background research for RFIs. Coordinated final inspection, the development and resolution of punch lists, and the shop drawing/submittal review and approval process. Assisted with determining the validity of contractor's request for change orders. Developed and maintained project progress photographs and required photographs/videos for dispute/claim documentation. Gathered the necessary documentation for all dispute issues and maintained up-to-date dispute files. Logged and tracked all PCOs/COs, RFIs, contractor correspondence and submittals. Assisted with maintaining a set of contract drawings with addenda, RFI, change orders, etc. Maintained daily reports. Participated in construction start-up and jobsite meeting with contractors and developed meeting minutes for CM review. Assisted with preparing and publishing monthly reports. Assisted with processing contractor's payment and forwarding to owner. Assisted with verifying that the contractor is maintaining project as-built drawings

Higginson + Cartozian Architects, Inc.

As a Construction Administrative Assistant handled DSA Project Closeout. Prepared project specifications for Architect review and checked submittals. Assisted CFO, CEO, Construction Administrator and Project Managers with all required documentation for projects. Tracked and filed all project paperwork. Prepared change orders, FCDs, CCDs and many other forms for submittal to DSA, school district boards, contractors, and owners. Researched and prepared proposals for new projects.

Attended pre-proposal, project, pre-construction and facility planner meetings and took notes as needed. Updated website periodically with new project pictures and current news.

Kent Pecora

Project Account Manager

6 years of employment with Gordian

Education

- B.S., Physics with minor in Economics, Dickinson College

Relevant JOC Experience

Gordian

As an Account Manager, Mr. Pecora's responsibilities include handling day-to-day development, implementation and support of the JOC program. He assists in training staff in the proper execution of the JOC program and use of the eGordian system, developing project assignments, scope identification, contractor proposal accuracy, and overall contract compliance. Additional duties include assisting the Owner with proposal review and ensuring the use of appropriate line items.

Other Experience

Sightlines

As a Project Lead, Mr. Pecora's responsibilities included analyzing data and providing recommendations to the Leadership Team of Educational institutions within North America. Mr. Pecora presented to college leadership, including Facilities Directors, Presidents, Chief Financial Officers, and Board of Trustees regarding the state of campus facilities and advised executive leadership on master plan policies to achieve strategic data driven decisions nationwide. He provided internal and external support for Sightlines and Gordian products and services. Mr. Pecora managed a team of analysts; implemented sound onboarding practices and partnered them to increase productivity and define and achieve professional development goals.

Served as a Senior Analyst with Sightlines for one year where he spearheaded the company's penetration to working with institutions in Canada, including a companywide whitepaper to highlight challenges and opportunities of the new market. Mr. Pecora curated and delivered strategic presentations to institutional leadership focused on actionable, data-driven recommendations; limiting risk and liability on campus, while minimally impacting the student experience. He also performed the Senior Analyst functions across key revenue drivers and flagship institutions for the Philadelphia office.

For 2 years, Mr. Pecora worked as an Analyst processing and analyzing data across related areas within college facilities departments to discover trends, create a strategic plan for areas of improvement and recognize cost savings. Mr. Pecora built presentations to enforce strategic decisions and realize operational efficiencies or areas of opportunity. He also created various models to forecast the effects of budget changes, investment impacts and staffing reductions.

Kelly Mingle

Director of Development and Implementation

10 years of employment with Gordian

Education

- A.S., Environmental Design/Architecture, Cosumnes River College

Relevant JOC Experience

Gordian

As Director of Development and Implementation, Ms. Mingle coordinates the accurate development and preparation of Contracts and General Conditions used to procure the JOC construction contractors.

In her previous role as an Account Manager, Ms. Mingle was responsible for the implementation and continued support of the Job Order Contracting programs for the following:

- California Administrative Office of the Courts
- Sacramento County

Other Experience

County of Sacramento, Architectural Services Division

Ms. Mingle was with the County of Sacramento for 9 years, serving primarily as a JOC Program Coordinator following one year as a Program Manager with the Architectural Services Division (ASD). Responsibilities included project management, supervision of 3 Project Managers, and coordination of the JOC program County-wide. ASD utilized JOC for the Sheriff, Probation, Parks, Courts, General Services, Department of Water Resources, County Airports System and Department of Transportation completing 300+ construction projects with a combined value greater than \$88 million.

Gap, Inc.

While at the Gap, Inc., Ms. Mingle was the Senior Project Manager and was responsible for multiple, simultaneous retail projects including indoor malls, outdoor malls, and strip center locations throughout the United States and Puerto Rico.

Ray Bailey Architects, Inc., MD

While at Ray Bailey Architects, Inc., Ms. Mingle performed construction administration duties on a multi-phased, \$85 million renovation/addition to The Mall of Columbia, Columbia Maryland. The Scope of the project included three new multi-level parking decks, a new two-level wing to the mall, relocation of the food court, and extensive site work.

Laura Albright, CSI, CDT

Development and Implementation Specialist

6 years of employment with Gordian

Education

- B.A., California State University/ Sacramento
Bachelor of Arts - Design, cum laude

Credentials

- Construction Specifications Institute
- Construction Document Technologist

Relevant JOC Experience

Gordian

As a Development and Implementation Specialist, Ms. Albright is responsible for preparing the Contract and General Conditions that are used to procure the JOC construction contractors.

Other Experience

Gap, Inc.

While at the Gap, Inc., Ms. Albright was a Project Manager and was responsible for multiple, simultaneous retail projects including indoor malls, outdoor malls, and strip center locations throughout the United States and Puerto Rico.

Tech Events, Inc.

While at Tech Events, Inc., Ms. Albright was the Director of Client Service, managed and implemented full delivery for corporate technical event logistics, composed and managed all client contracts and renewals, managed all aspects of client relationships, department and team coordination, and solutions implementation. Business strategy development and launch of sister company SolvD, marketing strategy, and social media strategy, content and implementation.

Closed Loop, Inc.

While at Closed Loop, Inc., Ms. Albright was the Director of Operations managing all aspects of facilities, finances, office operations, remote office coordination, business development and resource allocation.

Borges Architectural Group

While at Borges Architectural Group, Ms. Albright was the Design Project Manager and was responsible for all Interior Design projects, client services, design specifications, construction management, proposals and bid reviews.

Erica Ventura

Development and Implementation Specialist

6 months of employment with Gordian, 6+ years' experience in administration of Capital Projects within local government

Education

- B.A., English Literature, San Francisco State University

Relevant JOC Experience

Gordian

As a Development and Implementation Specialist, Ms. Ventura is responsible for preparing the Contract and General Conditions that are used to procure the JOC construction contractors.

Prior to coming on board at Gordian, Ms. Ventura worked for almost three years as the Assistant Project Specialist for County of Sonoma, General Services Department. She assisted in administering the JOC program using the eGordian software award as well as overseeing individual job orders per project. Administered full scope of public work contracts for the Sonoma County capital projects group including advertisement, bidding, contract administration, requirements for Department of Industrial Relations, and monitoring of contract through the life of the project. Wrote and published RFPs and RFQs as needed for both consultants and contractors, including proposal evaluations and resulting contracts.

Other Experience

Sonoma County, General Services Department

Ms. Ventura was the Administrative Aide responsible for maintaining and monitoring all consultant and construction contracts within the General Services Department, including writing professional services agreements, compiling front end specifications, bidding, advertising, Board notices, insurance, and other requirements. Executed projects, tracked budgets, monitored insurance compliance and kept the required paperwork filed with the county and state. Reported project data to California Department of Industrial Relations and interpreting and applying rules and regulations to contract documents. Regular contact with contractors and consultants to gather information and apply it to projects. Worked on county event planning ranging from Day of Caring to Bike to Work day as well as private events requiring license agreements.

Ms. Ventura also served as the Senior Office Assistant for about a year before moving into the Administrative Aide role. Her responsibilities included creating and maintaining all ID badges for county departments. Answering main phone line to General Services. Received and processed maintenance calls and work orders. Processed all incoming key requests. Assisted with insurance maintenance on consultant contracts. Main liaison for all garbage and recycling issues as well as pest control. Assisted with supply orders, signage requests, table and chair requests and records management as needed. Also assisted with human resource related tasks such as job interviews and application review.

Noam Reininger

Chief Product & Data Officer

3.5 years of employment with Gordian and over 15 years of Data and IT industry experience

Education

- B.B.A., Information Systems and East Asian Studies, University of Wisconsin

Experience

Gordian

Mr. Reininger is the Chief Product & Data Officer responsible for the development of Gordian's portfolio of technology and data solutions that solve the unique challenges of the construction industry. Mr. Reininger leads all aspects of development including product & data strategy, innovation, software development & data operations.

Other Experience

Dun & Bradstreet

As the Senior Vice President, Master Data and Data-as-a Service Solutions, lead global product management organization responsible for \$330 million in annual revenue. Organization includes both strategy and execution teams with over 150+ cross-functional staff members responsible for D&B's Master Data & Data-as-a-Service Portfolio.

DELL

As the Director of Solution Centers started up and led an enterprise class pre-sales organization from the ground up. Hired, trained and lead a staff of 22 solution architects and oversaw multi-million-dollar facility bring-ups in Austin, Chicago, DC and New York. Engaged with senior government dignitaries and drove media relation activities.

SALESVU

As the Chief Operating Officer was a founding member, started up, staffed and oversaw offshore development and drove sales and marketing activities. Responsibilities included investor relations, strategy and operations.

Ted Kail

Vice President of Product Management

15 years of employment with Gordian

Education

- Executive M.B.A., Northeastern University
- B.S., Business, Northeastern University

Relevant JOC Experience

Gordian

As the VP of Product Management, Mr. Kail is responsible for determining the strategic direction of all products across the construction lifecycle, which includes Planning, Estimating, and Procurement solutions.

Other Experience

Sightlines, LLC

Sr. Director of Product Management responsible for directing Sightlines' offerings across the full life cycle – from ideation through service implementation. Determined the strategic direction of all Sightlines' current products and made decisions around all new services and markets. Directed the acquisition and integration of the Pacific Partners Consulting Group (PPCG). Prior to product, Ted managed all new client relationships in the operations department. Implemented and provided Sightlines' services at over 100 institutions throughout North America.

Paul Cowan

Senior CTC Engineer

14 years of employment with Gordian

Education

- B.S., Management, Georgia Institute of Technology, Atlanta, GA, 2001

Certification

- Information Technology Certificate, Georgia Institute of Technology, 2001

Relevant JOC Experience

Gordian

As a Senior CTC Engineer, Mr. Cowan is responsible for improving, expanding and maintaining Gordian's proprietary Construction Task Database and for customizing and publishing client specific Construction Task Catalogs. He has well developed company expertise in design engineering and construction consulting, as well as value engineering.

Other Experience

Mr. Cowan has worked with manufacturing partners to design and produce products to assist the US Air Force with production and safety requirements.

John B. Melin, Jr.

CTC Cost Estimator - Manager

24 years of employment with Gordian

Education

- B.S., Building Construction, Georgia Institute of Technology

Licensures

- Certified Cost Professional, #1194, Originally certified 9/1/1991
- Project Management Professional, #04539, Originally certified 5/17/1995

Relevant JOC Experience

Gordian

Mr. Melin is the Manager for the CTC Data Team and responsible for gathering and processing data for use in developing our Construction Task Catalog database. Mr. Melin has prepared customized Construction Task Catalogs for over 100 public facility owners, including:

- New York Department of Transportation
- New York State Department of Environmental Conservation
- New York State Dormitory Authority
- State University Construction Fund

Project Time and Cost, Atlanta

Department of Defense, Worldwide

Project Manager responsible for the coordination and preparation of site specific Unit Price Books for DOD Job Order Contracts worldwide.

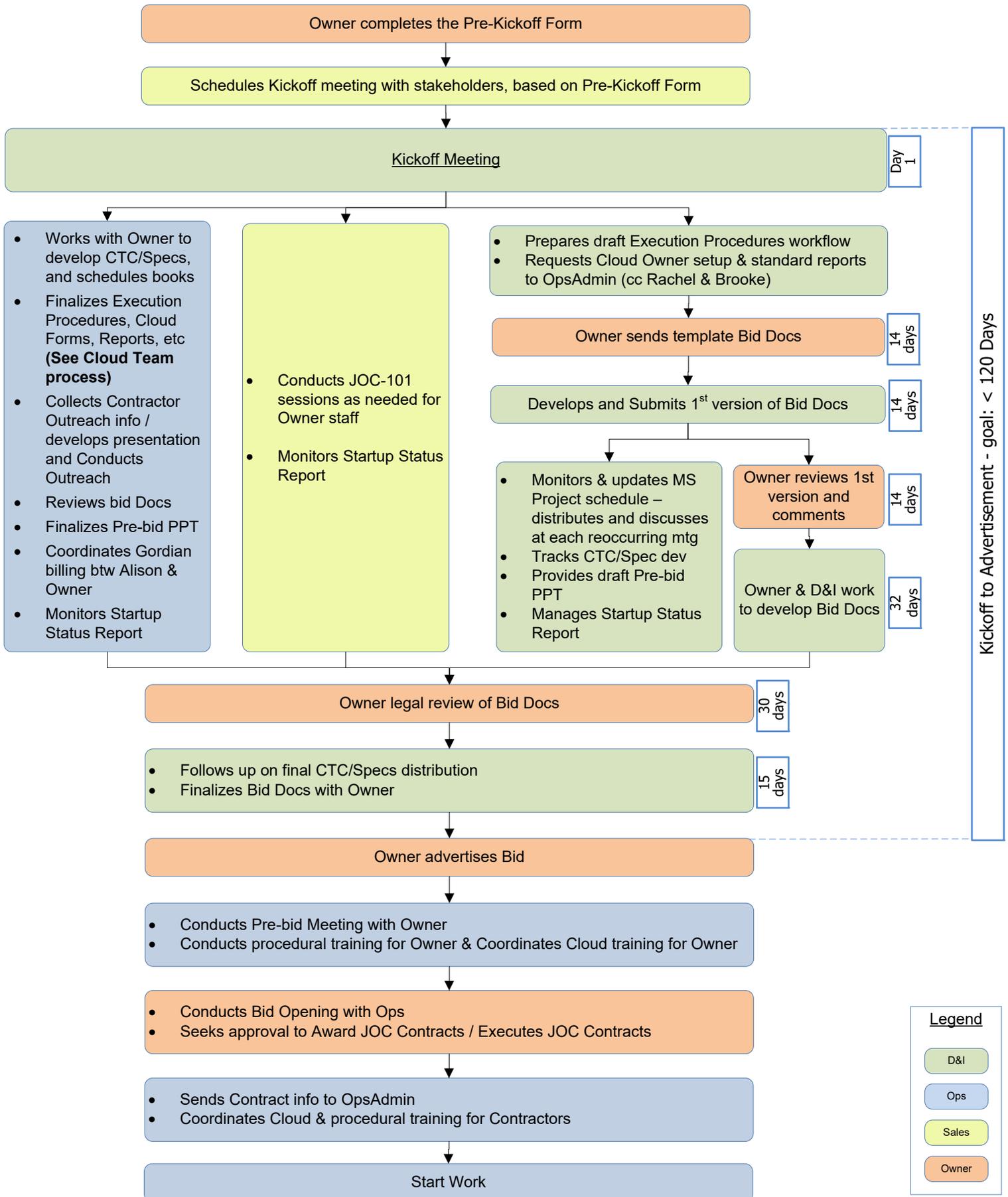
Database and Estimating Software Experience

- CACES, MCACES, M-CACES Composer Gold, MC2, Navy's CES, CEG

Professional Associations

- Association for the Advancement of Cost Engineers International

Job Order Contract New Owner Startup Process



EXAMPLE PROPOSAL RESPONSE

Off-Campus Housing Renovation

Using the Construction Task Catalog

About the CTC:

- ☑ This Construction Task Catalog[®] (CTC) was developed and customized by The Gordian Group, Inc. specifically for **University of California**, priced locally using current labor, material and equipment costs, and published in July 2020.
- ☑ The Gordian Group, Inc. licenses the use of this CTC and other proprietary information and software for the sole purpose of providing Job Order Contracting services to **University of California**. Use of this CTC and other proprietary information and software for any other purpose, or for any other entity, is expressly prohibited without the express written consent of The Gordian Group, Inc.

MasterFormat[™]

- ☑ The tasks in this Construction Task Catalog are organized using CSI's *MasterFormat*.



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The Unit Prices Include:

LABOR COSTS:

- ☑ Labor costs include direct labor through the working foreperson level at straight-time prevailing wage rates including fringe benefits and an allowance for Social Security, Medicare taxes, worker's compensation, unemployment insurance, and employee benefits.
- ☑ Labor costs include unloading equipment, materials, and tools, and transporting the same up or down 2 stories and 125' to reach the project site; layout; measuring and cutting to fit; performing the task; disposal of excess material; and time for lunch and breaks.

July 2020

EQUIPMENT COSTS:

- ☑ Equipment costs include all equipment required to accomplish the task.
- ☑ Mobilization is included for all equipment except large equipment (e.g. cranes, bulldozers, excavators, backhoes, bobcats etc.), which exclude mobilization.
- ☑ Equipment costs include all operating expenses such as fuel, electricity, lubricants, etc.

MATERIAL COSTS:

- ☑ Material costs include the cost of the material, delivery, and all incidentals and accessories integral to the installation.
- ☑ Material costs include manufacturer's and/or fabricator's shop drawings.
- ☑ Material costs for roofing, drywall, VCT, carpet, wall covering, ceiling tile, pipe, conduit, concrete, etc. include an allowance for waste. This list is not intended to be all inclusive, but descriptive of the types of construction materials that are typically sold in standard lengths, sizes and weights.
- ☑ Material costs for imported materials (e.g. aggregate, sand, soil, etc.) include delivery up to 15 miles from the closest approved source.

The Adjustment Factors Include:

The Adjustment Factors include the following costs, unless specifically excluded by the terms of the Contract Documents:

BUSINESS COSTS:

- ☑ Office overhead, including, but not limited to, office space, office equipment, office and management personnel, office supplies, and employee transportation.
- ☑ Insurance and bonding.
- ☑ Profit.

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- Job Order development services, Owner meetings, and other administrative services required by the Contract Documents.
- Subcontractor's overhead and profit.
- Cost of financing the work.
- Business risks such as the risk of a lower than expected volume of work, smaller than anticipated Job Orders, poor Subcontractor performance, and inflation or material cost fluctuations.

PROJECT RELATED COSTS:

- Project trailer, equipment and supplies, and portable toilets for Contractor's use.
- Project management and project supervision.
- Services required to complete project filings and obtain permits.
- Preparation and modification of sketches, drawings, submittals, as-built drawings, and other project records.
- Incidental engineering and architectural services.
- Gang boxes and storage containers for Contractor's tools, equipment and materials.
- Basic safety and warning signage, minor barricades (e.g., construction tape, etc.) and personnel safety equipment (e.g., hard hats, safety harnesses with lifeline or cabling, protective clothing, safety glasses, face shields, etc.).
- Meeting Owner's security requirements.
- All taxes for which a waiver is not available including material sales tax and equipment rental.
- Removing and returning Owner's furniture and furnishings (e.g. chairs, tables, pictures, etc. but excluding modular furniture, furnishings fastened to the wall or floor, safes and other furniture requiring disassembly).
- Sealing windows doors, and other openings with plastic to contain construction dust and debris within the work area, or to protect existing surfaces.
- Working in extreme temperatures (below or above normal) or adverse conditions such as rain, wind,

sleet or snow. Costs resulting from inadequate supply of building materials, fuel, electricity, or skilled labor.

- Daily clean-up.
- Final professional clean-up.

PRICE VARIATIONS:

- Contractors may experience direct costs that are different than the unit prices set forth in the Construction Task Catalog. While diligent effort was made to provide accurate, unit prices, it is the Contractor's responsibility to review and analyze the unit prices, and to calculate, prior to bidding, the Adjustment Factors accordingly.

SUMMARY:

- This list is not exhaustive and is intended to provide general examples of costs to be included in the Contractor's Adjustment Factors.
- The only compensation to be paid to the Contractor for unit price tasks will be:

Unit Price	X	Quantity	X	Adjustment Factor
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- No additional payments of any kind whatsoever will be made.
- All costs in excess of the unit prices, must be included in the Adjustment Factors.

General Rules:

- Unit prices are for complete and in-place construction and include all labor, equipment and material required to complete the task as described in the CTC.
- If the Contractor uses a crane or other lifting equipment (except a truck mounted boom lift or other equipment as part of the delivery process) to lift material onto a roof, even if that roof is less than

2 stories, the contractor will be paid for such crane or lifting equipment as a separate task.

- ☑ Unit prices include all fasteners such as anchor bolts, lag bolts, screws, adhesive, wedge anchors, expansion bolts, roofing clips (excluding hurricane clips) required. Fasteners listed separately in the CTC are for use with Owner furnished material and equipment or relocating or reinstalling existing material and equipment.
- ☑ Unit prices exclude more substantial mounting material such as threaded rod or angle iron unless the task description states otherwise.
- ☑ Unit prices for doors and windows, duct work, plumbing fixtures, seamless floors, countertops, roof flashing, pitch pockets, skylights, roof curbs, exterior trim, etc. include sealant and caulking.
- ☑ Unit prices include testing, calibrating, balancing, start-up services and the like required to ensure proper installation, construction and performance of the work (e.g. compaction test for backfill, balancing of heating ventilation and air conditioning, pneumatic or hydrostatic testing, soaping of joints, disinfection and flushing of water lines, etc.). Contractor may be paid for testing, calibrating, balancing, start-up services and the like for Owner supplied materials and equipment, or when working on or tying into existing materials and equipment.
- ☑ For the purpose of calculating the quantity of a task, quantities are calculated on a per project basis. The quantity so determined shall be used for the task and all appropriate modifiers, unless the task states otherwise.
- ☑ Whenever there are alternative tasks that may be selected to complete work, the Contractor shall select the most practical and economical tasks available (e.g. rental of equipment by weeks or months rather than days, or painting by roller or spray rather than brush).

DEMOLITION:

- ☑ Unit prices for demolition include all labor, equipment and material required for the complete removal of the items; clean-up of the area; and transporting the demolished items up or down 2 stories into a truck, dumpster, or to an owner

designated area, located within 125' of the project site.

- ☑ Unit prices for demolition exclude costs for hauling (See 01741900), dump fees (See 01741900), dumpsters (See 01741900), and trash chutes (See 01741900).
- ☑ If the item being demolished is attached to another item being removed and can be removed as one item, then that item shall not be priced as a separate demolition task, unless the component alone must be demolished to accomplish the task (e.g. demolition of pipe includes pipe fittings unless the fitting must be demolished separately to accomplish the task; demolition of a wood door includes hinges, hardware, closures, kick plates, etc.).
- ☑ The word "replace" includes removal of the existing item and installation of the new item.
- ☑ The words "remove and relocate" or "remove and reinstall" include removal, cleaning, and installation of the existing item in either the same location or another location.
- ☑ Salvageable materials are the property of the Owner and shall, if directed, be turned over to the Owner.

WORKING HEIGHT:

- ☑ Typical working height for work other than masonry is up to 14' above the finished floor or stationary working surface. The Contractor will not be paid for scaffolding, lifts, or similar equipment for work below 14'.
- ☑ Typical working height for masonry work is up to 4' above the finished floor or stationary working surface. The Contractor will not be paid for scaffolding, lifts, or similar equipment for masonry work below 4'.

FIELD ENGINEERING:

- ☑ Surveying tasks shall be used only when the Owner requests the Contractor to perform topographic surveys, property line surveys or to establish horizontal and vertical control points. If the Owner provides horizontal and vertical control points within or adjacent to the project site, all other surveying

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required to complete the work shall be considered construction staking or layout, and the cost thereof is included in the appropriate tasks.

ASSEMBLIES:

- ☑ Assembly tasks take precedence over individual component tasks.

RESTRICTED AND CONFINED SPACES:

- ☑ Restricted Working Space is defined as any area with less than 3' vertical or horizontal clearance and includes areas such as crawl spaces, ceiling plenums where the grid is not removed, narrow piping tunnels, and equipment rooms where the space to install the new work is congested as a result of equipment and piping placement that meet these dimensional restrictions. A Restricted Working Space modifier is available for certain mechanical piping and piping accessories tasks and for certain electrical conduit and conduit accessories tasks. Only those tasks with a modifier for Restricted Working Space are eligible for a price adjustment, and then only if the modifier applies to the contemplated tasks. A non pre-priced task will not be allowed because of Restricted Working Space for any CTC task.
- ☑ Confined Working Space is defined according to the OSHA definition 29 CFR 1926.21(b)(6)(i): "Any space having limited means of egress, which is subject to accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere, including, but not limited to, storage tanks, process vessels, bins, boilers, ventilation and exhaust duct, sewers, underground vaults, tunnels, pipelines and open top spaces more than 4 feet in depth such as pits and tubs." The Contractor shall conform to all OSHA and Owner requirements for working in Confined Working Spaces. Required ventilation and air monitoring equipment tasks shall be priced from the CTC.

TECHNICAL SPECIFICATIONS:

- ☑ Technical Specifications for tasks shall be interpreted as follows: All labor, material,

equipment, spare parts, services, and work required by a Technical Specification shall be considered included in the unit price, unless the task description states otherwise.

Or Equals:

- ☑ Whenever material, products, or equipment is identified in the CTC, or in the Technical Specifications, by reference to a manufacturer's name, make or model number, the identification is intended to establish a standard. Any material, product, or equipment of another manufacturer may be considered an or-equal provided that, in the opinion of the Owner, the material, product, or equipment so proposed is of equal quality, substance and function to the named item. The Contractor shall not install any proposed material, product, or equipment without the prior written approval of the Owner. The burden of proof, and all costs related thereto, concerning whether the proposed material, product, or equipment is an or-equal, shall be borne by the Contractor.

Useful Information:

UNIT OF MEASURE DEFINITIONS:

ACR – Acre, **BAG** – Bag, **BBL** – Barrel, **BCY** - Bank (In-place) Cubic Yards, **BF** - Board Foot, **BOX** - Box (each), **BTU** - British Thermal Unit, **C** - One Hundred, **CCF** - One Hundred Cubic Feet, **CCY** - Compacted Cubic Yards, **CF** - Cubic Foot, **CFM** - Cubic Feet Per Minute, **CI** – Cubic Inch, **CLF** - One Hundred Linear Feet, **CSF** - One Hundred Square Feet, **CSY** - Hundred Square Yards, **CWT** - Hundred Weight, **CY** - Cubic Yard, **CYM** - Cubic Yard Mile, **DAY** – Day, **DRM** - Drum (each), **EA** – Each, **FLR** - Floor (Per Floor), **FT** – Foot, **GAL** – Gallon, **GSF** - Ground Square Foot, **HR** – Hour, **HWT** - Hundred Carton Weight, **HYR** – Half Year, **IN** – Inch, **JOB** – Job, **LAN** – Lane, **LB** – Pound, **LCY** - Loose (Excavated) Cubic Yards, **LF** - Linear Foot, **LFD**

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- Linear Feet Per Day, **LIT** – Liter, **LOT** – Lot, **MBF** - One Thousand Board Feet, **MBH** - One Thousand British Thermal Units, **MCF** – One Thousand Cubic Feet, **MF3** - One Thousand Cubic Feet Per Minute, **MGL** – One Thousand Gallons, **MI** – Mile, **MLF** - One Thousand Linear Feet, **MO** – Month, **MSF** - One Thousand Square Feet, **MSY** - One Thousand Square Yards, **MT** – Metric Ton, **MTK** – Metric Ton Kilometer, **M2** – Square Meter, **M3K** – Cubic Meter Kilometer, **NTE** – Note, **OPN** – Opening, **OUT** - Outlet or Output (each), **OZ** – Ounce, **PKG** – Package, **PNT** – Point, **PR** – Pair, **QT** – Quart, **ROL** - Roll (each), **ROM** – Room, **ROW** – Row, **RSR** - Riser (Per Rise), **SEA** – Seat, **SET** – Set, **SF** - Square Foot, **SHT** – Sheet, **SI** - Square Inch, **STP** - Stop (each), **SQ** - Square or One Hundred Square Feet, **SY** - Square Yard, **SYI** – Inches per Square Yard, **TNM** - Tons per Mile, **TON** – Ton, **TRK** – Truck Load, **UI** - United Inch, **UNT** – Unit, **VLF** - Vertical Linear Foot, **WK** – Week, **YD** – Yard, **YR** – Year

Clay	3220	2150	3570
Gneiss	4550	2720	3180

BULK FACTORS FOR DEMOLITION:

The following bulk factors shall be used to calculate the volume of demolished material to be transported from the project site.

- **Asphalt** = 1.25
- **Concrete** = 1.40

CONVERSIONS:

1 Acre = 43,560 Square Feet = 4046.8 Square Meters

1 Board Foot = 12" x 12" x 1" = 144 Cubic Inches

1 Centimeter = 0.3937 Inches = 0.0328 Feet

1 Cubic Foot = 0.03704 Cubic Yards = 0.02832 Cubic Meters

1 Cubic Meter = 1.3080 Cubic Yards = 35.3147 Cubic Feet

1 Cubic Yard = 27 Cubic Feet = 0.7646 Cubic Meters

1 Foot = 12 Inches = 0.3048 Meters

1 Inch = 2.54 Centimeters = 0.0254 Meters

1 Kilogram = 2.2046 Pounds

1 Kilometer = 0.6214 Miles = 3280 Feet

1 Meter = 100 Centimeters = 3.2808 Feet

1 Mile = 5280 Feet = 1.6093 Kilometers

1 Pound = 0.4536 Kilograms

1 Square Foot = 144 Square Inches = .0929 Square Meters

1 Square Meter = 1.1960 Square Yards = 10.7639 Square Feet

1 Square Yard = 9 Square Feet = 0.8361 Square Meters

MATERIAL WEIGHTS:

EARTHEN MATERIAL

The following engineering values for establishing shrink/swell factors shall be used unless otherwise directed by the Owner.

Material	Material Weight (Lbs Per CY)		
	In-place (Bank)	Loose (Excavated Materials)	Compacted
Earth, Common (Average)	3170	2536	3520
Sand	2880	2590	3240
Earth, Rock Mix. (75% E/ 25% R)	3380	2370	3720
Earth, Rock Mix. (50% E/50% R)	3750	2710	4000
Earth, Rock Mix. (25% E/ 75% R)	4120	3140	3680
Gravel (Average)	3280	2730	3570
Limestone	4380	2690	3220
Riprap Rock (Average)	4500	2610	3150
Granite	4540	2640	3170
Basalt	4950	3020	3640

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1 Ton = 2000 Pounds = 907.185 Kilograms

1 Yard = 3 Feet = 0.9144 Meters

TRADEMARKS

- ☑ Gordian JOC Solution, JOC Complete Solution, JOC Complete Solution Plus, PROGEN, eGordian, eziQC, Construction Task Catalog, Catalog of Construction Tasks, DMAP, The Standard for Job Order Contracting and 6 Phase Development and Implementation Process are either registered trademarks or trademarks of The Gordian Group, Inc. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

Sheet Metal Thickness (inches)				
Gage No.	Steel Sheet	Galvanized Steel Sheet	Stainless Steel Sheet	Aluminum Sheet
10	.135	.138	.141	
11	.120	.123	.125	
12	.105	.108	.109	
13	.090	.093	.094	.072
14	.075	.079	.078	.064
15	.067	.071	.070	.057
16	.060	.064	.063	.051
17	.054	.058	.056	.045
18	.048	.052	.050	.040
19	.042	.046	.044	.036
20	.036	.040	.038	.032
21	.033	.037	.034	.028
22	.030	.034	.031	.025
23	.027	.031	.028	.023
24	.024	.028	.025	.020
25	.021	.025	.022	.018
26	.018	.022	.019	.017

STANDARD GEOMETRY:

Circle

- Circumference = $2 \pi \text{ radius} = \pi \text{ diameter}$
- Area = $\pi \text{ radius}^2 = \pi (\text{diameter}^2 / 4)$

Cylinder

- Volume = $(\pi \text{ radius}^2) \text{height}$
- Surface Area = $2 \pi \text{ radius}^2 + (2 \pi \text{ radius}) \text{height}$

Sphere

- Volume = $(4 \pi \text{ radius}^3) / 3$
- Surface Area = $4 \pi \text{ radius}^2$

$\pi = 3.14159$

United Inch

- The industry standard for measuring windows is the United Inch or UI. The UI is determined by adding the width and the height in inches.

EXAMPLE PROPOSAL RESPONSE
Off-Campus Housing Renovation
Specifications

SECTION 06 10 00 00 - ROUGH CARPENTRY

1.1 GENERAL

A. Description Of Work:

1. This specification covers the furnishing and installation of materials for rough carpentry. Products shall be as follows or as directed by the Owner. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.

B. Summary

1. This Section includes the following:
 - a. Framing with dimension lumber.
 - b. Framing with timber.
 - c. Framing with engineered wood products.
 - d. Rooftop equipment bases and support curbs.
 - e. Wood blocking, cants, and nailers.
 - f. Wood furring and grounds.
 - g. Wood sleepers.
 - h. Utility shelving.
 - i. Plywood backing panels.

C. Definitions

1. Exposed Framing: Framing not concealed by other construction.
2. Dimension Lumber: Lumber of 2 inches nominal (38 mm actual) or greater but less than 5 inches nominal (114 mm actual) in least dimension.
3. Timber: Lumber of 5 inches nominal (114 mm actual) or greater in least dimension.
4. Lumber grading agencies, and the abbreviations used to reference them, include the following:
 - a. NeLMA: Northeastern Lumber Manufacturers' Association.
 - b. NLGA: National Lumber Grades Authority.
 - c. RIS: Redwood Inspection Service.
 - d. SPIB: The Southern Pine Inspection Bureau.
 - e. WCLIB: West Coast Lumber Inspection Bureau.
 - f. WWPA: Western Wood Products Association.

D. Submittals

1. Product Data: For each type of process and factory-fabricated product. Indicate component materials and dimensions and include construction and application details.
 - a. Include data for wood-preservative treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Indicate type of preservative used and net amount of preservative retained.
 - b. Include data for fire-retardant treatment from chemical treatment manufacturer and certification by treating plant that treated materials comply with requirements. Include physical properties of treated materials based on testing by a qualified independent testing agency.
 - c. For fire-retardant treatments specified to be High-Temperature (HT) type, include physical properties of treated lumber both before and after exposure to elevated temperatures, based on testing by a qualified independent testing agency according to ASTM D 5664.
 - d. For products receiving a waterborne treatment, include statement that moisture content of treated materials was reduced to levels specified before shipment to Project site.
 - e. Include copies of warranties from chemical treatment manufacturers for each type of treatment.
2. LEED Submittals:

06 - Wood, Plastics, and Composites

- a. Product Data for Credit EQ 4.1: For adhesives, including printed statement of VOC content.
 - b. Product Data for Credit EQ 4.4: For composite-wood products, documentation indicating that product contains no urea formaldehyde.
 - c. Certificates for Credit MR 7: Chain-of-custody certificates certifying that products specified to be made from certified wood comply with forest certification requirements. Include evidence that mill is certified for chain of custody by an FSC-accredited certification body.
 - 1) Include statement indicating costs for each certified wood product.
3. Material Certificates: For dimension lumber specified to comply with minimum allowable unit stresses. Indicate species and grade selected for each use and design values approved by the ALSC Board of Review.
 4. Research/Evaluation Reports: For the following, showing compliance with building code in effect for Project:
 - a. Wood-preservative-treated wood.
 - b. Fire-retardant-treated wood.
 - c. Engineered wood products.
 - d. Power-driven fasteners.
 - e. Powder-actuated fasteners.
 - f. Expansion anchors.
 - g. Metal framing anchors.

E. Quality Assurance

1. Forest Certification: For the following wood products, provide materials produced from wood obtained from forests certified by an FSC-accredited certification body to comply with FSC STD-01-001, "FSC Principles and Criteria for Forest Stewardship":
 - a. Dimension lumber framing.
 - b. Timber.
 - c. Laminated-veneer lumber.
 - d. Parallel-strand lumber.
 - e. Prefabricated wood I-joists.
 - f. Rim boards.
 - g. Miscellaneous lumber.

F. Delivery, Storage, And Handling

1. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

1.2 PRODUCTS

A. Wood Products, General

1. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.
 - a. Factory mark each piece of lumber with grade stamp of grading agency.
 - b. For exposed lumber indicated to receive a stained or natural finish, mark grade stamp on end or back of each piece or omit grade stamp and provide certificates of grade compliance issued by grading agency.
 - c. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified. Where actual sizes are indicated, they are minimum dressed sizes for dry lumber.
 - d. Provide dressed lumber, S4S, unless otherwise indicated.

2. Engineered Wood Products: Provide engineered wood products acceptable to authorities having jurisdiction and for which current model code research or evaluation reports exist that show compliance with building code in effect for Project.
 - a. Allowable Design Stresses: Provide engineered wood products with allowable design stresses, as published by manufacturer, that meet or exceed those indicated. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
- B. Wood-Preservative-Treated Lumber
1. Preservative Treatment by Pressure Process: AWPA C2, except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWPA C31 with inorganic boron (SBX).
 - a. Preservative Chemicals: Acceptable to authorities having jurisdiction and containing no arsenic or chromium.
 - b. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not require incising, contain colorants, bleed through, or otherwise adversely affect finishes.
 2. Kiln-dry lumber after treatment to a maximum moisture content of 19 percent. Do not use material that is warped or does not comply with requirements for untreated material.
 3. Mark lumber with treatment quality mark of an inspection agency approved by the ALSC Board of Review.
 - a. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.
 4. Application: Treat all rough carpentry, unless otherwise indicated, **OR** items indicated on Drawings, and the following, **as directed**:
 - a. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 - b. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 - c. Wood framing and furring attached directly to the interior of below-grade exterior masonry or concrete walls.
 - d. Wood framing members that are less than 18 inches (460 mm) above the ground in crawlspaces or unexcavated areas.
 - e. Wood floor plates that are installed over concrete slabs-on-grade.
- C. Fire-Retardant-Treated Materials
1. General: Comply with performance requirements in AWPA C20 (lumber) and AWPA C27 (plywood).
 - a. Use Exterior type for exterior locations and where indicated.
 - b. Use Interior Type A, High Temperature (HT) for enclosed roof framing, framing in attic spaces, and where indicated.
 - c. Use Interior Type A, unless otherwise indicated.
 2. Identify fire-retardant-treated wood with appropriate classification marking of testing and inspecting agency acceptable to authorities having jurisdiction.
 - a. For exposed lumber indicated to receive a stained or natural finish, mark end or back of each piece or omit marking and provide certificates of treatment compliance issued by inspection agency.
 3. For exposed items indicated to receive a stained or natural finish, use chemical formulations that do not bleed through, contain colorants, or otherwise adversely affect finishes.
 4. Application: Treat all rough carpentry, unless otherwise indicated, **OR** items indicated on Drawings, and the following, **as directed**:
 - a. Framing for raised platforms.
 - b. Concealed blocking.
 - c. Framing for non-load-bearing partitions.

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- d. Framing for non-load-bearing exterior walls.
- e. Roof construction.
- f. Plywood backing panels.

D. Dimension Lumber Framing

1. Maximum Moisture Content: 15 percent **OR** 19 percent **OR** 15 percent for 2-inch nominal (38-mm actual) thickness or less, 19 percent for more than 2-inch nominal (38-mm actual) thickness **OR** 15 percent for 2-inch nominal (38-mm actual) thickness or less, no limit for more than 2-inch nominal (38-mm actual) thickness **OR** 19 percent for 2-inch nominal (38-mm actual) thickness or less, no limit for more than 2-inch nominal (38-mm actual) thickness, **as directed**.
2. Non-Load-Bearing Interior Partitions: Construction or No. 2 **OR** Construction, Stud, or No. 3 **OR** Standard, Stud, or No. 3, **as directed**, grade of any species.
3. Exterior and Load-Bearing Walls **OR** Framing Other Than Non-Load-Bearing Interior Partitions **OR** Framing Other Than Interior Partitions, **as directed**: Any species and grade with a modulus of elasticity of at least 1,500,000 psi (10 350 MPa) **OR** 1,300,000 psi (8970 MPa) **OR** 1,100,000 psi (7590 MPa) **OR** 1,000,000 psi (6900 MPa) **OR** 900,000 psi (6210 MPa), **as directed**, and an extreme fiber stress in bending of at least 1000 psi (6.9 MPa) **OR** 850 psi (5.86 MPa) **OR** 700 psi (4.83 MPa) **OR** 600 psi (4.14 MPa) **OR** 500 psi (3.45 MPa), **as directed**, for 2-inch nominal (38-mm actual) thickness and 12-inch nominal (286-mm actual) width for single-member use.
4. Ceiling Joists (Non-Load-Bearing): Construction or No. 2 **OR** Construction, Stud, or No. 3 **OR** Standard, Stud, or No. 3, **as directed**, grade of any species.
5. Joists, Rafters, and Other Framing Not Listed Above: Any species and grade with a modulus of elasticity of at least 1,500,000 psi (10 350 MPa) **OR** 1,300,000 psi (8970 MPa) **OR** 1,100,000 psi (7590 MPa) **OR** 1,000,000 psi (6900 MPa) **OR** 900,000 psi (6210 MPa), **as directed**, and an extreme fiber stress in bending of at least 1000 psi (6.9 MPa) **OR** 850 psi (5.86 MPa) **OR** 700 psi (4.83 MPa) **OR** 600 psi (4.14 MPa) **OR** 500 psi (3.45 MPa), **as directed**, for 2-inch nominal (38-mm actual) thickness and 12-inch nominal (286-mm actual) width for single-member use.
6. Exposed Exterior **OR** Interior, **as directed**, Framing Indicated to Receive a Stained or Natural Finish: Provide material hand-selected for uniformity of appearance and freedom from characteristics, on exposed surfaces and edges, that would impair finish appearance, including decay, honeycomb, knot-holes, shake, splits, torn grain, and wane.
 - a. Species and Grade: As indicated above for load-bearing construction of same type.
 - b. Species and Grade: Hem-fir (north), Select Structural **OR** No. 1, **as directed**, grade; NLGA.
 - c. Species and Grade: Southern pine, Select Structural **OR** No. 1 **OR** No. 2, **as directed**, grade; SPIB.
 - d. Species and Grade: Douglas fir-larch; Select Structural **OR** No. 1, **as directed**, grade; WCLIB, or WWPA.
 - e. Species and Grade: Mixed southern pine, Select Structural **OR** No. 1 **OR** No. 2, **as directed**, grade; SPIB.
 - f. Species and Grade: Spruce-pine-fir, Select Structural **OR** No. 1, **as directed**, grade; NLGA.
 - g. Species and Grade: Douglas fir-south; Select Structural **OR** No. 1, **as directed**, grade; WWPA.
 - h. Species and Grade: Hem-fir; Select Structural **OR** No. 1, **as directed**, grade; WCLIB, or WWPA.
 - i. Species and Grade: Douglas fir-larch (north); Select Structural **OR** No. 1, **as directed**, grade; NLGA.
 - j. Species and Grade: Spruce-pine-fir (south), Select Structural **OR** No. 1, **as directed**, grade; NeLMA, WCLIB, or WWPA.
 - k. Species and Grade: Eastern hemlock-balsam fir or eastern hemlock-tamarack; Select Structural **OR** No. 1, **as directed**, grade; NeLMA.
 - l. Species and Grade: Beech-birch-hickory, Select Structural **OR** No. 1, **as directed**, grade; NeLMA.

- m. Species and Grade: Northern red oak, Select Structural **OR** No. 1, **as directed**, grade; NeLMA.
- n. Species and Grade: Redwood, Clear Heart Structural **OR** Clear Structural **OR** Select Structural **OR** No. 1, **as directed**, grade; RIS.
- o. Species and Grade: Mixed oak, Select Structural **OR** No. 1, **as directed**, grade; NeLMA.
- p. Species and Grade: Mixed maple, Select Structural **OR** No. 1, **as directed**, grade; NeLMA.
- q. Species and Grade: Western cedars, Select Structural **OR** No. 1, **as directed**, grade; WCLIB, or WWPA.

E. Timber Framing

- 1. Provide timber framing complying with the following requirements, according to grading rules of grading agency indicated:
 - a. Species and Grade: Douglas fir-larch, Douglas fir-larch (north), or Douglas fir-south; Select Structural **OR** No. 1, **as directed**, grade; NLGA, WCLIB, or WWPA.
 - b. Species and Grade: Eastern hemlock, eastern hemlock-tamarack, or eastern hemlock-tamarack (north); Select Structural **OR** No. 1, **as directed**, grade; NeLMA or NLGA.
 - c. Species and Grade: Hem-fir or hem-fir (north), Select Structural **OR** No. 1, **as directed**, grade; NLGA, WCLIB, or WWPA.
 - d. Species and Grade: Mixed maple, Select Structural **OR** No. 1, **as directed**, grade; NeLMA.
 - e. Species and Grade: Mixed oak, Select Structural **OR** No. 1, **as directed**, grade; NeLMA.
 - f. Species and Grade: Southern pine, Select Structural **OR** No. 1, **as directed**, grade; SPIB.
 - g. Maximum Moisture Content: 20 **OR** 23, **as directed**, percent.
 - h. Additional Restriction: Free of heart centers.

F. Engineered Wood Products

- 1. Laminated-Veneer Lumber: Structural composite lumber made from wood veneers with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559 and containing no urea formaldehyde.
 - a. Extreme Fiber Stress in Bending, Edgewise: 3100 psi (21.3 MPa) **OR** 2900 psi (20.0 MPa) **OR** 2600 psi (17.9 MPa) **OR** 2250 psi (15.5 MPa), **as directed**, for 12-inch nominal- (286-mm actual-) depth members.
 - b. Modulus of Elasticity, Edgewise: 2,000,000 psi (13 700 MPa) **OR** 1,800,000 psi (12 400 MPa) **OR** 1,500,000 psi (10 300 MPa), **as directed**.
- 2. Parallel-Strand Lumber: Structural composite lumber made from wood strand elements with grain primarily parallel to member lengths, evaluated and monitored according to ASTM D 5456 and manufactured with an exterior-type adhesive complying with ASTM D 2559 and containing no urea formaldehyde.
 - a. Extreme Fiber Stress in Bending, Edgewise: 2900 psi (20 MPa) for 12-inch nominal- (286-mm actual-) depth members.
 - b. Modulus of Elasticity, Edgewise: 2,200,000 psi (15 100 MPa).
- 3. Wood I-Joists: Prefabricated units, I-shaped in cross section, made with solid or structural composite lumber flanges and wood-based structural panel webs, let into and bonded to flanges. Provide units complying with material requirements of and with structural capacities established and monitored according to ASTM D 5055.
 - a. Provide I-joists manufactured without urea formaldehyde.
 - b. Web Material: Either oriented strand board or plywood, complying with DOC PS 1 or DOC PS 2, Exposure 1 **OR** Plywood, complying with DOC PS 1 or DOC PS 2, Exposure 1 **OR** Plywood, complying with DOC PS 1, Exterior grade, **as directed**.
 - c. Structural Properties: Provide units with depths and design values not less than those indicated.
 - d. Provide units complying with APA PRI-400, factory marked with APA trademark indicating nominal joist depth, joist class, span ratings, mill identification, and compliance with APA standard.

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4. Rim Boards: Product designed to be used as a load-bearing member and to brace wood I-joists at bearing ends, complying with research/evaluation report for I-joists.
 - a. Manufacturer: Provide products by same manufacturer as I-joists.
 - b. Material: All-veneer product **OR** glued-laminated wood **OR** product made from any combination solid lumber, wood strands, and veneers, **as directed**. Provide rim boards made without urea formaldehyde.
 - c. Thickness: 1 inch (25 mm) **OR** 1-1/8 inches (28 mm) **OR** 1-1/4 inches (32 mm), **as directed**.
 - d. Provide performance-rated product complying with APA PRR-401, rim board **OR** rim board plus, **as directed**, grade, factory marked with APA trademark indicating thickness, grade, and compliance with APA standard.

G. Miscellaneous Lumber

1. General: Provide miscellaneous lumber indicated and lumber for support or attachment of other construction, including the following:
 - a. Blocking.
 - b. Nailers.
 - c. Rooftop equipment bases and support curbs.
 - d. Cants.
 - e. Furring.
 - f. Grounds.
 - g. Utility shelving.
2. For items of dimension lumber size, provide Construction or No. 2 **OR** Standard, Stud, or No. 3, **as directed**, grade lumber with 15 **OR** 19, **as directed**, percent maximum moisture content of any species.
3. For items of dimension lumber size, provide Construction or No. 2 **OR** Standard, Stud, or No. 3, **as directed**, grade lumber with 15 **OR** 19, **as directed**, percent maximum moisture content and any of the following species:
 - a. Hem-fir (north); NLGA.
 - b. Mixed southern pine; SPIB.
 - c. Spruce-pine-fir; NLGA.
 - d. Hem-fir; WCLIB, or WWPA.
 - e. Spruce-pine-fir (south); NeLMA, WCLIB, or WWPA.
 - f. Western woods; WCLIB or WWPA.
 - g. Northern species; NLGA.
 - h. Eastern softwoods; NeLMA.
4. For exposed boards, provide lumber with 15 **OR** 19, **as directed**, percent maximum moisture content and any of the following species and grades:
 - a. Eastern white pine, Idaho white, lodgepole, ponderosa, or sugar pine; Premium or 2 Common (Sterling) **OR** Standard or No. 3 Common, **as directed**, grade; NeLMA, NLGA, WCLIB, or WWPA.
 - b. Mixed southern pine, No. 1 **OR** 2, **as directed**, grade; SPIB.
 - c. Hem-fir or hem-fir (north), Select Merchantable or No. 1 Common **OR** Construction or No. 2 Common, **as directed**, grade; NLGA, WCLIB, or WWPA.
 - d. Spruce-pine-fir (south) or spruce-pine-fir, Select Merchantable or No. 1 Common **OR** Construction or No. 2 Common, **as directed**, grade; NeLMA, NLGA, WCLIB, or WWPA.
5. For concealed boards, provide lumber with 15 **OR** 19, **as directed**, percent maximum moisture content and any of the following species and grades:
 - a. Mixed southern pine, No. 2 **OR** 3, **as directed**, grade; SPIB.
 - b. Hem-fir or hem-fir (north), Construction or 2 Common **OR** Standard or 3 Common, **as directed**, grade; NLGA, WCLIB, or WWPA.
 - c. Spruce-pine-fir (south) or spruce-pine-fir, Construction or 2 Common **OR** Standard or 3 Common, **as directed**, grade; NeLMA, NLGA, WCLIB, or WWPA.
 - d. Eastern softwoods, No. 2 **OR** 3, **as directed**, Common grade; NeLMA.
 - e. Northern species, No. 2 **OR** 3, **as directed**, Common grade; NLGA.

- f. Western woods, Construction or No. 2 Common **OR** Standard or No. 3 Common, **as directed**, grade; WCLIB or WWPA.
 - 6. For blocking not used for attachment of other construction, Utility, Stud, or No. 3 grade lumber of any species may be used provided that it is cut and selected to eliminate defects that will interfere with its attachment and purpose.
 - 7. For blocking and nailers used for attachment of other construction, select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
 - 8. For furring strips for installing plywood or hardboard paneling, select boards with no knots capable of producing bent-over nails and damage to paneling.
- H. Plywood Backing Panels
- 1. Telephone and Electrical Equipment Backing Panels: DOC PS 1, Exposure 1, C-D Plugged, fire-retardant treated, **as directed**, in thickness indicated or, if not indicated, not less than 1/2-inch (13-mm) nominal thickness.
- I. Fasteners
- 1. General: Provide fasteners of size and type indicated that comply with requirements specified in this Article for material and manufacture.
 - a. Where rough carpentry is exposed to weather, in ground contact, pressure-preservative treated, or in area of high relative humidity, provide fasteners with hot-dip zinc coating complying with ASTM A 153/A 153M **OR** of Type 304 stainless steel, **as directed**.
 - 2. Nails, Brads, and Staples: ASTM F 1667.
 - 3. Power-Driven Fasteners: NES NER-272.
 - 4. Wood Screws: ASME B18.6.1.
 - 5. Lag Bolts: ASME B18.2.1 (ASME B18.2.3.8M).
 - 6. Bolts: Steel bolts complying with ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6); with ASTM A 563 (ASTM A 563M) hex nuts and, where indicated, flat washers.
 - 7. Expansion Anchors: Anchor bolt and sleeve assembly of material indicated below with capability to sustain, without failure, a load equal to 6 times the load imposed when installed in unit masonry assemblies and equal to 4 times the load imposed when installed in concrete as determined by testing per ASTM E 488 conducted by a qualified independent testing and inspecting agency.
 - a. Material:
 - 1) Carbon-steel components, zinc plated to comply with ASTM B 633, Class Fe/Zn 5.
OR
Stainless steel with bolts and nuts complying with ASTM F 593 and ASTM F 594, Alloy Group 1 or 2 (ASTM F 738M and ASTM F 836M, Grade A1 or A4).
- J. Metal Framing Anchors
- 1. Allowable Design Loads: Provide products with allowable design loads, as published by manufacturer, that meet or exceed those indicated **OR** of basis-of-design products, **as directed**. Manufacturer's published values shall be determined from empirical data or by rational engineering analysis and demonstrated by comprehensive testing performed by a qualified independent testing agency.
 - 2. Galvanized Steel Sheet: Hot-dip, zinc-coated steel sheet complying with ASTM A 653/A 653M, G60 (Z180) coating designation.
 - a. Use for interior locations where stainless steel is not indicated.
 - 3. Stainless-Steel Sheet: ASTM A 666, Type 304 **OR** 316, **as directed**.
 - a. Use for exterior locations and where indicated.
 - 4. Joist Hangers: U-shaped joist hangers with 2-inch- (50-mm-) long seat and 1-1/4-inch- (32-mm-) wide nailing flanges at least 85 percent of joist depth.
 - 5. I-Joist Hangers: U-shaped joist hangers with 2-inch- (50-mm-) long seat and 1-1/4-inch- (32-mm-) wide nailing flanges full depth of joist. Nailing flanges provide lateral support at joist top chord.
 - 6. Top Flange Hangers: U-shaped joist hangers, full depth of joist, formed from metal strap with tabs bent to extend over and be fastened to supporting member.
 - 7. Bridging: Rigid, V-section, nailless type, 0.050 inch (1.3 mm) thick, length to suit joist size and spacing.

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8. Post Bases: Adjustable-socket type for bolting in place with standoff plate to raise post 1 inch (25 mm) above base and with 2-inch- (50-mm-) minimum side cover, socket 0.062 inch (1.6 mm) thick, and standoff and adjustment plates 0.108 inch (2.8 mm) thick.
9. Joist Ties: Flat straps, with holes for fasteners, for tying joists together over supports.
10. Rafter Tie-Downs: Bent strap tie for fastening rafters or roof trusses to wall studs below, 1-1/2 inches (38 mm) wide by 0.050 inch (1.3 mm) thick. Tie fastens to side of rafter or truss, face of top plates, and side of stud below.
11. Rafter Tie-Downs (Hurricane or Seismic Ties): Bent strap tie for fastening rafters or roof trusses to wall studs below, 2-1/4 inches (57 mm) wide by 0.062 inch (1.6 mm) thick. Tie fits over top of rafter or truss and fastens to both sides of rafter or truss, face of top plates, and side of stud below.
12. Floor-to-Floor Ties: Flat straps, with holes for fasteners, for tying upper floor wall studs to band joists and lower floor studs, 1-1/4 inches (32 mm) wide by 0.050 inch (1.3 mm) thick by 36 inches (914 mm) long.
13. Hold-Downs: Brackets for bolting to wall studs and securing to foundation walls with anchor bolts or to other hold-downs with threaded rods and designed with first of two bolts placed seven bolt diameters from reinforced base.
14. Wall Bracing:
 - a. T-shaped bracing made for letting into studs in saw kerf, 1-1/8 inches (29 mm) wide by 9/16 inch (14 mm) deep by 0.034 inch (0.85 mm) thick with hemmed edges.
OR
Wall Bracing: Angle bracing made for letting into studs in saw kerf, 15/16 by 15/16 by 0.040 inch (24 by 24 by 1 mm) thick with hemmed edges.

K. Miscellaneous Materials

1. Sill-Sealer Gaskets:
 - a. Glass-fiber-resilient insulation, fabricated in strip form, for use as a sill sealer; 1-inch (25-mm) nominal thickness, compressible to 1/32 inch (0.8 mm); selected from manufacturer's standard widths to suit width of sill members indicated.
OR
Closed-cell neoprene foam, 1/4 inch (6.4 mm) thick, selected from manufacturer's standard widths to suit width of sill members indicated.
2. Adhesives for Gluing Furring and Sleepers to Concrete or Masonry: Formulation complying with ASTM D 3498 that is approved for use indicated by adhesive manufacturer.
 - a. Use adhesives that have a VOC content of 70 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Water-Repellent Preservative: NWWDA-tested and -accepted formulation containing 3-iodo-2-propynyl butyl carbamate, combined with an insecticide containing chloropyrifos as its active ingredient.

1.3 EXECUTION

A. Installation, General

1. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
2. Framing Standard: Comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.
3. Framing with Engineered Wood Products: Install engineered wood products to comply with manufacturer's written instructions.
4. Metal Framing Anchors: Install metal framing to comply with manufacturer's written instructions.
5. Do not splice structural members between supports, unless otherwise indicated.

6. Provide blocking and framing as indicated and as required to support facing materials, fixtures, specialty items, and trim.
 - a. Provide metal clips for fastening gypsum board or lath at corners and intersections where framing or blocking does not provide a surface for fastening edges of panels. Space clips not more than 16 inches (406 mm) o.c.
 7. Provide fire blocking in furred spaces, stud spaces, and other concealed cavities as indicated and as follows:
 - a. Fire block furred spaces of walls, at each floor level, at ceiling, and at not more than 96 inches (2438 mm) o.c. with solid wood blocking or noncombustible materials accurately fitted to close furred spaces.
 - b. Fire block concealed spaces of wood-framed walls and partitions at each floor level, at ceiling line of top story, and at not more than 96 inches (2438 mm) o.c. Where fire blocking is not inherent in framing system used, provide closely fitted solid wood blocks of same width as framing members and 2-inch nominal- (38-mm actual-) thickness.
 - c. Fire block concealed spaces between floor sleepers with same material as sleepers to limit concealed spaces to not more than 100 sq. ft. (9.3 sq. m) and to solidly fill space below partitions.
 - d. Fire block concealed spaces behind combustible cornices and exterior trim at not more than 20 feet (6 m) o.c.
 8. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.
 9. Comply with AWPA M4 for applying field treatment to cut surfaces of preservative-treated lumber.
 - a. Use inorganic boron for items that are continuously protected from liquid water.
 - b. Use copper naphthenate for items not continuously protected from liquid water.
 10. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following:
 - a. NES NER-272 for power-driven fasteners.
 - b. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
 - c. "Nailing Schedule," and Tables in Section 2304, of ICC's International Building Code.
 - d. Table 2306.1, "Fastening Schedule," in SBCCI's Standard Building Code.
 - e. Table R602.3(1), "Fastener Schedule for Structural Members," and Table R602.3(2), "Alternate Attachments," in ICC's International Residential Code for One- and Two-Family Dwellings.
 - f. Table 602.3(1), "Fastener Schedule for Structural Members," and Table 602.3(2), "Alternate Attachments," in ICC's International One- and Two-Family Dwelling Code.
 11. Use common wire nails, unless otherwise indicated. Select fasteners of size that will not fully penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting wood; do not countersink nail heads, unless otherwise indicated.
 12. For exposed work, arrange fasteners in straight rows parallel with edges of members, with fasteners evenly spaced, and with adjacent rows staggered.
 - a. Comply with approved **OR** indicated, **as directed**, fastener patterns where applicable. Before fastening, mark fastener locations, using a template made of sheet metal, plastic, or cardboard.
 - b. Use finishing nails, unless otherwise indicated. Do not countersink nail heads **OR** Countersink nail heads and fill holes with wood filler, **as directed**.
- B. Wood Ground, Sleeper, Blocking, And Nailer Installation
1. Install where indicated and where required for screeding or attaching other work. Form to shapes indicated and cut as required for true line and level of attached work. Coordinate locations with other work involved.
 2. Attach items to substrates to support applied loading. Recess bolts and nuts flush with surfaces, unless otherwise indicated.

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3. Provide permanent grounds of dressed, pressure-preservative-treated, key-beveled lumber not less than 1-1/2 inches (38 mm) wide and of thickness required to bring face of ground to exact thickness of finish material. Remove temporary grounds when no longer required.

C. Wood Furring Installation

1. Install level and plumb with closure strips at edges and openings. Shim with wood as required for tolerance of finish work.
2. Furring to Receive Plywood or Hardboard Paneling: Install 1-by-3-inch nominal- (19-by-63-mm actual-) size furring horizontally **OR** vertically **OR** horizontally and vertically, **as directed**, at 24 inches (610 mm) **OR** 600 mm, **as directed**, o.c.
3. Furring to Receive Gypsum Board **OR** Plaster Lath, **as directed**: Install 1-by-2-inch nominal- (19-by-38-mm actual-) size furring vertically at 16 inches (406 mm) **OR** 400 mm, **as directed**, o.c.

D. Wall And Partition Framing Installation

1. General: Provide single bottom plate and double top plates using members of 2-inch nominal (38-mm actual) thickness whose widths equal that of studs, except single top plate may be used for non-load-bearing partitions and for load-bearing partitions where framing members bearing on partition are located directly over studs. Fasten plates to supporting construction, unless otherwise indicated.
 - a. For exterior walls, provide 2-by-6-inch nominal- (38-by-140-mm actual-) **OR** 2-by-4-inch nominal- (38-by-89-mm actual-), **as directed**, size wood studs spaced 24 inches (610 mm) **OR** 16 inches (406 mm) **OR** 600 mm **OR** 400 mm, **as directed**, o.c., unless otherwise indicated.
 - b. For interior partitions and walls, provide 2-by-6-inch nominal- (38-by-140-mm actual-) **OR** 2-by-4-inch nominal- (38-by-89-mm actual-) **OR** 2-by-3-inch nominal- (38-by-64-mm actual-), **as directed**, size wood studs spaced 24 inches (610 mm) **OR** 16 inches (406 mm) **OR** 600 mm **OR** 400 mm, **as directed**, o.c., unless otherwise indicated.
 - c. Provide continuous horizontal blocking at midheight of partitions more than 96 inches (2438 mm) high, using members of 2-inch nominal (38-mm actual) thickness and of same width as wall or partitions.
2. Construct corners and intersections with three or more studs, except that two studs may be used for interior non-load-bearing partitions.
3. Frame openings with multiple studs and headers. Provide nailed header members of thickness equal to width of studs. Support headers on jamb studs.
 - a. For non-load-bearing partitions, provide double-jamb studs and headers not less than 4-inch nominal (89-mm actual) depth for openings 48 inches (1200 mm) and less in width, 6-inch nominal (140-mm actual) depth for openings 48 to 72 inches (1200 to 1800 mm) in width, 8-inch nominal (184-mm actual) depth for openings 72 to 120 inches (1800 to 3000 mm) in width, and not less than 10-inch nominal (235-mm actual) depth for openings 10 to 12 feet (3 to 3.6 m) in width.
 - b. For load-bearing walls, provide double-jamb studs for openings 60 inches (1500 mm) and less in width, and triple-jamb studs for wider openings. Provide headers of depth indicated or, if not indicated, according to Table R502.5(1) or Table R502.5(2), as applicable, in ICC's International Residential Code for One- and Two-Family Dwellings.
4. Provide diagonal bracing in exterior walls, at both walls of each external corner **OR** walls, at locations indicated, **as directed**, at 45-degree angle, full-story height, unless otherwise indicated. Use 1-by-4-inch nominal- (19-by-89-mm actual-) size boards, let-in flush with faces of studs **OR** metal wall bracing, let into studs in saw kerf, **as directed**.

E. Floor Joist Framing Installation

1. General: Install floor joists with crown edge up and support ends of each member with not less than 1-1/2 inches (38 mm) of bearing on wood or metal, or 3 inches (76 mm) on masonry. Attach floor joists as follows:
 - a. Where supported on wood members, by toe nailing or by using metal framing anchors.

- b. Where framed into wood supporting members, by using wood ledgers as indicated or, if not indicated, by using metal joist hangers.
 2. Fire Cuts: At joists built into masonry, bevel cut ends 3 inches (76 mm) and do not embed more than 4 inches (102 mm).
 3. Frame openings with headers and trimmers supported by metal joist hangers; double headers and trimmers where span of header exceeds 48 inches (1200 mm).
 4. Do not notch in middle third of joists; limit notches to one-sixth depth of joist, one-third at ends. Do not bore holes larger than 1/3 depth of joist; do not locate closer than 2 inches (50 mm) from top or bottom.
 5. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist at ends of joists unless nailed to header or band.
 6. Lap members framing from opposite sides of beams, girders, or partitions not less than 4 inches (102 mm) or securely tie opposing members together. Provide solid blocking of 2-inch nominal (38-mm actual) thickness by depth of joist over supports.
 7. Anchor members paralleling masonry with 1/4-by-1-1/4-inch (6.4-by-32-mm) metal strap anchors spaced not more than 96 inches (2438 mm) o.c., extending over and fastening to 3 joists. Embed anchors at least 4 inches (102 mm) into grouted masonry with ends bent at right angles and extending 4 inches (102 mm) beyond bend.
 8. Provide solid blocking between joists under jamb studs for openings.
 9. Under non-load-bearing partitions, provide double joists separated by solid blocking equal to depth of studs above.
 - a. Provide triple joists separated as above, under partitions receiving ceramic tile and similar heavy finishes or fixtures.
 10. Provide bridging of type indicated below, at intervals of 96 inches (2438 mm) o.c., between joists.
 - a. Diagonal wood bridging formed from bevel-cut, 1-by-3-inch nominal- (19-by-64-mm actual-) size lumber, double-crossed and nailed at both ends to joists.
 - b. Steel bridging installed to comply with bridging manufacturer's written instructions.
- F. Ceiling Joist And Rafter Framing Installation
1. Ceiling Joists: Install ceiling joists with crown edge up and complying with requirements specified above for floor joists. Face nail to ends of parallel rafters.
 - a. Where ceiling joists are at right angles to rafters, provide additional short joists parallel to rafters from wall plate to first joist; nail to ends of rafters and to top plate and nail to first joist or anchor with framing anchors or metal straps. Provide 1-by-8-inch nominal- (19-by-184-mm actual-) size or 2-by-4-inch nominal- (38-by-89-mm actual-) size stringers spaced 48 inches (1200 mm) o.c. crosswise over main ceiling joists.
 2. Rafters: Notch to fit exterior wall plates and toe nail or use metal framing anchors. Double rafters to form headers and trimmers at openings in roof framing, if any, and support with metal hangers. Where rafters abut at ridge, place directly opposite each other and nail to ridge member or use metal ridge hangers.
 - a. At valleys, provide double-valley rafters of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against valley rafters.
 - b. At hips, provide hip rafter of size indicated or, if not indicated, of same thickness as regular rafters and 2 inches (50 mm) deeper. Bevel ends of jack rafters for full bearing against hip rafter.
 3. Provide collar beams (ties) as indicated or, if not indicated, provide 1-by-6-inch nominal- (19-by-140-mm actual-) size boards between every third pair of rafters, but not more than 48 inches (1219 mm) o.c. Locate below ridge member, at third point of rafter span. Cut ends to fit roof slope and nail to rafters.
 4. Provide special framing as indicated for eaves, overhangs, dormers, and similar conditions, if any.
- G. Timber Framing Installation

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1. Install timber with crown edge up and provide not less than 4 inches (102 mm) of bearing on supports. Provide continuous members, unless otherwise indicated; tie together over supports as indicated if not continuous.
2. Where beams or girders are framed into pockets of exterior concrete or masonry walls, provide 1/2-inch (13-mm) air space at sides and ends of wood members.
3. Install wood posts using metal anchors indicated.
4. Treat ends of timber beams and posts exposed to weather by dipping in water-repellent preservative for 15 minutes.

H. Stair Framing Installation

1. Provide stair framing members of size, space, and configuration indicated or, if not indicated, to comply with the following requirements:
 - a. Stringer Size: 2-by-12-inch nominal- (38-by-286-mm actual-) size, minimum.
 - b. Stringer Material: Laminated-veneer lumber **OR** parallel-strand lumber **OR** solid lumber, **as directed**.
 - c. Notching: Notch stringers to receive treads, risers, and supports; leave at least 3-1/2 inches (89 mm) of effective depth.
 - d. Stringer Spacing: At least 3 stringers for each 36-inch (914-mm) clear width of stair.
2. Provide stair framing with no more than 3/16-inch (4.7-mm) variation between adjacent treads and risers and no more than 3/8-inch (9.5-mm) variation between largest and smallest treads and risers within each flight.

I. Protection

1. Protect wood that has been treated with inorganic boron (SBX) from weather. If, despite protection, inorganic boron-treated wood becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.
2. Protect rough carpentry from weather. If, despite protection, rough carpentry becomes wet, apply EPA-registered borate treatment. Apply borate solution by spraying to comply with EPA-registered label.

END OF SECTION 06 10 00 00

Task	Specification	Specification Description
06 11 13 00	06 10 00 00	Rough Carpentry
06 11 13 00	06 05 23 00a	Miscellaneous Carpentry

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SECTION 06 11 16 00 - ROUGH CARPENTRY RENOVATION

1.1 DESCRIPTION OF WORK

- A. This specification covers the furnishing and installation of materials for rough carpentry renovation. Products shall be as directed by the Owner. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.

1.2 GENERAL

A. Quality Assurance

1. Regulatory Requirements:

- a. Fire Retardant Treated Lumber and Plywood: Bear UL FR-S classification label.
- b. Preservative Treated Wood: Provide all heart redwood, cedar, or cyprus; or preservative-treated wood at following conditions in accordance with applicable building code:
 - 1) Wood framing, woodwork, and plywood up to and including subflooring at first-floor level of structures having crawl spaces, when bottoms of such items are 150 mm (6 inches) or less from earth underneath.
 - 2) Exterior wood steps, platforms, and railings.
 - 3) Wood sills, soles, plates, furring, and sleepers that are less than 150 mm (6 inches) from earth, furring and nailers that are set into or in contact with concrete or masonry.
 - 4) Nailers, edge strips, crickets, curbs, and cants for roof decks.
 - 5) Furring strips used on walls or partitions below grade and exterior walls above grade.
 - 6) Wood members used for rough framing of openings in exterior concrete or masonry walls.

B. Delivery, Storage, And Handling

- 1. General: Deliver material to site, off-load, and handle in manner that will not damage material. Store material off ground and cover with waterproof covering. Provide adequate ventilation.
 - a. Interior Fire-Retardant Treated Wood: Keep dry at all times. Replace material that has become wet. Store off ground, in building, or covered with unbroken water-tight cover in storage yard, during transit, and at job site. Keep ventilated to avoid moisture condensation.

C. Project Conditions

- 1. Environmental Requirements: Execute demolition and renovation in manner to limit unnecessary dust and noise, and in compliance with applicable codes and federal or state requirements. Burning of materials on site not allowed.
- 2. Existing Conditions: See Detailed Scope of Work. Do not interfere with use of occupied buildings or portions of buildings. Maintain free and safe passage to and from occupied areas.
- 3. Protection:
 - a. Provide necessary temporary shoring and bracing to support and protect portions of existing buildings during demolition operations. Leave such shoring in place until permanent supports have been installed. Be solely responsible for design, safety, and adequacy of temporary shoring and bracing and its ability to carry load for which intended.
 - b. Contractor: Protect grounds, plantings, buildings, and any other facilities or property from damage caused by construction operations.
- 4. Safety: Cease operations at endangered area, and notify the Owner immediately if safety of structure appears to be endangered. Take precautions to properly support structure. Do not resume work in endangered area until safety is restored.

D. Scheduling And Sequencing

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1. Scheduling and Completion: Comply with requirements of Detailed Scope of Work.

1.3 PRODUCTS

A. Materials

1. Materials for Patching, Extending, and Matching:
 - a. Provide same products or types of construction as in existing structure, as needed to patch, extend, or match existing work.
 - 1) Generally, Contract Documents will not define products or standards of workmanship present in existing construction. Determine products by inspection and testing as necessary, and required workmanship by reference to existing as sample of comparison.
 - 2) Patching, extending, and matching existing work and systems shall result in complete, finished system.
 - b. Presence of product, finish, or type of construction requires that patching, extending, or matching be performed as necessary to make work complete and consistent.
2. Lumber: Each Piece of Lumber: Grade stamped by recognized association or independent inspection agency certified by American Lumber Standards Committee's Board of Review.
 - a. New Replacement Studs and Joists: Match existing and complies with Reference Standards.
 - b. Wood Studs and Joists: No. 2 Grade or better.
 - c. Sill Plates on Concrete: All heart redwood, cedar, or cyprus: or preservative-treated wood.
 - d. Blocking and Furring: Standard Grade or Better.
 - e. Preservative-Treated: AWPB LP-2, pressure-treated with waterborne preservative. Penta or creosote not allowed.
 - 1) Treat drilled holes and cuts across grain in accordance with AWPA M4.
 - f. Fire-Retardant Treated:
 - 1) Lumber: AWPA C20 Interior Type A.
 - 2) Plywood: AWPA C27 Interior Type A.
 - 3) Bear UL FR-S classification label.
 - g. Pressure-Treated Lumber: Bear AWPA Quality Mark C-2.
 - h. Seasoning: Kiln dry to following (including treated material):
 - i. Lumber Up to 50 mm (2 inches): 19 percent or less moisture content.
 - j. Preservative- and Fire-Retardant Treated Material: Mill or rip material parallel to grain prior to treatment.
3. Plywood: PS-1: Each panel identified with APA grade trademark.
 - a. Subfloor: APA Rated Sheathing, Tongue and groove, Exposure 1 (interior with exterior glue).
 - 1) Span Rating: Not less than spacing of framing members.
 - 2) Thickness: In accordance with APA Recommendations.
 - b. Roof Sheathing: APA Rated Sheathing, Exposure 1 (interior with exterior glue).
 - 1) Span Rating: Not less than spacing of framing members.
 - 2) Thickness: In accordance with APA Recommendations.
 - c. Wall Sheathing: APA CD, Exposure 1 (Interior with exterior glue).
 - 1) Span Rating: Not less than spacing of framing members.
 - 2) Thickness: As indicated.
 - d. Panel Edge Clips: Extruded aluminum or hot-dipped galvanized steel, H-shaped clips to prevent differential deflection of roof sheathing.
 - e. Fire-Retardant Treated Plywood: Bear UL FR-S classification label.
 - 1) Interior Plywood Fire Retardant Treatment: AWPA C27 Interior Type A.
 - 2) Exterior Plywood Fire Retardant Treatment: AWPA C27 Exterior Type.
 - f. Seasoning: Kiln dry plywood to 15 percent or less moisture content.
 - 1) Pressure Treated Plywood: Kiln dry lumber after treatment.
 - g. Nails: Type and size as recommended by APA.

4. Metal Framing Anchors: Punched and formed for nailing so that nails will be stressed in shear only.
 - a. General: Provide with nails and bolts according to manufacturers requirements.
 - 1) Nails: Zinc coated.
 - b. Types: As indicated and as required to accommodate framing.
 - c. Sizes: Of sufficient size and strength to develop full strength of supported member in accordance with applicable building code.
 - d. Metal Bridging: Minimum No. 16 U.S. Standard gage.
 - e. Finish: Hot-dipped galvanized.
5. Anchor Bolts: Furnish anchors to be built into concrete and masonry for anchorage of wood.
6. Rough Hardware: Provide necessary bolts, screws, nails, clips, plates, straps, hangers, etc., necessary for completion of renovation work. Provide correct material of proper size and strength for purpose intended, conforming to Reference Standards and applicable building codes.
 - a. Exterior Locations and for Fire-Retardant- and Preservative-Treated Wood: Provide galvanized rough hardware.
7. Vapor Barrier at Crawl Spaces: ASTM D 2103, 0.15 mm (6 mil) polyethylene sheeting.
8. Insulation: Type and R-value to comply with applicable codes and regulations.
 - a. Blanket Insulation: ASTM C 665 fiberglass blankets. Exposed insulation shall be foil-faced with flame-spread rating of 25 or less in accordance with ASTM E 84, where required by applicable codes and regulations.

1.4 EXECUTION

A. Examination

1. Units, Spaces, and Areas to be Renovated: Comply with Detailed Scope of Work.
 - a. Verify that surfaces to receive rough carpentry are prepared to require grades and dimensions.

B. Preparation

1. Dust Protection: Comply with Detailed Scope of Work.
2. Building Occupation: Carry out demolition and renovation work to cause as little inconvenience to occupants as possible. See Detailed Scope of Work.
3. Protection: See Detailed Scope of Work.
4. Selective Demolition: Comply with Detailed Scope of Work.

C. Laying Out Work

1. Discrepancies: Verify dimensions and elevations indicated in layout of existing work.
 - a. Prior to commencing work, carefully compare and check Drawings (if any) for discrepancies in locations or elevations of work to be executed.
 - b. Refer discrepancies among Drawings (if any), Specifications, and existing conditions to the Owner for adjustment before work affected is performed.
 - 1) Failure to make such notification shall place responsibility on Contractor to carry out work in satisfactory, workmanlike manner.
2. Contractor: Responsible for location and elevation of construction contemplated by Construction Documents.

D. Performance

1. Patching: Patch and extend existing work using skilled mechanics who are capable of matching existing quality of workmanship.
 - a. Quality of Patched or Extended Work: Not less than specified for new work. If similar new work is not specified, equal to existing work.
2. General: Perform in accordance with AF&PA National Design Specification for Wood Construction, latest Edition.
 - a. Framing: Erect plumb, level and true and rigidly anchor in place. Cut framing square on bearings, closely fit, accurately set to required lines and levels.

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- b. Nail or spike members in accordance with applicable codes.
 - c. Framing: 400 mm (16 inches) OC unless otherwise indicated.
 - d. Shims: Do not use shims for leveling on wood or metal bearings. Use steel or slate shims with full bearing on masonry or concrete.
 - e. Do not splice framing members between bearing points.
 - f. Metal Framing Anchors: Install where required for proper connections in accordance with manufacturer recommendations. Drive nail in each nail hole provided in anchor.
3. Wood Framing:
- a. Openings: Frame members for passage of pipes and ducts to avoid cutting structural members. Do not cut, notch, or bore framing members for passage of pipes or conduits without the Owner's permission. Reinforce framing members as directed where damaged by cuffing.
 - b. Firestopping: Firestop concealed spaces in framing. No shutoff by framing members to prevent drafts from one space to another. Use 50 mm (2 inch) nominal thick accurately fit wood blocking to fill opening.
 - c. Joists and Beams: Sizes and spacing as indicated.
 - 1) Set crown edge-up with 90 mm (3-1/2 inch) bearing unless noted otherwise.
 - 2) Toe nail joists to wood sills with 16d nails both sides or secure with metal connectors. Lap and spike joists over supports.
 - 3) Double joists to form headers and trimmers at openings over 1,200 mm (4 feet) and support with metal joist hangers.
 - 4) Provide joist hangers at joists framing into flush wood beams.
 - d. Provide blocking or suitable edge support between members as necessary to support edges of sheathing.
 - e. Replace warped lumber in walls and joists prior to installation of finish surface.
4. Anchors: Unless otherwise indicated, bolt plates firmly to concrete or masonry with anchor bolts in accordance with applicable code.
- a. In Masonry: Embed anchor bolts minimum 400 mm (16 inches) and provide each with nut and 50 mm (2 inch) diameter washer at bottom end. Grout bolts with mortar.
 - b. In Concrete: Embed anchor bolts minimum 200 mm (8 inches) and provide each with nut and 50 mm (2 inch) diameter washer at bottom end. 90 degree bent end may be substituted for nut and washer.
5. Wood Studs: Install at 400 mm (16 inches) OC with single bottom plate and double top plate with joints staggered.
- a. Double studs at openings and triple at corners and intersections. Double headers with double trimmers over openings.
6. Plywood Sheathing: Install in accordance with APA Recommendations.
- a. Provide space at end and side joints as recommended by APA.
 - b. Install panels with face grain perpendicular to supports with end-joints supported. Stagger ends of adjacent sheets 1 200 mm (4 feet) where possible.
 - c. Where support spacing exceeds maximum span for unsupported edge, provide adequate blocking, tongue and groove edges, or panel edge clips, in accordance with APA E30-L.
 - d. Nail in accordance with APA's Recommendations.
7. Preservative- and Fire-Retardant Material: Milling or ripping material parallel to grain not allowed unless material is treated after milling or ripping.
- a. Preservative-Treated Material: Treat drilled holes and cuts across grain in accordance with AWPA M4.
- E. Flooring Work
- 1. Defective Joists and Subfloor: Remove defective joists and subfloor which no longer satisfy structural requirements with new material to fulfill their structural function.
 - a. Remove ceiling, subfloor, and joists in safe manner and at minimum inconvenience to residents.
 - b. Splice, strengthen, support, or replace rotted or otherwise defective joists to fulfill their anticipated structural function.

- c. New Replacement Joists: Comply with requirements of appropriate section specifying new flooring, including flooring manufacturer's recommendations.
 - d. Ceiling Replacement: Include removal and replacement of ceiling finish to match existing.
 - 1) Glue and screw new ceiling material to bottom of joists.
 - 2) Paint entire ceiling of space affected by replacement matching color of existing walls in accordance with Division 9 Section "Painting."
 - e. Crawl-Space Insulation: Replace insulation damaged by or removed during construction operations. If there is no existing insulation, provide new insulation, where required.
 - 1) Insulation: Type and R-value to comply with applicable codes and regulations.
 - f. New Replacement Subfloor: Install in accordance with APA Recommendations and with requirements of appropriate section specifying new flooring, including flooring manufacturer's recommendations.
 - 1) Glue and nail new subfloor to joists.
 - 2) Nail in accordance with APA's Recommendations and sufficiently to avoid squeaking floors.
 - g. Base at walls: Replace wood base (including coves and corner rounds) with new wood base to match existing.
2. Above-Grade Floors to Receive Resilient Flooring: Examine to ensure that vapor-barrier sheet is laid over ground, sheets lapped, edge joints sealed and sufficient cross ventilation exists to insure dryness.
- a. If vapor barrier does not cover ground in crawl space, install vapor barrier in accordance with applicable codes and regulations.
 - 1) Completely cover ground at crawl spaces with minimum 150 mm (6 inch) lapped joints.
 - 2) Tape all lapped joints with water-resistive tape in accordance with manufacturer's recommendations.
 - 3) Protect vapor barrier from puncture and displacement. Lay heavy objects such as pieces of masonry at intervals not over 1 200 mm (4 feet) OC at lapped joints to hold in place. If punctures occur in vapor barrier, repair by placing patches of vapor-barrier material over punctures and taping all lapped joints.
 - b. If crawl space does not have enough ventilation, install additional vents in accordance with applicable codes and regulations.
3. Floors Damaged by Construction Operations: Patch floor damage to match existing floor surfaces, and comply with requirements for new flooring.
- F. Roofing Work
- 1. Removal of Existing Roofing: Roofing may contain asbestos fibers. Comply with applicable codes, laws, and regulations regarding asbestos materials.
 - 2. Defective Rafters and Sheathing: Remove defective rafters and sheathing which no longer satisfy structural requirements with new material to match existing.
 - a. Remove sheathing and rafters in safe manner and at minimum inconvenience to residents.
 - b. Splice, strengthen, support, or replace rotted or otherwise defective rafters to fulfill their anticipated structural function.
 - c. New Replacement Sheathing: Install in accordance with APA Recommendations and with requirements of applicable Division 7 roofing Sections.
 - 1) Nail in accordance with APA's Recommendations.
- G. Blocking And Furring
- 1. Blocking: Install wood blocking as required for proper support of hardware, bath accessories, cabinets, and other wall-mounted items.
 - a. Set true to line, level, or plumb, well-secured in stud wall and flush with back of drywall or other wall finish.
 - b. Coordinate exact locations with other sections.
 - 2. Rough Wood Bucks: Set true and plumb and anchor to concrete or masonry with steel straps extending into wall minimum 200 mm (8 inches). Place anchors near top and bottom of buck and space uniformly at maximum 600 mm (24 inches) OC. Provide nominal 50 mm (2 inch) thick if not indicated.

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3. Wood Furring: Install wood furring on masonry or concrete walls in sizes and spacing as indicated on Drawings (if any). Provide minimum 25 mm by 75-mm (1 inch by 3 inch) nominal furring strips spaced at maximum of 400 mm (16 inches) OC if not indicated.
 - a. Securely fasten wood furring at maximum 900 mm (3 feet) OC with toggle or expansion bolts, cut concrete nails or ramset anchors as required. Do not use wood plugs.
 - b. Install furring around openings and at corners.
 - c. Erect furring plumb and level, and shim out as required to provide true, even plane with surfaces suitable to receive required finish.

END OF SECTION 06 11 16 00

Task	Specification	Specification Description
06 11 16 00	01 22 16 00	No Specification Required
06 11 16 00	06 10 00 00	Rough Carpentry
06 11 16 00	06 05 23 00a	Miscellaneous Carpentry

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SECTION 09 23 13 00 - GYPSUM BOARD RENOVATION

GENERAL

Description Of Work

1. This specification covers the furnishing and installation of materials for gypsum board renovation. Products shall be as directed by the Owner. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.

Submittals

2. Quality Assurance/Control Submittals
 - a. Certificates: Manufacturer's written certification that gypsum products meet or exceed specified requirements.

Quality Assurance

3. Regulatory Requirements:
 - a. Gypsum Board Partitions: Listed and labeled for fire-protective ratings as indicated or scheduled.
 - b. Gypsum Board Floor/Ceilings and Roof/Ceiling Assemblies: Listed and labeled for fire protective ratings as indicated or scheduled.
 - c. Fire-Rated Assemblies: Comply with UL 05, FM P8016, or GA 600 for required fire-rated assembly.

Delivery, Storage, And Handling

4. Storage and Protection: Store wallboard off ground to protect it from weather and damage due to moisture damage.
 - a. Wallboard: Dry, free of warpage, and have bundling tape intact immediately prior to use.

Project Conditions

5. Environmental Requirements: Comply with Detailed Scope of Work.
 - a. During gypsum-panel application and finishing, maintain indoor temperatures within range of 13 degrees C (55 degrees F) to 21 degrees C (70 degrees F). Provide adequate ventilation to carry off excess moisture.
6. Existing Conditions: See Division 1 Section "Summary of Work". Do not interfere with use of occupied buildings or portions of buildings. Maintain free and safe passage to and from occupied areas.
7. Protection: Protect grounds, plantings, buildings and any other facilities or property from damage caused by construction operations.

Scheduling And Sequencing

8. Scheduling and Completion: Comply with Detailed Scope of Work.

PRODUCTS

Materials

9. Materials for Patching, Extending, and Matching:

09 - Finishes

- a. Provide same products or types of construction as in existing structure, as needed to patch, extend, or match existing work.
 - 1) Generally, Contract Documents will not define products present in existing construction. Determine products by Inspection and any necessary testing.
 - 2) Patching, extending, and matching of existing work and systems shall result in a complete, finished system.
- b. Presence of product, finish, or type of construction requires that patching, extending, or matching be performed as necessary to make work complete and consistent.

Metals

10. Partition Metals: ASTM C 645, galvanized steel:
 - a. Interior Steel Studs: Minimum 0.46 mm (25 gage), provide sizes and gages to match existing or as indicated.
 - 1) Provide minimum of 0.84 mm (20 gage) studs both sides of hollow metal frames.
 - b. Steel Stud Runners: Match studs. Provide long leg runners for slip joint at structure above to allow for deflection.
 - c. Furring Channels: Hat-shaped furring channels, minimum 0.46 mm (25 gage).
 - d. Resilient Furring Channels: Manufacturer's standard product designed to reduce sound transmission by resilient attachment of gypsum board, 13 mm (1/2 inch) deep.
 - e. Sheet-Metal Reinforcement (Alternate to Wood Blocking): 1.52 mm (16 gage) minimum.
11. Suspended Coiling Metals:
 - a. Runner Channels: ASTM C 754 cold-rolled steel channels with rust-inhibitive finish.
 - 1) 50 mm (2 Inches) deep, 88 kg per 100 m (590 pounds per 1,000 LF).
 - 2) 38 mm (1-1/2 inch) deep, 70 kg per 100 m (475 pounds per 1,000 LF).
 - 3) 19 mm (3/4 Inch) deep, 45 kg per 100 m (300 pounds per 1,000 LF).
 - b. Furring Channels: Hat-shaped galvanized-steel furring channels, minimum 0.46 mm (25 gage).
 - c. Steel Studs: Galvanized steel as specified above, minimum 0.46 mm (25 gage).
 - d. Wire for Hangers and Ties: ASTM A 641, Class 1 zinc coating, soft temper.
 - 1) Hanger Wire: Minimum 4.1 mm (8 gage).
 - 2) Tie Wire: 6 mm (16 gage).

Gypsum Board And Related Materials

12. Gypsum Board: GA216 and ASTM C 36
 - a. Size: 12.7 mm and 15.9 mm (1/2 inch and 5/8 inch) thick to match existing, as indicated or scheduled. Provide boards 1 200 mm (48 inches) wide by length required to minimize cross joints.
 - b. Regular Tapered-edge gypsum panels.
 - 1) Provide Type X gypsum panels at fire-rated assemblies.
 - c. Water-Resistant: ASTM C 630, paintable, tapered-edge gypsum panels.
 - 1) Provide Type X water-resistant gypsum panels at fire-rated assemblies.
13. Cementitious Backer Units (CBU): ANSI A118.9, nailable/screwable backer board composed of stable portland cement, aggregates, and reinforcements with ability to remain unaffected by prolonged exposure to moisture, 12.7 mm (1/2 inch) thick.
14. Fasteners:
 - a. Screws: ASTM C 1002, drywall screws, corrosion resistant. Provide types as recommended by manufacturer for each application.
 - 1) Wallboard to Metal Framing: Minimum 25 mm (1 inch), Type S.
 - 2) Wall board to Wood Framing: Minimum 32 mm (1-1/4 inch) Type W bugle head.

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- 3) Wall board to Wallboard: Type G.
 - b. Nails: ASTM C 514.
 15. Accessories: GA 216 and ASTM C 1047, galvanized steel.
 - a. Comer Bead: GA 216 Type CB-114 x 114.
 - b. Metal Trim (Casing Beads): GA 216 Type L, in depth to match gypsum-board thickness.
 - c. Control Joint: V-shaped control joint.
 - d. Adhesive: ASTM C 557 multi-purpose adhesive.
 16. Finishing Materials: ASTM C 475.
 - a. Joint Tape: Provide type as recommended by panel manufacturer.
 - b. Joint Treatment: Joint compound, adhesive, water, and fasteners.
 17. Sound-Isolation Materials:
 - a. Sound Insulation: ASTM C 665, Type I (unfaced) mineral fiber blankets, 3.7 to 4.9 kg per sq m (3/4 to 1 PCF), thickness as indicated, scheduled, or required by fire-rated assembly.
 - b. Acoustical Sealant:
 - 1) Concealed: ASTM C 919 nondrying, non-hardening, and non-skinning; non-bleeding; and non-staining.
 - 2) Exposed: ASTM C 919 non-oxidizing and skinning; permanently elastic; and paintable.
 - c. Ductwork Penetrations Packing: Low-density fiberglass.

EXECUTION

Examination

18. Units, Spaces, and Areas to be Renovated: Comply with Detailed Scope of Work.
 - a. Existing Conditions: Before beginning installation, examine substrates and framing to receive gypsum board for defects or conditions adversely affecting quality and execution of installation.

Preparation

19. Dust Protection: Comply with Detailed Scope of Work.
20. Building Occupation: Carry out demolition and renovation work to cause as little inconvenience to occupants as possible. See Detailed Scope of Work.
21. Protection: Comply with Detailed Scope of Work.
 - a. Protection: Provide drapes and drop cloths necessary to protect walls, floors, ductwork and piping, electrical work, etc. during drywall finishing operations.
22. Selective Demolition: Comply with Detailed Scope of Work.

Laying Out Work

23. Discrepancies: Verify dimensions and elevations indicated in layout of existing work.
 - a. Prior to commencing work, carefully compare and check Drawings (if any) for discrepancies in locations or elevations of work to be executed.
 - b. Refer discrepancies among Drawings (if any), Specifications, and existing conditions to the Owner or adjustment before work affected is performed.
 - 1) Failure to make such notification shall place responsibility on Contractor to carry out work in satisfactory, workmanlike manner.
 - c. Contractor: Responsible for location and elevation of construction indicated by Construction Documents.

Performance

09 - Finishes

24. Patching: Patch and extend existing work using skilled mechanics capable of matching existing quality of workmanship.
 - a. Quality of Patched or Extended Work: Not less than specified for new work. If similar new work is not specified, equal to existing work.
25. Damaged Surfaces: Comply with Detailed Scope of Work.
26. Transitions from Existing to New Work: Comply with Detailed Scope of Work.

Erection Of Drywall Stud Partitions

27. Reference Standard: Erect steel framing in accordance with ASTM C 754.
28. Layouts: Align partition studs accurately according to partition layout.
29. Anchoring: Anchor runner channels to concrete slabs with concrete stub nails or power-driven anchors at 600 mm (24 inches) OC. Anchor runner channels to coiling grid, where applicable, with stove bolts. Where studs extend above ceiling system, install headers where required to receive runners.
30. Studs: Position studs vertically in runners. Where studs are located adjacent to openings or partition intersections and comers. anchor studs to runners with manufacturer's metal lock fastener or with 13 mm (1/2 inch) Type S pan-head screws.
 - a. Space studs at 400 mm (16 Inches) and 600 mm (24 inches) OC as indicated or scheduled.
 - 1) Cementitious Backer Units (CBU): Space studs at maximum of 400 mm (16 inches) OC.
 - 2) Limiting Heights: Comply with ASTM C 754 for transverse load of 240 Pa (5 lb-force/SF) without exceeding either allowable stress or deflection of L/240. Comers and Intersections: Locate studs no more than 50 mm (2 inches) from abutting partitions, comers, etc.
 - b. Openings: Locate studs not more than 50 mm (2 inches) from opening frames. Anchor studs to frame anchor clips by bolt or screw attachment. Install headers over openings as recommended by the manufacturer.
 - 1) Solid-Core Wood Doors and Hollow Metal Doors: Provide two full-height studs at jambs fastened together back to back.
 - 2) Fire-Rated Openings: Comply with GA 219.
31. Bracing: Provide diagonal bracing at head of studs that terminate above the ceiling level. Bracing shall consist of metal studs bent to V-shape and extending at 45 degrees from partition head to structure above. Locate bracing 1 200 mm (48 inches) maximum OC.
32. Wood Blocking or Metal Reinforcement:
 - a. Wood Blocking: See Division 6 Section "Rough Carpentry."
 - b. Install metal reinforcement of size required for support of toilet and bath accessories, hardware, cabinets, shelving, counters, and other wall-mounted items.
 - c. Set true to line, level, or plumb well-secured in stud wall and flush with back of drywall or other wall finish.
 - d. Coordinate exact locations with other sections.

Miscellaneous Framing And Furring

33. General: Provide necessary framing and furring for special framing at recesses, offsets, specialty items, and at wall-mounted casework, shelving, and equipment.
34. Furring Channels: Install furring channels over back-up material. Position channels vertically at 600 mm (24 inches) OC. Use power-activated fasteners or stub nails at 600 mm (24 Inches) OC along alternating flanges. Shim channels level as required.
 - a. Cementitious Backer Units (CBU): Space furring at maximum of 400 mm (16 inches) OC.

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35. Resilient Furring Channels: Screw-attach In accordance with manufacturer's recommendations.
 - a. Spacing: 600 mm (24 inches) OC for framing at 16 inches OC and 400 mm (16 inches) OC for framing at 24 Inches OC.

Ceiling Grillage Erection

36. Reference Standard: Erect steel framing In accordance with ASTM C 754.
37. Hangers: Install wire hangers spaced not over 1 200 mm (48 inches) OC in direction of 38 mm (1-1/2 inch) main runner channels and within 150 mm (6 inches) of ends of main runners or interruptions of ceiling continuity. Hang from structure above.
38. Runners: Place main runners not over 1 200 mm (48 inches) OC. Provide, position, and level hangers with hangers saddle-tied along runners. Space furring channels at 600 mm (24 inches) OC at right angles to runner channels and secure with furring channel clips.
39. Reinforcement: At light troffers or other openings, reinforce grillage with 19 mm (3/4 inch) cold-rolled channels wired atop and parallel to main runner channels.
 - a. Provide lateral seismic bracing as required by code.
40. Special Shapes: Provide necessary framing and suspension for off sets, verticals, etc.

Insulation

41. Sound Insulation: Place sound Insulation blankets in partitions tight within spaces, around cut openings. behind and around electrical and mechanical items within partitions, and tight to items passing through partitions.
 - a. Ductwork Penetrations: Provide one-inch wide clearance around ductwork and pack with fiberglass ready for joint sealers.

Installation Of Gypsum Drywall

42. Reference Standards: Apply and finish gypsum board in accordance with GA 216 and ASTM C 840.
43. Partition Gypsum Board Layout: Apply gypsum wallboard panels vertically with abutting ends and edges occurring over stud flanges or furring.
 - a. Joints on Opposite Sides of Partitions: Stagger; joints shall not occur over same stud.
 - b. Two Layer Construction: Stagger Joints between layers.
44. Ceiling Gypsum Board: Apply gypsum board of maximum practical length with long dimensions at right angles to furring channels. End and edge joints shall occur over furring channels with end joints staggered. Properly support gypsum board around cutouts and openings.
45. Fasteners: Apply board to studs or furring with drywall screws spaced 300 mm (12 inches) OC in field of board and 200 mm (8 inches) OC staggered along abutting edges.
46. Water-Resistant: Apply gypsum wallboard manufacturer's recommended sealant to raw cut edges and screw heads.
47. Cementitious Backer Units (CBU): Install in accordance with ANSI A108.11 and manufacturer's recommendations.
48. Accessories:
 - a. Comer Bead: Apply as recommended by manufacturer at exposed outer corners.
 - b. Trim (Casing Beads): Apply as recommended by manufacturer, where gypsum board abuts other materials, and as indicated.
 - c. Control Joints: Comply with GA 216.
 - 1) Walls: Install at not more than 9 m (30 feet) OC.
 - 2) Ceilings: Install at not more than 15 m (50 feet) OC and where framing changes direction.
 - 3) Coordinate locations with the Owner.
49. Access Panels: Securely install access panels furnished under other sections. Set plumb and square to align with finish surface.

09 - Finishes

50. Acoustical Sealant: Seal perimeter and penetrations on both sides of sound-rated partitions and partitions with sound-attenuation blankets with minimum of single 6 mm (1/4 inch) bead of sealant
 - a. Locations:
 - 1) Seal around gypsum-board perimeter in angle formed by gypsum-board panels and abutting dissimilar materials.
 - 2) Seal intersections of gypsum board with dissimilar materials.
 - 3) Seal pipe, conduit, ductwork, penetrations, etc.
 - 4) Seal around cutouts for lights, cabinets, pipes, ductwork, electrical boxes, etc.
 - 5) Seal gypsum board panel terminations in door and window frames.
 - 6) Seal control-joint locations before installing control Joints to panels.
 - b. Installation: Comply with ASTM C 919 and requirements of indicated sound-rated assembly. Provide number and positions of beads to comply with sound rating of assembly.
51. Tolerances: Gypsum-board surface plane within plus or minus 3 mm in 3 000 mm (1/8 inch in 10 feet).
52. Finishing: Finish in accordance with GA 214.
 - a. Concealed Locations (Not Exposed to View in Rooms): Level 1
 - b. Beneath Tile: Level 2.
 - c. Other Finished Areas: Level 4. Finish joints, trim, and fastener dimples. Sand smooth.
 - d. Cementitious Backer Units (CBU): Treat joints in accordance with ANSI A108.11 and manufacturer's recommendations.

END OF SECTION 09 23 13 00

Task	Specification	Specification Description
09 23 13 00	09 22 13 13	Gypsum Plaster
09 23 13 00	09 22 13 13a	Gypsum Veneer Plaster
09 23 13 00	09 22 13 13b	Portland Cement Plaster
09 23 13 00	09 22 36 23	Lath and Plaster Renovation
09 24 13 00	09 22 13 13	Gypsum Plaster
09 24 13 00	09 22 13 13a	Gypsum Veneer Plaster
09 24 33 00	01 22 16 00	No Specification Required

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SECTION 09 28 13 00 - GYPSUM BOARD

1.1 GENERAL

A. Description Of Work

1. This specification covers the furnishing and installation of materials for gypsum board. Products shall be as follows or as directed by the Owner. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.

B. Summary

1. This Section includes the following:
 - a. Interior gypsum board.
 - b. Exterior gypsum board for ceilings and soffits.
 - c. Tile backing panels.

C. Submittals

1. Product Data: For each type of product indicated.
2. Samples: For the following products:
 - a. Trim Accessories: Full-size Sample in 12-inch- (300-mm-) long length for each trim accessory indicated.
 - b. Textured Finishes: Manufacturer's standard size for each textured finish indicated and on same backing indicated for Work.
3. LEED Submittals:
 - a. Product Data for Credit MR 4.1 and MR 4.2, **as directed**: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content.
 - 1) Include statement indicating costs for each product having recycled content.
 - b. Product Data for Credit EQ 4.1: For adhesives used to laminate gypsum board panels to substrates, including printed statement of VOC content.

D. Quality Assurance

1. Fire-Resistance-Rated Assemblies: For fire-resistance-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 119 by an independent testing agency.
2. STC-Rated Assemblies: For STC-rated assemblies, provide materials and construction identical to those tested in assembly indicated according to ASTM E 90 and classified according to ASTM E 413 by an independent testing agency.

E. Storage And Handling

1. Store materials inside under cover and keep them dry and protected against damage from weather, condensation, direct sunlight, construction traffic, and other causes. Stack panels flat to prevent sagging.

F. Project Conditions

1. Environmental Limitations: Comply with ASTM C 840 requirements or gypsum board manufacturer's written recommendations, whichever are more stringent.
2. Do not install interior products until installation areas are enclosed and conditioned.
3. Do not install panels that are wet, those that are moisture damaged, and those that are mold damaged.
 - a. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - b. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

1.2 PRODUCTS

A. Panels, General

1. Recycled Content: Provide gypsum panel products with recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content constitutes a minimum of 25 percent by weight.
2. Size: Provide in maximum lengths and widths available that will minimize joints in each area and that correspond with support system indicated.

B. Interior Gypsum Board

1. General: Complying with ASTM C 36/C 36M or ASTM C 1396/C 1396M, as applicable to type of gypsum board indicated and whichever is more stringent.
2. Regular Type:
 - a. Thickness: 1/2 inch (12.7 mm).
 - b. Long Edges: Tapered **OR** Tapered and featured (rounded or beveled) for prefilling, **as directed**.
3. Type X:
 - a. Thickness: 5/8 inch (15.9 mm).
 - b. Long Edges: Tapered **OR** Tapered and featured (rounded or beveled) for prefilling, **as directed**.
4. Type C:
 - a. Thickness: As required by fire-resistance-rated assembly indicated on Drawings.
 - b. Long Edges: Tapered.
5. Flexible Type: Manufactured to bend to fit radii and to be more flexible than standard regular-type gypsum board of same thickness.
 - a. Thickness: 1/4 inch (6.4 mm).
 - b. Long Edges: Tapered.
6. Ceiling Type: Manufactured to have more sag resistance than regular-type gypsum board.
 - a. Thickness: 1/2 inch (12.7 mm).
 - b. Long Edges: Tapered.
7. Foil-Backed Type:
 - a. Core: As indicated on Drawings **OR** 3/8 inch (9.5 mm), regular type **OR** 1/2 inch (12.7 mm), regular type **OR** 5/8 inch (15.9 mm), Type X **OR** Type C as required by fire-resistance-rated assembly indicated on Drawings, **as directed**.
 - b. Long Edges: Tapered **OR** Tapered and featured (rounded or beveled) for prefilling, **as directed**.
8. Abuse-Resistant Type: Manufactured to produce greater resistance to surface indentation, through-penetration (impact resistance), and abrasion than standard, regular-type and Type X gypsum board.
 - a. Core: As indicated on Drawings **OR** 1/2 inch (12.7 mm), regular type **OR** 5/8 inch (15.9 mm), Type X, **as directed**.
 - b. Long Edges: Tapered.
9. High-Impact Type: Manufactured with Type X core, plastic film laminated to back side for greater resistance to through-penetration (impact resistance).
 - a. Core: As indicated on Drawings **OR** 5/8 inch (15.9 mm) thick, **as directed**.
 - b. Plastic-Film Thickness: 0.010 inch (0.254 mm) **OR** 0.020 inch (0.508 mm) **OR** 0.030 inch (0.762 mm) **OR** 0.081 inch (2.057 mm), **as directed**.
10. Moisture- and Mold-Resistant Type: With moisture- and mold-resistant core and surfaces.
 - a. Core: 5/8 inch (15.9 mm), Type X.
 - b. Long Edges: Tapered.

C. Exterior Gypsum Board For Ceilings And Soffits

1. Exterior Gypsum Soffit Board: ASTM C 931/C 931M or ASTM C 1396/C 1396M, with manufacturer's standard edges.

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- 1) Core: As indicated **OR** 1/2 inch (12.7 mm), regular type **OR** 5/8 inch (15.9 mm), Type X, **as directed**.
 2. Glass-Mat Gypsum Sheathing Board: ASTM C 1177/C 1177M.
 - a. Core: As indicated **OR** 1/2 inch (12.7 mm), regular type **OR** 5/8 inch (15.9 mm), Type X, **as directed**.
- D. Tile Backing Panels
1. Water-Resistant Gypsum Backing Board: ASTM C 630/C 630M or ASTM C 1396/C 1396M.
 - a. Core: As indicated on Drawings **OR** 1/2 inch (12.7 mm), regular type **OR** 5/8 inch (15.9 mm), Type X **OR** Type C as required by fire-resistance-rated assembly indicated on Drawings, **as directed**.
 2. Glass-Mat, Water-Resistant Backing Board:
 - a. Complying with ASTM C 1178/C 1178M.
 - b. Complying with ASTM C1177/C 1177M.
 - c. Core: As indicated on Drawings **OR** 1/2 inch (12.7 mm), regular type **OR** 5/8 inch (15.9 mm), Type X, **as directed**.
 3. Cementitious Backer Units: ANSI A118.9.
 - a. Thickness: As indicated on Drawings **OR** 1/2 inch (12.7 mm), **as directed**.
- E. Trim Accessories
1. Interior Trim: ASTM C 1047.
 - a. Material: Galvanized or aluminum-coated steel sheet, rolled zinc, plastic, or paper-faced galvanized steel sheet **OR** Galvanized or aluminum-coated steel sheet or rolled zinc **OR** Plastic **OR** Paper-faced galvanized steel sheet, **as directed**.
 - b. Shapes:
 - 1) Cornerbead.
 - 2) Bullnose bead.
 - 3) LC-Bead: J-shaped; exposed long flange receives joint compound.
 - 4) L-Bead: L-shaped; exposed long flange receives joint compound.
 - 5) U-Bead: J-shaped; exposed short flange does not receive joint compound.
 - 6) Expansion (control) joint.
 - 7) Curved-Edge Cornerbead: With notched or flexible flanges.
 2. Exterior Trim: ASTM C 1047.
 - a. Material: Hot-dip galvanized steel sheet, plastic, or rolled zinc.
 - b. Shapes:
 - 1) Cornerbead.
 - 2) LC-Bead: J-shaped; exposed long flange receives joint compound.
 - 3) Expansion (Control) Joint: One-piece, rolled zinc with V-shaped slot and removable strip covering slot opening.
 3. Aluminum Trim: Extruded accessories of profiles and dimensions indicated.
 - a. Aluminum: Alloy and temper with not less than the strength and durability properties of ASTM B 221 (ASTM B 221M), Alloy 6063-T5.
 - b. Finish: Corrosion-resistant primer compatible with joint compound and finish materials specified.
- F. Joint Treatment Materials
1. General: Comply with ASTM C 475/C 475M.
 2. Joint Tape:
 - a. Interior Gypsum Wallboard: Paper.
 - b. Exterior Gypsum Soffit Board: Paper.
 - c. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.
 - d. Tile Backing Panels: As recommended by panel manufacturer.
 3. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
 - a. Prefilling: At open joints, rounded or beveled panel edges, and damaged surface areas, use setting-type taping compound.

- b. Embedding and First Coat: For embedding tape and first coat on joints, fasteners, and trim flanges, use setting-type taping **OR** drying-type, all-purpose, **as directed**, compound.
 - 1) Use setting-type compound for installing paper-faced metal trim accessories.
 - c. Fill Coat: For second coat, use setting-type, sandable topping **OR** drying-type, all-purpose, **as directed**, compound.
 - d. Finish Coat: For third coat, use setting-type, sandable topping **OR** drying-type, all-purpose, **as directed**, compound.
 - e. Skim Coat: For final coat of Level 5 finish, use setting-type, sandable topping compound **OR** drying-type, all-purpose compound **OR** high-build interior coating product designed for application by airless sprayer and to be used instead of skim coat to produce Level 5 finish, **as directed**.
- 4. Joint Compound for Exterior Applications:
 - a. Exterior Gypsum Soffit Board: Use setting-type taping compound and setting-type, sandable topping compound.
 - b. Glass-Mat Gypsum Sheathing Board: As recommended by sheathing board manufacturer.
 - 5. Joint Compound for Tile Backing Panels:
 - a. Water-Resistant Gypsum Backing Board: Use setting-type taping compound and setting-type, sandable topping compound.
 - b. Glass-Mat, Water-Resistant Backing Panel: As recommended by backing panel manufacturer.
 - c. Cementitious Backer Units: As recommended by backer unit manufacturer.
- G. Auxiliary Materials
- 1. General: Provide auxiliary materials that comply with referenced installation standards and manufacturer's written recommendations.
 - 2. Laminating Adhesive: Adhesive or joint compound recommended for directly adhering gypsum panels to continuous substrate.
 - a. Use adhesives that have a VOC content of 50 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 3. Steel Drill Screws: ASTM C 1002, unless otherwise indicated.
 - a. Use screws complying with ASTM C 954 for fastening panels to steel members from 0.033 to 0.112 inch (0.84 to 2.84 mm) thick.
 - b. For fastening cementitious backer units, use screws of type and size recommended by panel manufacturer.
 - 4. Sound Attenuation Blankets: ASTM C 665, Type I (blankets without membrane facing) produced by combining thermosetting resins with mineral fibers manufactured from glass, slag wool, or rock wool.
 - a. Fire-Resistance-Rated Assemblies: Comply with mineral-fiber requirements of assembly.
 - b. Recycled Content: Provide blankets with recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content constitutes a minimum of 25 percent by weight.
 - 5. Acoustical Sealant: As specified in Division 07 Section "Joint Sealants".
 - a. Provide sealants that have a VOC content of 250 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
 - 6. Thermal Insulation: As specified in Division 07 Section "Thermal Insulation".
 - 7. Vapor Retarder: As specified in Division 07 Section "Thermal Insulation".
- H. Texture Finishes
- 1. Primer: As recommended by textured finish manufacturer.
 - 2. Polystyrene Aggregate Ceiling Finish: Water-based, job-mixed, polystyrene aggregate finish with flame-spread and smoke-developed indexes of not more than 25 when tested according to ASTM E 84.
 - a. Texture: Fine **OR** Medium **OR** Coarse, **as directed**.
 - 3. Aggregate Finish: Water-based, job-mixed, aggregated, drying-type texture finish for spray application.

- a. Texture: Light spatter **OR** Spatter knock-down, **as directed**.
4. Acoustical Finish: Water-based, chemical-setting or drying-type, job-mixed texture finish for spray application.
 - a. Application Thickness: 1/2 inch (12.7 mm).
 - b. Fire-Test-Response Characteristics: Indices when tested according to ASTM E 84 as follows:
 - 1) Flame Spread: Less than 25.
 - 2) Smoke Developed: Less than 450.
 - c. NRC: 0.55 according to ASTM C 423.

1.3 EXECUTION

A. Examination

1. Examine areas and substrates, with Installer present, and including welded hollow-metal frames and framing, for compliance with requirements and other conditions affecting performance.
2. Examine panels before installation. Reject panels that are wet, moisture damaged, and mold damaged.
3. Proceed with installation only after unsatisfactory conditions have been corrected.

B. Applying And Finishing Panels, General

1. Comply with ASTM C 840.
2. Install ceiling panels across framing to minimize the number of abutting end joints and to avoid abutting end joints in central area of each ceiling. Stagger abutting end joints of adjacent panels not less than one framing member.
3. Install panels with face side out. Butt panels together for a light contact at edges and ends with not more than 1/16 inch (1.5 mm) of open space between panels. Do not force into place.
4. Locate edge and end joints over supports, except in ceiling applications where intermediate supports or gypsum board back-blocking is provided behind end joints. Do not place tapered edges against cut edges or ends. Stagger vertical joints on opposite sides of partitions. Do not make joints other than control joints at corners of framed openings.
5. Form control and expansion joints with space between edges of adjoining gypsum panels.
6. Cover both faces of support framing with gypsum panels in concealed spaces (above ceilings, etc.), except in chases braced internally.
 - a. Unless concealed application is indicated or required for sound, fire, air, or smoke ratings, coverage may be accomplished with scraps of not less than 8 sq. ft. (0.7 sq. m) in area.
 - b. Fit gypsum panels around ducts, pipes, and conduits.
 - c. Where partitions intersect structural members projecting below underside of floor/roof slabs and decks, cut gypsum panels to fit profile formed by structural members; allow 1/4- to 3/8-inch- (6.4- to 9.5-mm-) wide joints to install sealant.
7. Isolate perimeter of gypsum board applied to non-load-bearing partitions at structural abutments, except floors. Provide 1/4- to 1/2-inch- (6.4- to 12.7-mm-) wide spaces at these locations, and trim edges with edge trim where edges of panels are exposed. Seal joints between edges and abutting structural surfaces with acoustical sealant.
8. Attachment to Steel Framing: Attach panels so leading edge or end of each panel is attached to open (unsupported) edges of stud flanges first.
9. Wood Framing: Install gypsum panels over wood framing, with floating internal corner construction. Do not attach gypsum panels across the flat grain of wide-dimension lumber, including floor joists and headers. Float gypsum panels over these members, or provide control joints to counteract wood shrinkage.
10. STC-Rated Assemblies: Seal construction at perimeters, behind control joints, and at openings and penetrations with a continuous bead of acoustical sealant. Install acoustical sealant at both faces of partitions at perimeters and through penetrations. Comply with ASTM C 919 and with manufacturer's written recommendations for locating edge trim and closing off sound-flanking paths around or through assemblies, including sealing partitions above acoustical ceilings.

11. Install sound attenuation blankets before installing gypsum panels, unless blankets are readily installed after panels have been installed on one side.

C. Applying Interior Gypsum Board

1. Install interior gypsum board in the following locations:
 - a. Regular Type: As indicated on Drawings **OR** Vertical surfaces, unless otherwise indicated, **as directed**.
 - b. Type X: As indicated on Drawings **OR** Where required for fire-resistance-rated assembly **OR** Vertical surfaces, unless otherwise indicated, **as directed**.
 - c. Type C: As indicated on Drawings **OR** Where required for specific fire-resistance-rated assembly indicated, **as directed**.
 - d. Flexible Type: As indicated on Drawings **OR** Apply in double layer at curved assemblies, **as directed**.
 - e. Ceiling Type: As indicated on Drawings **OR** Ceiling surfaces, **as directed**.
 - f. Foil-Backed Type: As indicated on Drawings **OR as directed**.
 - g. Abuse-Resistant Type: As indicated on Drawings **OR as directed**.
 - h. High-Impact Type: As indicated on Drawings **OR as directed**.
 - i. Moisture- and Mold-Resistant Type: As indicated on Drawings **OR as directed**.
2. Single-Layer Application:
 - a. On ceilings, apply gypsum panels before wall/partition board application to greatest extent possible and at right angles to framing, unless otherwise indicated.
 - b. On partitions/walls, apply gypsum panels vertically (parallel to framing) **OR** horizontally (perpendicular to framing), **as directed**, unless otherwise indicated or required by fire-resistance-rated assembly, and minimize end joints.
 - 1) Stagger abutting end joints not less than one framing member in alternate courses of panels.
 - 2) At stairwells and other high walls, install panels horizontally, unless otherwise indicated or required by fire-resistance-rated assembly.
 - c. On Z-furring members, apply gypsum panels vertically (parallel to framing) with no end joints. Locate edge joints over furring members.
 - d. Fastening Methods: Apply gypsum panels to supports with steel drill screws.
3. Multilayer Application:
 - a. On ceilings, apply gypsum board indicated for base layers before applying face layers on walls/partitions; apply face layers in same sequence. Apply base layers at right angles to framing members and offset face-layer joints 1 framing member, 16 inches (400 mm) minimum, from parallel base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly.
 - b. On partitions/walls, apply gypsum board indicated for base layers and face layers vertically (parallel to framing) with joints of base layers located over stud or furring member and face-layer joints offset at least one stud or furring member with base-layer joints, unless otherwise indicated or required by fire-resistance-rated assembly. Stagger joints on opposite sides of partitions.
 - c. On Z-furring members, apply base layer vertically (parallel to framing) and face layer either vertically (parallel to framing) or horizontally (perpendicular to framing) with vertical joints offset at least one furring member. Locate edge joints of base layer over furring members.
 - d. Fastening Methods: Fasten base layers and face layers separately to supports with screws **OR** Fasten base layers with screws; fasten face layers with adhesive and supplementary fasteners, **as directed**.
4. Laminating to Substrate: Where gypsum panels are indicated as directly adhered to a substrate (other than studs, joists, furring members, or base layer of gypsum board), comply with gypsum board manufacturer's written recommendations and temporarily brace or fasten gypsum panels until fastening adhesive has set.
5. Curved Surfaces:

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- a. Install panels horizontally (perpendicular to supports) and unbroken, to extent possible, across curved surface plus 12-inch- (300-mm-) long straight sections at ends of curves and tangent to them.
 - b. For double-layer construction, fasten base layer to studs with screws 16 inches (400 mm) o.c. Center gypsum board face layer over joints in base layer, and fasten to studs with screws spaced 12 inches (300 mm) o.c.
- D. Applying Exterior Gypsum Panels For Ceilings And Soffits
- 1. Apply panels perpendicular to supports, with end joints staggered and located over supports.
 - a. Install with 1/4-inch (6.4-mm) open space where panels abut other construction or structural penetrations.
 - b. Fasten with corrosion-resistant screws.
- E. Applying Tile Backing Panels
- 1. Water-Resistant Gypsum Backing Board: Install at showers, tubs, and where indicated. Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.
 - 2. Glass-Mat, Water-Resistant Backing Panel: Comply with manufacturer's written installation instructions and install at showers, tubs, and where indicated **OR** locations indicated to receive tile, **as directed**. Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations.
 - 3. Cementitious Backer Units: ANSI A108.11, at showers, tubs, and where indicated **OR** locations indicated to receive tile, **as directed**.
 - 4. Areas Not Subject to Wetting: Install regular-type gypsum wallboard panels to produce a flat surface except at showers, tubs, and other locations indicated to receive water-resistant panels.
 - 5. Where tile backing panels abut other types of panels in same plane, shim surfaces to produce a uniform plane across panel surfaces.
- F. Installing Trim Accessories
- 1. General: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
 - 2. Control Joints: Install control joints at locations indicated on Drawings **OR** according to ASTM C 840 and in specific locations approved by the Owner for visual effect, **as directed**.
 - 3. Interior Trim: Install in the following locations:
 - a. Cornerbead: Use at outside corners, unless otherwise indicated.
 - b. Bullnose Bead: Use at outside corners **OR** where indicated, **as directed**.
 - c. LC-Bead: Use at exposed panel edges.
 - d. L-Bead: Use where indicated.
 - e. U-Bead: Use at exposed panel edges **OR** where indicated, **as directed**.
 - f. Curved-Edge Cornerbead: Use at curved openings.
 - 4. Exterior Trim: Install in the following locations:
 - a. Cornerbead: Use at outside corners.
 - b. LC-Bead: Use at exposed panel edges.
 - 5. Aluminum Trim: Install in locations indicated on Drawings.
- G. Finishing Gypsum Board
- 1. General: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration. Promptly remove residual joint compound from adjacent surfaces.
 - 2. Prefill open joints, rounded or beveled edges, and damaged surface areas.
 - 3. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
 - 4. Gypsum Board Finish Levels: Finish panels to levels indicated below and according to ASTM C 840:
 - a. Level 1: Ceiling plenum areas, concealed areas, and where indicated.
 - b. Level 2: Panels that are substrate for tile **OR** Panels that are substrate for acoustical tile **OR** Where indicated on Drawings, **as directed**.

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- c. Level 3: For surfaces receiving medium- or heavy-textured finishes before painting or heavy wallcoverings where lighting conditions are not critical **OR** Where indicated on Drawings, **as directed**.
- d. Level 4: For surfaces receiving light-textured finishes, wallcoverings, and flat paints **OR** At panel surfaces that will be exposed to view, unless otherwise indicated, **as directed**. This is generally the standard exposed finish. Gloss and semi-gloss enamel paints are not usually recommended over this level of finish. ASTM C 840 requires application of "drywall primer" on surfaces before final decoration
 - 1) Primer and its application to surfaces are specified in other Division 07.
- e. Level 5: For surfaces receiving gloss and semigloss enamels and other surfaces subject to severe lighting **OR** Where indicated on Drawings, **as directed**.
 - 1) Primer and its application to surfaces are specified in other Division 07.
- f. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.
- g. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions.
- h. Cementitious Backer Units: Finish according to manufacturer's written instructions.

H. Applying Texture Finishes

- 1. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.
- 2. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.
- 3. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture-finish manufacturer's written recommendations.

I. Protection

- 1. Protect installed products from damage from weather, condensation, direct sunlight, construction, and other causes during remainder of the construction period.
- 2. Remove and replace panels that are wet, moisture damaged, and mold damaged.
 - a. Indications that panels are wet or moisture damaged include, but are not limited to, discoloration, sagging, or irregular shape.
 - b. Indications that panels are mold damaged include, but are not limited to, fuzzy or splotchy surface contamination and discoloration.

END OF SECTION 09 28 13 00

SECTION 09 65 23 00 - RESILIENT SHEET FLOORING

1.1 GENERAL

A. Description Of Work

1. This specification covers the furnishing and installation of materials for resilient sheet floor flooring. Products shall be as follows or as directed by the Owner. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.

B. Summary

1. Section Includes:
 - a. Vinyl sheet floor covering, with and without backing.
 - b. Rubber sheet floor covering, with and without backing.

C. Submittals

1. Product Data: For each type of product indicated.
2. LEED Submittals:
 - a. Product Data for Credit EQ 4.1: For adhesives and chemical-bonding compounds, including printed statement of VOC content.
3. Shop Drawings: For each type of floor covering. Include floor covering layouts, locations of seams, edges, columns, doorways, enclosing partitions, built-in furniture, cabinets, and cutouts.
 - a. Show details of special patterns.
4. Samples: In manufacturer's standard size, but not less than 6-by-9-inch (150-by-230-mm) sections of each different color and pattern of floor covering required.
 - a. For heat-welding bead, manufacturer's standard-size Samples, but not less than 9 inches (230 mm) long, of each color required.
5. Seam Samples: For seamless-installation technique indicated and for each floor covering product, color, and pattern required; with seam running lengthwise and in center of 6-by-9-inch (150-by-230-mm) Sample applied to a rigid backing and prepared by Installer for this Project.
6. Maintenance data.

D. Quality Assurance

1. Fire-Test-Response Characteristics: As determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.
 - a. Critical Radiant Flux Classification: Class I, not less than 0.45 W/sq. cm.

E. Delivery, Storage, And Handling

1. Store floor coverings and installation materials in dry spaces protected from the weather, with ambient temperatures maintained within range recommended by manufacturer, but not less than 50 deg F (10 deg C) or more than 90 deg F (32 deg C). Store rolls upright.

F. Project Conditions

1. Maintain ambient temperatures within range recommended by manufacturer, but not less than 70 deg F (21 deg C) or more than 85 deg F (29 deg C), in spaces to receive floor coverings during the following time periods:
 - a. 48 hours before installation.
 - b. During installation.
 - c. 48 hours after installation.
2. Until Final Completion, maintain ambient temperatures within range recommended by manufacturer, but not less than 55 deg F (13 deg C) or more than 95 deg F (35 deg C).
3. Close spaces to traffic during floor covering installation.
4. Close spaces to traffic for 48 hours after floor covering installation.
5. Install floor coverings after other finishing operations, including painting, have been completed.

1.2 PRODUCTS**A. Vinyl Sheet Floor Covering**

1. Unbacked Vinyl Sheet Floor Covering: ASTM F 1913, 0.080 inch (2.0 mm) thick.
2. Vinyl Sheet Floor Covering with Backing: ASTM F 1303.
 - a. Type (Binder Content): Type I, minimum binder content of 90 percent **OR** Type II, minimum binder content of 34 percent, **as directed**.
 - b. Wear-Layer Thickness: Grade 1.
 - c. Overall Thickness: As standard with manufacturer.
 - d. Interlayer Material: Foamed plastic **OR** None, **as directed**.
 - e. Backing Class: Class A (fibrous) **OR** Class B (nonfoamed plastic) **OR** Class C (foamed plastic), **as directed**.
3. Wearing Surface: Smooth **OR** Embossed **OR** Smooth with embedded abrasives **OR** Embossed with embedded abrasives, **as directed**.
4. Sheet Width: As standard with manufacturer **OR** 4.9 feet (1.5 m) **OR** 6 feet (1.8 m) **OR** 6.5 feet (1.98 m) **OR** 6.6 feet (2.0 m) **OR** 9 feet (2.7 m) **OR** 12 feet (3.6 m), **as directed**.
5. Seaming Method: Heat welded **OR** Chemically bonded **OR** Standard, **as directed**.
6. Colors and Patterns: As selected from full range of industry colors.

B. Rubber Sheet Floor Covering

1. Unbacked Rubber Sheet Floor Covering: ASTM F 1859.
 - a. Type: Type I (homogeneous rubber sheet) **OR** Type II (layered rubber sheet), **as directed**.
 - b. Thickness: As standard with manufacturer.
2. Rubber Sheet Floor Covering with Backing: ASTM F 1860.
 - a. Type: Type I, homogeneous rubber sheet with backing **OR** Type II, layered rubber sheet with backing, **as directed**.
 - b. Wear-Layer Thickness: As standard with manufacturer.
 - c. Overall Thickness: As standard with manufacturer.
 - d. Interlayer Material: As standard with manufacturer **OR** None, **as directed**.
 - e. Backing Type: Fibrous) **OR** Foamed rubber, **as directed**.
3. Hardness: Not less than required by ASTM F 1859 **OR** Not less than required by ASTM F 1860 **OR** Manufacturer's standard hardness, measured using Shore, Type A durometer per ASTM D 2240, **as directed**.
4. Wearing Surface: Smooth **OR** Textured **OR** Molded pattern, **as directed**.
 - a. Molded-Pattern Figure: Raised discs **OR** Raised squares, **as directed**.
5. Sheet Width: As standard with manufacturer **OR** 4.9 feet (1.5 m) **OR** 6 feet (1.8 m) **OR** 6.5 feet (1.98 m) **OR** 6.6 feet (2.0 m) **OR** 9 feet (2.7 m) **OR** 12 feet (3.6 m), **as directed**.
6. Seaming Method: Heat welded **OR** Chemically bonded **OR** Standard, **as directed**.
7. Colors and Patterns: As selected from full range of industry colors.

C. Installation Materials

1. Trowelable Leveling and Patching Compounds: Latex-modified, portland cement based or blended hydraulic-cement-based formulation provided or approved by manufacturer for applications indicated.
2. Adhesives: Water-resistant type recommended by manufacturer to suit floor covering and substrate conditions indicated.
 - a. Use adhesives that have a VOC content of not more than 50 g/L **OR** 60 g/L, **as directed**, when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
3. Seamless-Installation Accessories:
 - a. Heat-Welding Bead: Manufacturer's solid-strand product for heat welding seams.
 - 1) Color: As selected from manufacturer's full range to contrast with floor covering **OR** Match floor covering, **as directed**.
 - b. Chemical-Bonding Compound: Manufacturer's product for chemically bonding seams.

- 1) VOC Content: Not more than 510 g/L. when calculated according to 40 CFR 59, Subpart D (EPA method 24).
4. Integral-Flash-Cove-Base Accessories:
 - a. Cove Strip: 1-inch (25-mm) radius provided or approved by manufacturer.
 - b. Cap Strip: Square metal, vinyl, or rubber cap **OR** Tapered vinyl cap, **as directed**, provided or approved by manufacturer.
 - c. Corners: Metal inside and outside corners and end stops provided or approved by manufacturer.
5. Floor Polish: Provide protective liquid floor polish products as recommended by manufacturer.

1.3 EXECUTION

A. Preparation

1. Prepare substrates according to manufacturer's written instructions to ensure adhesion of floor coverings.
2. Concrete Substrates: Prepare according to ASTM F 710.
 - a. Verify that substrates are dry and free of curing compounds, sealers, and hardeners.
 - b. Remove substrate coatings and other substances that are incompatible with adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
 - c. Alkalinity and Adhesion Testing: Perform tests recommended by manufacturer. Proceed with installation only after substrates pass testing.
 - d. Moisture Testing: Perform tests recommended by manufacturer and as follows. Proceed with installation only after substrates pass testing.
 - 1) Perform anhydrous calcium chloride test, ASTM F 1869. Proceed with installation only after substrates have maximum moisture-vapor-emission rate of 3 lb of water/1000 sq. ft. (1.36 kg of water/92.9 sq. m) in 24 hours.
 - 2) Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 75 percent relative humidity level measurement.
3. Fill cracks, holes, and depressions in substrates with trowelable leveling and patching compound and remove bumps and ridges to produce a uniform and smooth substrate.
4. Do not install floor coverings until they are same temperature as space where they are to be installed.
 - a. Move floor coverings and installation materials into spaces where they will be installed at least 48 hours in advance of installation.
5. Sweep and vacuum clean substrates to be covered by floor coverings immediately before installation.

B. Floor Covering Installation

1. Comply with manufacturer's written instructions for installing floor coverings.
2. Unroll floor coverings and allow them to stabilize before cutting and fitting.
3. Lay out floor coverings as follows:
 - a. Maintain uniformity of floor covering direction.
 - b. Minimize number of seams; place seams in inconspicuous and low-traffic areas, at least 6 inches (152 mm) away from parallel joints in floor covering substrates.
 - c. Match edges of floor coverings for color shading at seams.
 - d. Avoid cross seams.
4. Scribe and cut floor coverings to butt neatly and tightly to vertical surfaces, permanent fixtures, and built-in furniture including cabinets, pipes, outlets, and door frames.
5. Extend floor coverings into toe spaces, door reveals, closets, and similar openings.
6. Maintain reference markers, holes, or openings that are in place or marked for future cutting by repeating on floor coverings as marked on substrates. Use chalk or other nonpermanent marking device.

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7. Install floor coverings on covers for telephone and electrical ducts and similar items in installation areas. Maintain overall continuity of color and pattern between pieces of floor coverings installed on covers and adjoining floor covering. Tightly adhere floor covering edges to substrates that abut covers and to cover perimeters.
 8. Adhere floor coverings to substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
 9. Seamless Installation:
 - a. Heat-Welded Seams: Comply with ASTM F 1516. Rout joints and use welding bead to permanently fuse sections into a seamless floor covering. Prepare, weld, and finish seams to produce surfaces flush with adjoining floor covering surfaces.
 - b. Chemically-Bonded Seams: Bond seams with chemical-bonding compound to permanently fuse sections into a seamless floor covering. Prepare seams and apply compound to produce tightly-fitted seams without gaps, overlays, or excess bonding compound on floor covering surfaces.
 10. Integral-Flash-Cove Base: Cove floor coverings 6 inches (152 mm) **OR** dimension indicated, **as directed**, up vertical surfaces. Support floor coverings at horizontal and vertical junction by cove strip. Butt at top against cap strip.
 - a. Install metal corners at inside and outside corners.
- C. Cleaning And Protection
1. Comply with manufacturer's written instructions for cleaning and protection of floor coverings.
 2. Perform the following operations immediately after completing floor covering installation:
 - a. Remove adhesive and other blemishes from floor covering surfaces.
 - b. Sweep and vacuum floor coverings thoroughly.
 - c. Damp-mop floor coverings to remove marks and soil.
 3. Protect floor coverings from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period.
 4. Floor Polish: Remove soil, visible adhesive, and surface blemishes from floor covering before applying liquid floor polish.
 - a. Apply one **OR** two **OR** three, **as directed**, coat(s).
 5. Cover floor coverings until Final Completion.

END OF SECTION 09 65 23 00

Task	Specification	Specification Description
09 65 23 00	09 65 13 13	Cork Flooring
09 65 43 00	09 65 13 13	Cork Flooring
09 65 43 00	09 65 23 00	Resilient Sheet Flooring

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SECTION 09 91 23 00 - INTERIOR PAINTING

1.1 GENERAL

A. Description Of Work

1. This specification covers the furnishing and installation of materials for interior painting. Products shall be as follows or as directed by the Owner. Installation procedures shall be in accordance with the product manufacturer's recommendations. Demolition and removal of materials shall be as required to support the work.

B. Summary

1. This Section includes surface preparation and the application of paint systems on the following interior substrates:
 - a. Concrete.
 - b. Clay masonry.
 - c. Concrete masonry units (CMU).
 - d. Steel.
 - e. Galvanized metal.
 - f. Aluminum (not anodized or otherwise coated).
 - g. Wood.
 - h. Gypsum board.
 - i. Plaster.
 - j. Spray-textured ceilings.
 - k. Cotton or canvas insulation covering.

C. Submittals

1. Product Data: For each type of product indicated.
2. Samples: For each finish and for each color and texture required.
3. Product List: Printout of current "MPI Approved Products List" for each product category specified in Part 1.2, with the proposed product highlighted.
4. LEED Submittal:
 - a. Product Data for Credit EQ 4.2: For paints, including printed statement of VOC content and chemical components.

D. Quality Assurance

1. MPI Standards:
 - a. Products: Complying with MPI standards indicated and listed in "MPI Approved Products List."
 - b. Preparation and Workmanship: Comply with requirements in "MPI Architectural Painting Specification Manual" for products and paint systems indicated.
2. Mockups: Apply mockups of each paint system indicated and each color and finish selected to verify preliminary selections made under Sample submittals and to demonstrate aesthetic effects and set quality standards for materials and execution.
 - a. Architect will select one surface to represent surfaces and conditions for application of each paint system specified in Part 3.
 - 1) Vertical and Horizontal Surfaces: Provide samples of at least 100 sq. ft. (9 sq. m).
 - 2) Other Items: Architect will designate items or areas required.
 - b. Final approval of color selections will be based on mockups.
 - 1) If preliminary color selections are not approved, apply additional mockups of additional colors selected by Architect at no added cost to Owner.
 - c. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

- d. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

E. Delivery, Storage, And Handling

- 1. Store materials not in use in tightly covered containers in well-ventilated areas with ambient temperatures continuously maintained at not less than 45 deg F (7 deg C).
 - a. Maintain containers in clean condition, free of foreign materials and residue.
 - b. Remove rags and waste from storage areas daily.

F. Project Conditions

- 1. Apply paints only when temperature of surfaces to be painted and ambient air temperatures are between 50 and 95 deg F (10 and 35 deg C).
- 2. Do not apply paints when relative humidity exceeds 85 percent; at temperatures less than 5 deg F (3 deg C) above the dew point; or to damp or wet surfaces.

1.2 PRODUCTS

A. Paint, General

- 1. Material Compatibility:
 - a. Provide materials for use within each paint system that are compatible with one another and substrates indicated, under conditions of service and application as demonstrated by manufacturer, based on testing and field experience.
 - b. For each coat in a paint system, provide products recommended in writing by manufacturers of topcoat for use in paint system and on substrate indicated.
- 2. VOC Content of Field-Applied Interior Paints and Coatings: Provide products that comply with the following limits for VOC content, exclusive of colorants added to a tint base, when calculated according to 40 CFR 59, Subpart D (EPA Method 24); these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
 - a. Flat Paints, Coatings, and Primers: VOC content of not more than 50 g/L.
 - b. Nonflat Paints, Coatings, and Primers: VOC content of not more than 150 g/L.
 - c. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
 - d. Floor Coatings: VOC not more than 100 g/L.
 - e. Shellacs, Clear: VOC not more than 730 g/L.
 - f. Shellacs, Pigmented: VOC not more than 550 g/L.
 - g. Flat Topcoat Paints: VOC content of not more than 50 g/L.
 - h. Nonflat Topcoat Paints: VOC content of not more than 150 g/L.
 - i. Anti-Corrosive and Anti-Rust Paints Applied to Ferrous Metals: VOC not more than 250 g/L.
 - j. Floor Coatings: VOC not more than 100 g/L.
 - k. Shellacs, Clear: VOC not more than 730 g/L.
 - l. Shellacs, Pigmented: VOC not more than 550 g/L.
 - m. Primers, Sealers, and Undercoaters: VOC content of not more than 200 g/L.
 - n. Dry-Fog Coatings: VOC content of not more than 400 g/L.
 - o. Zinc-Rich Industrial Maintenance Primers: VOC content of not more than 340 g/L.
 - p. Pre-Treatment Wash Primers: VOC content of not more than 420 g/L.
- 3. Chemical Components of Field-Applied Interior Paints and Coatings: Provide topcoat paints and anti-corrosive and anti-rust paints applied to ferrous metals that comply with the following chemical restrictions; these requirements do not apply to paints and coatings that are applied in a fabrication or finishing shop:
 - a. Aromatic Compounds: Paints and coatings shall not contain more than 1.0 percent by weight of total aromatic compounds (hydrocarbon compounds containing one or more benzene rings).
 - b. Restricted Components: Paints and coatings shall not contain any of the following:

-
- 1) Acrolein.
 - 2) Acrylonitrile.
 - 3) Antimony.
 - 4) Benzene.
 - 5) Butyl benzyl phthalate.
 - 6) Cadmium.
 - 7) Di (2-ethylhexyl) phthalate.
 - 8) Di-n-butyl phthalate.
 - 9) Di-n-octyl phthalate.
 - 10) 1,2-dichlorobenzene.
 - 11) Diethyl phthalate.
 - 12) Dimethyl phthalate.
 - 13) Ethylbenzene.
 - 14) Formaldehyde.
 - 15) Hexavalent chromium.
 - 16) Isophorone.
 - 17) Lead.
 - 18) Mercury.
 - 19) Methyl ethyl ketone.
 - 20) Methyl isobutyl ketone.
 - 21) Methylene chloride.
 - 22) Naphthalene.
 - 23) Toluene (methylbenzene).
 - 24) 1,1,1-trichloroethane.
 - 25) Vinyl chloride.
4. Colors: As selected from manufacturer's full range **OR** Match samples **OR** As indicated in a color schedule, **as directed**.
- B. Block Fillers
1. Interior/Exterior Latex Block Filler: MPI #4.
 - a. VOC Content: E Range of E2 **OR** E3, **as directed**.
- C. Primers/Sealers
1. Interior Latex Primer/Sealer: MPI #50.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 1 **OR** EPR 2 **OR** EPR 3, **as directed**.
 2. Interior Alkyd Primer/Sealer: MPI #45.
 - a. VOC Content: E Range of E1 **OR** E2, **as directed**.
 3. Wood-Knot Sealer: Sealer recommended in writing by topcoat manufacturer for use in paint systems indicated.
- D. Metal Primers
1. Alkyd Anticorrosive Metal Primer: MPI #79.
 - a. VOC Content: E Range of E1 **OR** E2, **as directed**.
 2. Quick-Drying Alkyd Metal Primer: MPI #76.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 3. Rust-Inhibitive Primer (Water Based): MPI #107.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 1 **OR** EPR 2 **OR** EPR 3, **as directed**.
 4. Cementitious Galvanized-Metal Primer: MPI #26.
 - a. VOC Content: E Range of E1.
 5. Waterborne Galvanized-Metal Primer: MPI #134.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 1 **OR** EPR 2 **OR** EPR 3, **as directed**.
 6. Vinyl Wash Primer: MPI #80.
 - a. VOC Content: E Range of E2 **OR** E3, **as directed**.

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7. Quick-Drying Primer for Aluminum: MPI #95.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.

E. Wood Primers

1. Interior Latex-Based Wood Primer: MPI #39.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 1 **OR** EPR 2 **OR** EPR 3, **as directed**.

F. Latex Paints

1. Interior Latex (Flat): MPI #53 (Gloss Level 1).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 0.5 **OR** EPR 1.5 **OR** EPR 2.5, **as directed**.
2. Interior Latex (Low Sheen): MPI #44 (Gloss Level 2).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 1 **OR** EPR 2 **OR** EPR 3, **as directed**.
3. Interior Latex (Eggshell): MPI #52 (Gloss Level 3).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 1 **OR** EPR 2 **OR** EPR 3, **as directed**.
4. Interior Latex (Satin): MPI #43 (Gloss Level 4).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 1.5 **OR** EPR 2 **OR** EPR 2.5 **OR** EPR 3.5, **as directed**.
5. Interior Latex (Semigloss): MPI #54 (Gloss Level 5).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 2 **OR** EPR 3 **OR** EPR 4, **as directed**.
6. Interior Latex (Gloss): MPI #114 (Gloss Level 6, except minimum gloss of 65 units at 60 deg).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 2 **OR** EPR 3 **OR** EPR 4, **as directed**.
7. Institutional Low-Odor/VOC Latex (Flat): MPI #143 (Gloss Level 1).
 - a. VOC Content: E Range of E3.
 - b. Environmental Performance Rating: EPR 4 **OR** EPR 5.5, **as directed**.
8. Institutional Low-Odor/VOC Latex (Low Sheen): MPI #144 (Gloss Level 2).
 - a. VOC Content: E Range of E3.
 - b. Environmental Performance Rating: EPR 4.5.
9. Institutional Low-Odor/VOC Latex (Eggshell): MPI #145 (Gloss Level 3).
 - a. VOC Content: E Range of E3.
 - b. Environmental Performance Rating: EPR 4.5.
10. Institutional Low-Odor/VOC Latex (Semigloss): MPI #147 (Gloss Level 5).
 - a. VOC Content: E Range of E3.
 - b. Environmental Performance Rating: EPR 3 **OR** EPR 5.5, **as directed**.
11. High-Performance Architectural Latex (Low Sheen): MPI #138 (Gloss Level 2).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 4 **OR** EPR 5 **OR** EPR 6, **as directed**.
12. High-Performance Architectural Latex (Eggshell): MPI #139 (Gloss Level 3).
 - a. VOC Content: E Range of E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 5 **OR** EPR 6, **as directed**.
13. High-Performance Architectural Latex (Satin): MPI #140 (Gloss Level 4).
 - a. VOC Content: E Range of E1 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 4.5 **OR** EPR 6.5, **as directed**.
14. High-Performance Architectural Latex (Semigloss): MPI #141 (Gloss Level 5).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 5 **OR** EPR 6 **OR** EPR 7, **as directed**.
15. Exterior Latex (Flat): MPI #10 (Gloss Level 1).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
16. Exterior Latex (Semigloss): MPI #11 (Gloss Level 5).

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- a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - 17. Exterior Latex (Gloss): MPI #119 (Gloss Level 6, except minimum gloss of 65 units at 60 deg).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
- G. Alkyd Paints
- 1. Interior Alkyd (Flat): MPI #49 (Gloss Level 1).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - 2. Interior Alkyd (Eggshell): MPI #51 (Gloss Level 3).
 - a. VOC Content: E Range of E1 **OR** E2, **as directed**.
 - 3. Interior Alkyd (Semigloss): MPI #47 (Gloss Level 5).
 - a. VOC Content: E Range of E1 **OR** E2, **as directed**.
 - b. Environmental Performance Rating: EPR 1 **OR** EPR 2 **OR** EPR 3, **as directed**.
 - 4. Interior Alkyd (Gloss): MPI #48 (Gloss Level 6).
 - a. VOC Content: E Range of E1 **OR** E2, **as directed**.
- H. Quick-Drying Enamels
- 1. Quick-Drying Enamel (Semigloss): MPI #81 (Gloss Level 5).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - 2. Quick-Drying Enamel (High Gloss): MPI #96 (Gloss Level 7).
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
- I. Textured Coating
- 1. Latex Stucco and Masonry Textured Coating: MPI #42.
 - a. VOC Content: E Range of E2 **OR** E3, **as directed**.
- J. Dry Fog/Fall Coatings
- 1. Latex Dry Fog/Fall: MPI #118.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 1 **OR** EPR 2 **OR** EPR 3, **as directed**.
 - 2. Waterborne Dry Fall: MPI #133.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 1 **OR** EPR 2 **OR** EPR 3, **as directed**.
 - 3. Interior Alkyd Dry Fog/Fall: MPI #55.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
- K. Aluminum Paint
- 1. Aluminum Paint: MPI #1.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
- L. Floor Coatings
- 1. Interior Concrete Floor Stain: MPI #58.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 2.
 - 2. Interior/Exterior Clear Concrete Floor Sealer (Water Based): MPI #99.
 - a. VOC Content: E Range of E1 **OR** E2 **OR** E3, **as directed**.
 - 3. Interior/Exterior Clear Concrete Floor Sealer (Solvent Based): MPI #104.
 - a. VOC Content: E Range of E1 **OR** E2, **as directed**.
 - 4. Interior/Exterior Latex Floor and Porch Paint (Low Gloss): MPI #60 (maximum Gloss Level 3).
 - a. VOC Content: E Range of E2 **OR** E3, **as directed**.
 - b. Environmental Performance Rating: EPR 3.
 - 5. Exterior/Interior Alkyd Floor Enamel (Gloss): MPI #27 (Gloss Level 6).
 - a. VOC Content: E Range of E1 **OR** E2, **as directed**.
 - b. Additives: Manufacturer's standard additive to increase skid resistance of painted surface.

1.3 EXECUTION

A. Preparation

1. Comply with manufacturer's written instructions and recommendations in "MPI Architectural Painting Specification Manual" applicable to substrates indicated.
2. Remove plates, machined surfaces, and similar items already in place that are not to be painted. If removal is impractical or impossible because of size or weight of item, provide surface-applied protection before surface preparation and painting.
 - a. After completing painting operations, use workers skilled in the trades involved to reinstall items that were removed. Remove surface-applied protection if any.
 - b. Do not paint over labels of independent testing agencies or equipment name, identification, performance rating, or nomenclature plates.
3. Clean substrates of substances that could impair bond of paints, including dirt, oil, grease, and incompatible paints and encapsulants.
 - a. Remove incompatible primers and reprime substrate with compatible primers as required to produce paint systems indicated.
4. Concrete Substrates: Remove release agents, curing compounds, efflorescence, and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
5. Clay Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content of surfaces or alkalinity of mortar joints to be painted exceed that permitted in manufacturer's written instructions.
6. Concrete Masonry Substrates: Remove efflorescence and chalk. Do not paint surfaces if moisture content or alkalinity of surfaces to be painted exceeds that permitted in manufacturer's written instructions.
7. Steel Substrates: Remove rust and loose mill scale. Clean using methods recommended in writing by paint manufacturer.
8. Galvanized-Metal Substrates: Remove grease and oil residue from galvanized sheet metal fabricated from coil stock by mechanical methods to produce clean, lightly etched surfaces that promote adhesion of subsequently applied paints.
9. Aluminum Substrates: Remove surface oxidation.
10. Wood Substrates:
 - a. Scrape and clean knots, and apply coat of knot sealer before applying primer.
 - b. Sand surfaces that will be exposed to view, and dust off.
 - c. Prime edges, ends, faces, undersides, and backsides of wood.
 - d. After priming, fill holes and imperfections in the finish surfaces with putty or plastic wood filler. Sand smooth when dried.
11. Gypsum Board Substrates: Do not begin paint application until finishing compound is dry and sanded smooth.
12. Plaster Substrates: Do not begin paint application until plaster is fully cured and dry.
13. Spray-Textured Ceiling Substrates: Do not begin paint application until surfaces are dry.
14. Cotton or Canvas Insulation Covering Substrates: Remove dust, dirt, and other foreign material that might impair bond of paints to substrates.

B. Application

1. Apply paints according to manufacturer's written instructions.
 - a. Use applicators and techniques suited for paint and substrate indicated.
 - b. Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Before final installation, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 - c. Paint front and backsides of access panels, removable or hinged covers, and similar hinged items to match exposed surfaces.
2. Tint each undercoat a lighter shade to facilitate identification of each coat if multiple coats of same material are to be applied. Tint undercoats to match color of topcoat, but provide sufficient difference in shade of undercoats to distinguish each separate coat.

3. If undercoats or other conditions show through topcoat, apply additional coats until cured film has a uniform paint finish, color, and appearance.
4. Apply paints to produce surface films without cloudiness, spotting, holidays, laps, brush marks, roller tracking, runs, sags, ropiness, or other surface imperfections. Cut in sharp lines and color breaks.
5. Painting Mechanical and Electrical Work: Paint items exposed in equipment rooms and occupied spaces including, but not limited to, the following:
 - a. Mechanical Work:
 - 1) Uninsulated metal piping.
 - 2) Uninsulated plastic piping.
 - 3) Pipe hangers and supports.
 - 4) Tanks that do not have factory-applied final finishes.
 - 5) Visible portions of internal surfaces of metal ducts, without liner, behind air inlets and outlets.
 - 6) Duct, equipment, and pipe insulation having cotton or canvas insulation covering or other paintable jacket material.
 - 7) Mechanical equipment that is indicated to have a factory-primed finish for field painting.
 - b. Electrical Work:
 - 1) Switchgear.
 - 2) Panelboards.
 - 3) Electrical equipment that is indicated to have a factory-primed finish for field painting.

C. Field Quality Control

1. Testing of Paint Materials: The following procedure may be requested at any time and as often as the Owner deems necessary during the period when paints are being applied:
 - a. Engage the services of a qualified testing agency to sample paint materials being used. Samples of material delivered to Project site will be taken, identified, sealed, and certified in presence of Contractor.
 - b. Testing agency will perform tests for compliance with product requirements.
 - c. the Owner may direct Contractor to stop applying paints if test results show materials being used do not comply with product requirements. Contractor shall remove noncomplying-paint materials from Project site, pay for testing, and repaint surfaces painted with rejected materials. Contractor will be required to remove rejected materials from previously painted surfaces if, on repainting with complying materials, the two paints are incompatible.

D. Cleaning And Protection

1. At end of each workday, remove rubbish, empty cans, rags, and other discarded materials from Project site.
2. After completing paint application, clean spattered surfaces. Remove spattered paints by washing, scraping, or other methods. Do not scratch or damage adjacent finished surfaces.
3. Protect work of other trades against damage from paint application. Correct damage to work of other trades by cleaning, repairing, replacing, and refinishing, as approved by the Owner, and leave in an undamaged condition.
4. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

E. Interior Painting Schedule

1. Concrete Substrates, Nontraffic Surfaces:
 - a. Latex System: MPI INT 3.1E.
 - 1) Prime Coat: Interior latex matching topcoat.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - b. Latex Over Sealer System: MPI INT 3.1A.

- 1) Prime Coat: Interior latex primer/sealer.
- 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
- 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
- c. Latex Over Latex Aggregate System: MPI INT 3.1B.
 - 1) Prime Coat: Latex stucco and masonry textured coating.
 - 2) Intermediate Coat (for MPI Premium Grade system): Exterior latex matching topcoat.
 - 3) Topcoat: Exterior latex (flat) **OR** (semigloss) **OR** (gloss), **as directed**.
- d. Alkyd System: MPI INT 3.1D.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
- e. Institutional Low-Odor/VOC Latex System: MPI INT 3.1M.
 - 1) Prime Coat: Institutional low-odor/VOC interior latex matching topcoat.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
- f. High-Performance Architectural Latex System: MPI INT 3.1C.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
2. Concrete Substrates, Traffic Surfaces:
 - a. Latex Floor Enamel System: MPI INT 3.2A.
 - 1) Prime Coat: Interior/exterior latex floor and porch paint (low gloss).
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior/exterior latex floor and porch paint (low gloss).
 - 3) Topcoat: Interior/exterior latex floor and porch paint (low gloss).
 - b. Alkyd Floor Enamel System: MPI INT 3.2B.
 - 1) Prime Coat: Exterior/interior alkyd floor enamel (gloss).
 - 2) Intermediate Coat (for MPI Premium Grade system): Exterior/interior alkyd floor enamel (gloss).
 - 3) Topcoat: Exterior/interior alkyd floor enamel (gloss).
 - c. Concrete Stain System: MPI INT 3.2E.
 - 1) First Coat (for MPI Premium Grade system): Interior concrete floor stain.
 - 2) Topcoat: Interior concrete floor stain.
 - d. Clear Sealer System: MPI INT 3.2F.
 - 1) First Coat: Interior/exterior clear concrete floor sealer (solvent based).
 - 2) Topcoat: Interior/exterior clear concrete floor sealer (solvent based).
 - e. Water-Based Clear Sealer System: MPI INT 3.2G.
 - 1) First Coat: Interior/exterior clear concrete floor sealer (water based).
 - 2) Topcoat: Interior/exterior clear concrete floor sealer (water based).
3. Clay-Masonry Substrates:
 - a. Latex System: MPI INT 4.1A.
 - 1) Prime Coat: Interior latex matching topcoat.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - b. Alkyd System: MPI INT 4.1D.
 - 1) Prime Coat: Interior latex primer/sealer.

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- 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - c. Latex Aggregate System: MPI INT 4.1B.
 - 1) Prime Coat: As recommended in writing by topcoat manufacturer.
 - 2) Intermediate Coat: As recommended in writing by topcoat manufacturer.
 - 3) Topcoat: Latex stucco and masonry textured coating.
 - d. Institutional Low-Odor/VOC Latex System: MPI INT 4.1M.
 - 1) Prime Coat: Institutional low-odor/VOC interior latex matching topcoat.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
 - e. High-Performance Architectural Latex System: MPI INT 4.1L.
 - 1) Prime Coat: High-performance architectural latex matching topcoat.
 - 2) Intermediate Coat (for MPI Premium Grade system): High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
 - 4. CMU Substrates:
 - a. Latex System: MPI INT 4.2A.
 - 1) Prime Coat: Interior/exterior latex block filler.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - b. Alkyd System: MPI INT 4.2C.
 - 1) Prime Coat: Interior/exterior latex block filler.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - c. Alkyd Over Latex Sealer System: MPI INT 4.2N.
 - 1) Prime Coat: Interior/exterior latex block filler.
 - 2) Sealer Coat: Interior latex primer/sealer.
 - 3) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 4) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - d. Institutional Low-Odor/VOC Latex System: MPI INT 4.2E.
 - 1) Prime Coat: Interior/exterior latex block filler.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
 - e. High-Performance Architectural Latex System: MPI INT 4.2D.
 - 1) Prime Coat: Interior/exterior latex block filler.
 - 2) Intermediate Coat (for MPI Premium Grade system): High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
 - 5. Steel Substrates:
 - a. Quick-Drying Enamel System: MPI INT 5.1A.
 - 1) Prime Coat: Quick-drying alkyd metal primer.
 - 2) Intermediate Coat: Quick-drying enamel matching topcoat.
 - 3) Topcoat: Quick-drying enamel (semigloss) **OR** (high gloss), **as directed**.
 - b. Water-Based Dry-Fall System: MPI INT 5.1C.
 - 1) Prime Coat: Alkyd anticorrosive **OR** Quick-drying alkyd, **as directed**, metal primer.
 - 2) Topcoat: Latex dry fog/fall **OR** Waterborne dry fall, **as directed**.

- c. Alkyd Dry-Fall System: MPI INT 5.1D.
 - 1) Prime Coat: Alkyd anticorrosive **OR** Quick-drying alkyd, **as directed**, metal primer.
 - 2) Topcoat: Interior alkyd dry fog/fall.
- d. Latex Over Alkyd Primer System: MPI INT 5.1Q.
 - 1) Prime Coat: Alkyd anticorrosive **OR** Quick-drying alkyd, **as directed**, metal primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
- e. Alkyd System: MPI INT 5.1E.
 - 1) Prime Coat: Alkyd anticorrosive **OR** Quick-drying alkyd, **as directed**, metal primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
- f. Aluminum Paint System: MPI INT 5.1M.
 - 1) Prime Coat: Alkyd anticorrosive **OR** Quick-drying alkyd, **as directed**, metal primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Aluminum paint.
 - 3) Topcoat: Aluminum paint.
- g. Institutional Low-Odor/VOC Latex System: MPI INT 5.1S.
 - 1) Prime Coat: Rust-inhibitive primer (water based).
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
- h. High-Performance Architectural Latex System: MPI INT 5.1R.
 - 1) Prime Coat: Alkyd anticorrosive **OR** Quick-drying alkyd, **as directed**, metal primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
- 6. Galvanized-Metal Substrates:
 - a. Water-Based Dry-Fall System: MPI INT 5.3H.
 - 1) Prime Coat: Waterborne dry fall.
 - 2) Topcoat: Waterborne dry fall.
 - b. Alkyd Dry-Fall System: MPI INT 5.3F.
 - 1) Prime Coat: Cementitious galvanized-metal primer.
 - 2) Topcoat: Interior alkyd dry fog/fall.
 - c. Latex System: MPI INT 5.3A.
 - 1) Prime Coat: Cementitious galvanized-metal primer.
 - 2) Intermediate Coat: Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - d. Latex Over Waterborne Primer System: MPI INT 5.3J.
 - 1) Prime Coat: Waterborne galvanized-metal primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - e. Alkyd System: MPI INT 5.3C.
 - 1) Prime Coat: Cementitious galvanized-metal primer.
 - 2) Intermediate Coat: Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - f. Aluminum Paint System: MPI INT 5.3G.
 - 1) Prime Coat: Cementitious galvanized-metal primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Aluminum paint.
 - 3) Topcoat: Aluminum paint.
 - g. Institutional Low-Odor/VOC Latex System: MPI INT 5.3N.

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- 1) Prime Coat: Waterborne galvanized-metal primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
- h. High-Performance Architectural Latex System: MPI INT 5.3M.
- 1) Prime Coat: Waterborne galvanized-metal primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
7. Aluminum (Not Anodized or Otherwise Coated) Substrates:
- a. Latex System: MPI INT 5.4H.
 - 1) Prime Coat: Quick-drying primer for aluminum.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - b. Alkyd Over Vinyl Wash Primer System: MPI INT 5.4A.
 - 1) Prime Coat: Vinyl wash primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - c. Alkyd Over Quick-Drying Primer System: MPI INT 5.4J.
 - 1) Prime Coat: Quick-drying primer for aluminum.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - d. Aluminum Paint System: MPI INT 5.4D.
 - 1) Prime Coat: Vinyl wash primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Aluminum paint.
 - 3) Topcoat: Aluminum paint.
 - e. Institutional Low-Odor/VOC Latex System: MPI INT 5.4G.
 - 1) Prime Coat: Quick-drying primer for aluminum.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
 - f. High-Performance Architectural Latex System: MPI INT 5.4F.
 - 1) Prime Coat: Quick-drying primer for aluminum.
 - 2) Intermediate Coat (for MPI Premium Grade system): High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
8. Glue-Laminated Beam and Column Substrates:
- a. Latex System: MPI INT 6.1M.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat: Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - b. Latex Over Alkyd Primer System: MPI INT 6.1A.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - c. Alkyd System: MPI INT 6.1B.
 - 1) Prime Coat: Interior alkyd primer/sealer.

- 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
- 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
- d. Institutional Low-Odor/VOC Latex System: MPI INT 6.1Q.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
- e. High-Performance Architectural Latex System: MPI INT 6.1N.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat: High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
- 9. Dressed Lumber Substrates: Including architectural woodwork and doors.
 - a. Latex System: MPI INT 6.3T.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat: Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (semigloss) **OR** (gloss), **as directed**.
 - b. Latex Over Alkyd Primer System: MPI INT 6.3U.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (semigloss) **OR** (gloss), **as directed**.
 - c. Alkyd System: MPI INT 6.3B.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - d. Institutional Low-Odor/VOC Latex System: MPI INT 6.3V.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
 - e. High-Performance Architectural Latex System: MPI INT 6.3A.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat: High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
- 10. Wood Panel Substrates: Including painted plywood, medium-density fiberboard, and hardboard.
 - a. Latex System: MPI INT 6.4R.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat: Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (semigloss) **OR** (gloss), **as directed**.
 - b. Latex Over Alkyd Primer System: MPI INT 6.4A.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - c. Alkyd System: MPI INT 6.4B.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - d. Institutional Low-Odor/VOC Latex System: MPI INT 6.4T.

-
- 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat : Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
 - e. High-Performance Architectural Latex System: MPI INT 6.4S.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat: High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
11. Dimension Lumber Substrates, Nontraffic Surfaces: Including exposed joists and exposed beams.
- a. Latex System: MPI INT 6.2D.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat: Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - b. Latex Over Alkyd Primer System: MPI INT 6.2A.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat : Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - c. Alkyd System: MPI INT 6.2C.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - d. Institutional Low-Odor/VOC Latex System: MPI INT 6.2L.
 - 1) Prime Coat: Interior latex-based wood primer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
 - e. High-Performance Architectural Latex System: MPI INT 6.2B.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
12. Wood Substrates, Traffic Surfaces:
- a. Latex Floor Paint System: MPI INT 6.5G.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat: Interior/exterior latex floor and porch paint (low gloss).
 - 3) Topcoat: Interior/exterior latex floor and porch paint (low gloss).
 - b. Alkyd Floor Enamel System: MPI INT 6.5A.
 - 1) Prime Coat: Exterior/interior alkyd floor enamel (gloss).
 - 2) Intermediate Coat: Exterior/interior alkyd floor enamel (gloss).
 - 3) Topcoat: Exterior/interior alkyd floor enamel (gloss).
13. Gypsum Board Substrates:
- a. Latex System: MPI INT 9.2A.
 - 1) Prime Coat: Interior latex primer/sealer (for MPI Premium Grade system) **OR** matching topcoat, **as directed**.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - b. Alkyd Over Latex Primer System: MPI INT 9.2C.
 - 1) Prime Coat: Interior latex primer/sealer.

- 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
- 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
- c. Institutional Low-Odor/VOC Latex System: MPI INT 9.2M.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
- d. High-Performance Architectural Latex System: MPI INT 9.2B.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
- 14. Plaster Substrates:
 - a. Latex System: MPI INT 9.2A.
 - 1) Prime Coat: Interior latex primer/sealer (for MPI Premium Grade system) **OR** matching topcoat, **as directed**.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - b. Latex Over Alkyd Primer System: MPI INT 9.2K.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat: Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - c. Alkyd Over Latex Primer System: MPI INT 9.2C.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - d. Institutional Low-Odor/VOC Latex System: MPI INT 9.2M.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.
 - e. High-Performance Architectural Latex System: MPI INT 9.2B.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): High-performance architectural latex matching topcoat.
 - 3) Topcoat: High-performance architectural latex (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
- 15. Spray-Textured Ceiling Substrates:
 - a. Latex (Flat) System: MPI INT 9.1A, spray applied.
 - 1) Prime Coat: Interior latex primer/sealer **OR** (flat), **as directed**.
 - 2) Topcoat: Interior latex (flat).
 - b. Latex System: MPI INT 9.1E, spray applied.
 - 1) Prime Coat: Interior latex matching topcoat.
 - 2) Intermediate Coat: Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss), **as directed**.
 - c. Latex Over Alkyd Primer System: MPI INT 9.1B.
 - 1) Prime Coat: Interior alkyd primer/sealer.

-
- 2) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - d. Alkyd (Flat) System: MPI INT 9.1C.
 - 1) Prime Coat: Interior alkyd (flat).
 - 2) Topcoat: Interior alkyd (flat).
 - e. Alkyd System: MPI INT 9.1D.
 - 1) Prime Coat: Interior alkyd primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - 16. Cotton or Canvas Insulation-Covering Substrates: Including pipe and duct coverings.
 - a. Latex System: MPI INT 10.1A.
 - 1) Prime Coat: Interior latex primer/sealer (for MPI Premium Grade system) **OR** matching topcoat, **as directed**.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior latex matching topcoat.
 - 3) Topcoat: Interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (satin) **OR** (semigloss) **OR** (gloss), **as directed**.
 - b. Alkyd Over Latex Primer System: MPI INT 10.1B.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Interior alkyd matching topcoat.
 - 3) Topcoat: Interior alkyd (flat) **OR** (eggshell) **OR** (semigloss) **OR** (gloss), **as directed**.
 - c. Aluminum Paint System: MPI INT 10.1C.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Aluminum paint.
 - 3) Topcoat: Aluminum paint.
 - d. Institutional Low-Odor/VOC Latex System: MPI INT 10.1D.
 - 1) Prime Coat: Interior latex primer/sealer.
 - 2) Intermediate Coat (for MPI Premium Grade system): Institutional low-odor/VOC interior latex matching topcoat.
 - 3) Topcoat: Institutional low-odor/VOC interior latex (flat) **OR** (low sheen) **OR** (eggshell) **OR** (semigloss), **as directed**.

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EXAMPLE PROPOSAL RESPONSE

Agriculture Field Station Office Refresh

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About the CTC:

- ☑ This Construction Task Catalog[®] (CTC) was developed and customized by The Gordian Group, Inc. specifically for **University of California**, priced locally using current labor, material and equipment costs, and published in July 2020.
- ☑ The Gordian Group, Inc. licenses the use of this CTC and other proprietary information and software for the sole purpose of providing Job Order Contracting services to **University of California**. Use of this CTC and other proprietary information and software for any other purpose, or for any other entity, is expressly prohibited without the express written consent of The Gordian Group, Inc.

MasterFormat[™]

- ☑ The tasks in this Construction Task Catalog are organized using CSI's *MasterFormat*.



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The Unit Prices Include:

LABOR COSTS:

- ☑ Labor costs include direct labor through the working foreperson level at straight-time prevailing wage rates including fringe benefits and an allowance for Social Security, Medicare taxes, worker's compensation, unemployment insurance, and employee benefits.
- ☑ Labor costs include unloading equipment, materials, and tools, and transporting the same up or down 2 stories and 125' to reach the project site; layout; measuring and cutting to fit; performing the task; disposal of excess material; and time for lunch and breaks.

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EQUIPMENT COSTS:

- ☑ Equipment costs include all equipment required to accomplish the task.
- ☑ Mobilization is included for all equipment except large equipment (e.g. cranes, bulldozers, excavators, backhoes, bobcats etc.), which exclude mobilization.
- ☑ Equipment costs include all operating expenses such as fuel, electricity, lubricants, etc.

MATERIAL COSTS:

- ☑ Material costs include the cost of the material, delivery, and all incidentals and accessories integral to the installation.
- ☑ Material costs include manufacturer's and/or fabricator's shop drawings.
- ☑ Material costs for roofing, drywall, VCT, carpet, wall covering, ceiling tile, pipe, conduit, concrete, etc. include an allowance for waste. This list is not intended to be all inclusive, but descriptive of the types of construction materials that are typically sold in standard lengths, sizes and weights.
- ☑ Material costs for imported materials (e.g. aggregate, sand, soil, etc.) include delivery up to 15 miles from the closest approved source.

The Adjustment Factors Include:

The Adjustment Factors include the following costs, unless specifically excluded by the terms of the Contract Documents:

BUSINESS COSTS:

- ☑ Office overhead, including, but not limited to, office space, office equipment, office and management personnel, office supplies, and employee transportation.
- ☑ Insurance and bonding.
- ☑ Profit.

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- Job Order development services, Owner meetings, and other administrative services required by the Contract Documents.
- Subcontractor's overhead and profit.
- Cost of financing the work.
- Business risks such as the risk of a lower than expected volume of work, smaller than anticipated Job Orders, poor Subcontractor performance, and inflation or material cost fluctuations.

PROJECT RELATED COSTS:

- Project trailer, equipment and supplies, and portable toilets for Contractor's use.
- Project management and project supervision.
- Services required to complete project filings and obtain permits.
- Preparation and modification of sketches, drawings, submittals, as-built drawings, and other project records.
- Incidental engineering and architectural services.
- Gang boxes and storage containers for Contractor's tools, equipment and materials.
- Basic safety and warning signage, minor barricades (e.g., construction tape, etc.) and personnel safety equipment (e.g., hard hats, safety harnesses with lifeline or cabling, protective clothing, safety glasses, face shields, etc.).
- Meeting Owner's security requirements.
- All taxes for which a waiver is not available including material sales tax and equipment rental.
- Removing and returning Owner's furniture and furnishings (e.g. chairs, tables, pictures, etc. but excluding modular furniture, furnishings fastened to the wall or floor, safes and other furniture requiring disassembly).
- Sealing windows doors, and other openings with plastic to contain construction dust and debris within the work area, or to protect existing surfaces.
- Working in extreme temperatures (below or above normal) or adverse conditions such as rain, wind,

sleet or snow. Costs resulting from inadequate supply of building materials, fuel, electricity, or skilled labor.

- Daily clean-up.
- Final professional clean-up.

PRICE VARIATIONS:

- Contractors may experience direct costs that are different than the unit prices set forth in the Construction Task Catalog. While diligent effort was made to provide accurate, unit prices, it is the Contractor's responsibility to review and analyze the unit prices, and to calculate, prior to bidding, the Adjustment Factors accordingly.

SUMMARY:

- This list is not exhaustive and is intended to provide general examples of costs to be included in the Contractor's Adjustment Factors.
- The only compensation to be paid to the Contractor for unit price tasks will be:

Unit Price	X	Quantity	X	Adjustment Factor
------------	---	----------	---	----------------------
- No additional payments of any kind whatsoever will be made.
- All costs in excess of the unit prices, must be included in the Adjustment Factors.

General Rules:

- Unit prices are for complete and in-place construction and include all labor, equipment and material required to complete the task as described in the CTC.
- If the Contractor uses a crane or other lifting equipment (except a truck mounted boom lift or other equipment as part of the delivery process) to lift material onto a roof, even if that roof is less than

2 stories, the contractor will be paid for such crane or lifting equipment as a separate task.

- ☑ Unit prices include all fasteners such as anchor bolts, lag bolts, screws, adhesive, wedge anchors, expansion bolts, roofing clips (excluding hurricane clips) required. Fasteners listed separately in the CTC are for use with Owner furnished material and equipment or relocating or reinstalling existing material and equipment.
- ☑ Unit prices exclude more substantial mounting material such as threaded rod or angle iron unless the task description states otherwise.
- ☑ Unit prices for doors and windows, duct work, plumbing fixtures, seamless floors, countertops, roof flashing, pitch pockets, skylights, roof curbs, exterior trim, etc. include sealant and caulking.
- ☑ Unit prices include testing, calibrating, balancing, start-up services and the like required to ensure proper installation, construction and performance of the work (e.g. compaction test for backfill, balancing of heating ventilation and air conditioning, pneumatic or hydrostatic testing, soaping of joints, disinfection and flushing of water lines, etc.). Contractor may be paid for testing, calibrating, balancing, start-up services and the like for Owner supplied materials and equipment, or when working on or tying into existing materials and equipment.
- ☑ For the purpose of calculating the quantity of a task, quantities are calculated on a per project basis. The quantity so determined shall be used for the task and all appropriate modifiers, unless the task states otherwise.
- ☑ Whenever there are alternative tasks that may be selected to complete work, the Contractor shall select the most practical and economical tasks available (e.g. rental of equipment by weeks or months rather than days, or painting by roller or spray rather than brush).

DEMOLITION:

- ☑ Unit prices for demolition include all labor, equipment and material required for the complete removal of the items; clean-up of the area; and transporting the demolished items up or down 2 stories into a truck, dumpster, or to an owner

designated area, located within 125' of the project site.

- ☑ Unit prices for demolition exclude costs for hauling (See 01741900), dump fees (See 01741900), dumpsters (See 01741900), and trash chutes (See 01741900).
- ☑ If the item being demolished is attached to another item being removed and can be removed as one item, then that item shall not be priced as a separate demolition task, unless the component alone must be demolished to accomplish the task (e.g. demolition of pipe includes pipe fittings unless the fitting must be demolished separately to accomplish the task; demolition of a wood door includes hinges, hardware, closures, kick plates, etc.).
- ☑ The word "replace" includes removal of the existing item and installation of the new item.
- ☑ The words "remove and relocate" or "remove and reinstall" include removal, cleaning, and installation of the existing item in either the same location or another location.
- ☑ Salvageable materials are the property of the Owner and shall, if directed, be turned over to the Owner.

WORKING HEIGHT:

- ☑ Typical working height for work other than masonry is up to 14' above the finished floor or stationary working surface. The Contractor will not be paid for scaffolding, lifts, or similar equipment for work below 14'.
- ☑ Typical working height for masonry work is up to 4' above the finished floor or stationary working surface. The Contractor will not be paid for scaffolding, lifts, or similar equipment for masonry work below 4'.

FIELD ENGINEERING:

- ☑ Surveying tasks shall be used only when the Owner requests the Contractor to perform topographic surveys, property line surveys or to establish horizontal and vertical control points. If the Owner provides horizontal and vertical control points within or adjacent to the project site, all other surveying

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required to complete the work shall be considered construction staking or layout, and the cost thereof is included in the appropriate tasks.

ASSEMBLIES:

- ☑ Assembly tasks take precedence over individual component tasks.

RESTRICTED AND CONFINED SPACES:

- ☑ Restricted Working Space is defined as any area with less than 3' vertical or horizontal clearance and includes areas such as crawl spaces, ceiling plenums where the grid is not removed, narrow piping tunnels, and equipment rooms where the space to install the new work is congested as a result of equipment and piping placement that meet these dimensional restrictions. A Restricted Working Space modifier is available for certain mechanical piping and piping accessories tasks and for certain electrical conduit and conduit accessories tasks. Only those tasks with a modifier for Restricted Working Space are eligible for a price adjustment, and then only if the modifier applies to the contemplated tasks. A non pre-priced task will not be allowed because of Restricted Working Space for any CTC task.
- ☑ Confined Working Space is defined according to the OSHA definition 29 CFR 1926.21(b)(6)(i): "Any space having limited means of egress, which is subject to accumulation of toxic or flammable contaminants or has an oxygen deficient atmosphere, including, but not limited to, storage tanks, process vessels, bins, boilers, ventilation and exhaust duct, sewers, underground vaults, tunnels, pipelines and open top spaces more than 4 feet in depth such as pits and tubs." The Contractor shall conform to all OSHA and Owner requirements for working in Confined Working Spaces. Required ventilation and air monitoring equipment tasks shall be priced from the CTC.

TECHNICAL SPECIFICATIONS:

- ☑ Technical Specifications for tasks shall be interpreted as follows: All labor, material,

equipment, spare parts, services, and work required by a Technical Specification shall be considered included in the unit price, unless the task description states otherwise.

Or Equals:

- ☑ Whenever material, products, or equipment is identified in the CTC, or in the Technical Specifications, by reference to a manufacturer's name, make or model number, the identification is intended to establish a standard. Any material, product, or equipment of another manufacturer may be considered an or-equal provided that, in the opinion of the Owner, the material, product, or equipment so proposed is of equal quality, substance and function to the named item. The Contractor shall not install any proposed material, product, or equipment without the prior written approval of the Owner. The burden of proof, and all costs related thereto, concerning whether the proposed material, product, or equipment is an or-equal, shall be borne by the Contractor.

Useful Information:

UNIT OF MEASURE DEFINITIONS:

ACR – Acre, **BAG** – Bag, **BBL** – Barrel, **BCY** - Bank (In-place) Cubic Yards, **BF** - Board Foot, **BOX** - Box (each), **BTU** - British Thermal Unit, **C** - One Hundred, **CCF** - One Hundred Cubic Feet, **CCY** - Compacted Cubic Yards, **CF** - Cubic Foot, **CFM** - Cubic Feet Per Minute, **CI** – Cubic Inch, **CLF** - One Hundred Linear Feet, **CSF** - One Hundred Square Feet, **CSY** - Hundred Square Yards, **CWT** - Hundred Weight, **CY** - Cubic Yard, **CYM** - Cubic Yard Mile, **DAY** – Day, **DRM** - Drum (each), **EA** – Each, **FLR** - Floor (Per Floor), **FT** – Foot, **GAL** – Gallon, **GSF** - Ground Square Foot, **HR** – Hour, **HWT** - Hundred Carton Weight, **HYR** – Half Year, **IN** – Inch, **JOB** – Job, **LAN** – Lane, **LB** – Pound, **LCY** - Loose (Excavated) Cubic Yards, **LF** - Linear Foot, **LFD**

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- Linear Feet Per Day, **LIT** – Liter, **LOT** – Lot, **MBF** - One Thousand Board Feet, **MBH** - One Thousand British Thermal Units, **MCF** – One Thousand Cubic Feet, **MF3** - One Thousand Cubic Feet Per Minute, **MGL** – One Thousand Gallons, **MI** – Mile, **MLF** - One Thousand Linear Feet, **MO** – Month, **MSF** - One Thousand Square Feet, **MSY** - One Thousand Square Yards, **MT** – Metric Ton, **MTK** – Metric Ton Kilometer, **M2** – Square Meter, **M3K** – Cubic Meter Kilometer, **NTE** – Note, **OPN** – Opening, **OUT** - Outlet or Output (each), **OZ** – Ounce, **PKG** – Package, **PNT** – Point, **PR** – Pair, **QT** – Quart, **ROL** - Roll (each), **ROM** – Room, **ROW** – Row, **RSR** - Riser (Per Rise), **SEA** – Seat, **SET** – Set, **SF** - Square Foot, **SHT** – Sheet, **SI** - Square Inch, **STP** - Stop (each), **SQ** - Square or One Hundred Square Feet, **SY** - Square Yard, **SYI** – Inches per Square Yard, **TNM** - Tons per Mile, **TON** – Ton, **TRK** – Truck Load, **UI** - United Inch, **UNT** – Unit, **VLF** - Vertical Linear Foot, **WK** – Week, **YD** – Yard, **YR** – Year

Clay	3220	2150	3570
Gneiss	4550	2720	3180

BULK FACTORS FOR DEMOLITION:

The following bulk factors shall be used to calculate the volume of demolished material to be transported from the project site.

- **Asphalt** = 1.25
- **Concrete** = 1.40

CONVERSIONS:

1 Acre = 43,560 Square Feet = 4046.8 Square Meters

1 Board Foot = 12" x 12" x 1" = 144 Cubic Inches

1 Centimeter = 0.3937 Inches = 0.0328 Feet

1 Cubic Foot = 0.03704 Cubic Yards = 0.02832 Cubic Meters

1 Cubic Meter = 1.3080 Cubic Yards = 35.3147 Cubic Feet

1 Cubic Yard = 27 Cubic Feet = 0.7646 Cubic Meters

1 Foot = 12 Inches = 0.3048 Meters

1 Inch = 2.54 Centimeters = 0.0254 Meters

1 Kilogram = 2.2046 Pounds

1 Kilometer = 0.6214 Miles = 3280 Feet

1 Meter = 100 Centimeters = 3.2808 Feet

1 Mile = 5280 Feet = 1.6093 Kilometers

1 Pound = 0.4536 Kilograms

1 Square Foot = 144 Square Inches = .0929 Square Meters

1 Square Meter = 1.1960 Square Yards = 10.7639 Square Feet

1 Square Yard = 9 Square Feet = 0.8361 Square Meters

MATERIAL WEIGHTS:

EARTHEN MATERIAL

The following engineering values for establishing shrink/swell factors shall be used unless otherwise directed by the Owner.

Material	Material Weight (Lbs Per CY)		
	In-place (Bank)	Loose (Excavated Materials)	Compacted
Earth, Common (Average)	3170	2536	3520
Sand	2880	2590	3240
Earth, Rock Mix. (75% E/ 25% R)	3380	2370	3720
Earth, Rock Mix. (50% E/50% R)	3750	2710	4000
Earth, Rock Mix. (25% E/ 75% R)	4120	3140	3680
Gravel (Average)	3280	2730	3570
Limestone	4380	2690	3220
Riprap Rock (Average)	4500	2610	3150
Granite	4540	2640	3170
Basalt	4950	3020	3640

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1 Ton = 2000 Pounds = 907.185 Kilograms

1 Yard = 3 Feet = 0.9144 Meters

TRADEMARKS

- ☑ Gordian JOC Solution, JOC Complete Solution, JOC Complete Solution Plus, PROGEN, eGordian, eziQC, Construction Task Catalog, Catalog of Construction Tasks, DMAP, The Standard for Job Order Contracting and 6 Phase Development and Implementation Process are either registered trademarks or trademarks of The Gordian Group, Inc. The names of actual companies and products mentioned herein may be the trademarks of their respective owners.

Sheet Metal Thickness (inches)				
Gage No.	Steel Sheet	Galvanized Steel Sheet	Stainless Steel Sheet	Aluminum Sheet
10	.135	.138	.141	
11	.120	.123	.125	
12	.105	.108	.109	
13	.090	.093	.094	.072
14	.075	.079	.078	.064
15	.067	.071	.070	.057
16	.060	.064	.063	.051
17	.054	.058	.056	.045
18	.048	.052	.050	.040
19	.042	.046	.044	.036
20	.036	.040	.038	.032
21	.033	.037	.034	.028
22	.030	.034	.031	.025
23	.027	.031	.028	.023
24	.024	.028	.025	.020
25	.021	.025	.022	.018
26	.018	.022	.019	.017

STANDARD GEOMETRY:

Circle

- Circumference = $2 \pi \text{ radius} = \pi \text{ diameter}$
- Area = $\pi \text{ radius}^2 = \pi (\text{diameter}^2 / 4)$

Cylinder

- Volume = $(\pi \text{ radius}^2) \text{height}$
- Surface Area = $2 \pi \text{ radius}^2 + (2 \pi \text{ radius}) \text{height}$

Sphere

- Volume = $(4 \pi \text{ radius}^3) / 3$
- Surface Area = $4 \pi \text{ radius}^2$

$\pi = 3.14159$

United Inch

- The industry standard for measuring windows is the United Inch or UI. The UI is determined by adding the width and the height in inches.

RESPONSES TO EXHIBIT A

1.0 SUPPLIER RESPONSE

Supplier must supply the following information in order for the Principal Procurement Agency to determine Supplier's qualifications to extend the resulting Master Agreement to Participating Public Agencies through OMNIA Partners.

1.1 Company

- A. Brief history and description of Supplier to include experience providing similar products and services.
 - a. **See response to Company Profile Questions, question #1.**
- B. Total number and location of sales persons employed by Supplier.
 - a. **Gordian employs 64 sales persons consisting of executive level managers, directors, field sales representatives and inside sales representatives.**
- C. Number and location of support centers (if applicable) and location of corporate office.
 - a. **Gordian has seven offices nationwide, with the customer support department consolidated in our Greenville, SC headquarters.**
- D. Annual sales for the three previous fiscal years.
 - a. **Gordian is a wholly-owned subsidiary of Fortive Corporation, a publicly-traded corporation. All financial data is reported by Fortive Corporation in accordance with SEC regulations, and previous annual reports and other financial reports can be found here: www.investors.fortive.com.**
 - b. Submit FEIN and Dunn & Bradstreet report.
 - i. **DUNS Number: 868729716**
 - ii. **FEIN: 58-1900371**
- E. Describe any green or environmental initiatives or policies.
 - a. **Gordian follows Fortive Corporations Environmental, Health and Safety Policy and is committed to conducting its business in an environmentally responsible way, in compliance with all applicable environmental, health and safety laws and regulations, and in a manner that promotes and protects the health and safety of our associates, customers, and members of our local communities nationwide. Gordian's offices are equipped with environmentally efficient lighting, water and power systems; and each location includes recycling bins for both secure and unsecured materials.**

Our commercial products also implement best practices for reducing waste and include document creation and upload features, as well as collaboration tools that reduce the need for paper documents or email attachments that are easily and often unnecessarily printed. Gordian is committed to environmentally sound practices and consistently searches for new ways to reduce our footprint whether through onsite initiatives or product development efforts.

F. Describe any diversity programs or partners supplier does business with and how Participating Agencies may use diverse partners through the Master Agreement. Indicate how, if at all, pricing changes when using the diversity program. If there are any diversity programs, provide a list of diversity alliances and a copy of their certifications.

a. Gordian endeavors to utilize diverse business concerns whenever possible, both through direct subcontracting, where applicable, and indirect utilization supporting our overall business. In 2019 Gordian was responsible for the procurement of almost \$14 million dollars in products and services from small business concerns. Gordian does not anticipate the direct utilization of diverse partners through this Master Agreement.

G. Indicate if supplier holds any of the below certifications in any classified areas and include proof of such certification in the response:

a. Minority Women Business Enterprise

Yes No

If yes, list certifying agency:

b. Small Business Enterprise (SBE) or Disadvantaged Business Enterprise (DBE)

Yes No

If yes, list certifying agency:

c. Historically Underutilized Business (HUB)

Yes No

If yes, list certifying agency:

d. Historically Underutilized Business Zone Enterprise (HUBZone)

Yes No

If yes, list certifying agency:

e. Other recognized diversity certificate holder

Yes No

If yes, list certifying agency:

H. List any relationships with subcontractors or affiliates intended to be used when providing services and identify if subcontractors meet minority-owned standards. If any, list which certifications subcontractors hold and certifying agency.

a. Gordian does not anticipate the utilization of any subcontractors through the Master Agreement.

I. Describe how supplier differentiates itself from its competitors.

a. Gordian is the pioneer and continued leader in the development, implementation and support of JOC programs across the country. In 2019 alone, Gordian JOC programs accounted for the procurement of more than \$2.3 billion dollars in construction work, including over \$430 million dollars through cooperative purchasing programs. No other firm can match the level of experience, expertise and resources Gordian possesses and dedicates to the continued expansion and improvement of our JOC product and services offerings. While some firms may have a handful of employees dedicated to servicing a few clients, Gordian supports more than 250 customers directly through our JOC solutions, and hundreds more through cooperative purchasing programs in more than 25 states. Gordian understands what it takes to successfully market, sell and support JOC programs for Omnia and its members, and will bring over 3 decades of experience to ensure a successful partnership.

J. Describe any present or past litigation, bankruptcy or reorganization involving supplier.

a. Gordian is currently involved in litigation with an employee in the State of California. Additional information can be provided upon request.

K. Felony Conviction Notice: Indicate if the supplier

a. is a publicly held corporation and this reporting requirement is not applicable;

i. Supplier is a wholly-owned subsidiary of a publicly held corporation and this reporting requirement is not applicable.

b. is not owned or operated by anyone who has been convicted of a felony;
or

- c. is owned or operated by and individual(s) who has been convicted of a felony and provide the names and convictions.
- L. Describe any debarment or suspension actions taken against supplier
 - a. **None.**

1.2 Distribution, Logistics

- A. Each offeror awarded an item under this solicitation may offer their complete product and service offering/a balance of line. Describe the full line of products and services offered by supplier.
 - a. **See response to Company Profile Questions, question #1. Gordian is agreeable to providing value-added products and services that will assist Participating Public Agencies navigate every phase of the building lifecycle. This includes ezIQ, RSMeans Data, Assessment & Planning, ROPA, Space Utilization and Sustainability as set forth in #1.**
- B. Describe how supplier proposes to distribute the products/service nationwide. Include any states where products and services will not be offered under the Master Agreement, including U.S. Territories and Outlying Areas.
 - a. **Gordian can support the development, implementation and support of JOC programs nationwide, provided any Participating Public Agency procures sufficient construction volume to support local personnel. Where local personnel are not required, Gordian has the capability to support the delivery of our products and services nationwide through a combination of remote and temporary onsite support. Gordian currently provides products and services to the continental United States as well as Hawaii and Alaska.**
- C. Describe how Participating Agencies are ensured they will receive the Master Agreement pricing; include all distribution channels such as direct ordering, retail or in-store locations, through distributors, etc. Describe how Participating Agencies verify and audit pricing to ensure its compliance with the Master Agreement.
 - a. **All Participating Agency purchases will be direct and these agencies can verify and audit pricing by confirming with Omnia, requesting a copy of the Master Agreement, or verifying the contract terms on Omnia's website.**
- D. Identify all other companies that will be involved in processing, handling or shipping the products/service to the end user.

a. No other companies will be involved in processing, handling or shipping the products/service to the end user.

E. Provide the number, size and location of Supplier's distribution facilities, warehouses and retail network as applicable.

a. Not applicable.

1.3 Marketing and Sales

Gordian will work directly with Omnia to develop a coordinated and collaborative marketing plan for the Master Agreement which will include national marketing initiatives and a nationwide selling effort. In lieu of responding to the items below, Gordian expresses its intent to work with Omnia to ensure these coordinated efforts produce the maximum impact and will address all of the topics listed below in a manner that is agreeable to both parties. As stated above, Gordian has experienced marketing and sales departments which can be "ramped up" in minimal time given our history of marketing and selling into government agencies through both direct and cooperative use engagements.

A. Provide a detailed ninety-day plan beginning from award date of the Master Agreement describing the strategy to immediately implement the Master Agreement as supplier's primary go to market strategy for Public Agencies to supplier's teams nationwide, to include, but not limited to:

- i.** Executive leadership endorsement and sponsorship of the award as the public sector go-to-market strategy within first 10 days
- ii.** Training and education of Supplier's national sales force with participation from the Supplier's executive leadership, along with the OMNIA Partners team within first 90 days
 - i.** Gordian will work directly with Omnia to develop a coordinated and collaborative marketing plan for the Master Agreement which will include national marketing initiatives and a nationwide sales effort.

B. Provide a detailed ninety-day plan beginning from award date of the Master Agreement describing the strategy to market the Master Agreement to current Participating Public Agencies, existing Public Agency customers of Supplier, as well as to prospective Public Agencies nationwide immediately upon award, to include, but not limited to:

- i.** Creation and distribution of a co-branded press release to trade publications
- ii.** Announcement, Master Agreement details and contact information published on the Supplier's website within first 90 days

- iii. Design, publication and distribution of co-branded marketing materials within first 90 days
- iv. Commitment to attendance and participation with OMNIA Partners at national (i.e. NIGP Annual Forum, NPI Conference, etc.), regional (i.e. Regional NIGP Chapter Meetings, Regional Cooperative Summits, etc.) and supplier-specific trade shows, conferences and meetings throughout the term of the Master Agreement
- v. Commitment to attend, exhibit and participate at the NIGP Annual Forum in an area reserved by OMNIA Partners for partner suppliers. Booth space will be purchased and staffed by Supplier. In addition, Supplier commits to provide reasonable assistance to the overall promotion and marketing efforts for the NIGP Annual Forum, as directed by OMNIA Partners.
- vi. Design and publication of national and regional advertising in trade publications throughout the term of the Master Agreement
- vii. Ongoing marketing and promotion of the Master Agreement throughout its term (case studies, collateral pieces, presentations, promotions, etc.)
- viii. Dedicated OMNIA Partners internet web-based homepage on Supplier's website with:
 - OMNIA Partners standard logo;
 - Copy of original Request for Proposal;
 - Copy of Master Agreement and amendments between Principal Procurement Agency and Supplier;
 - Summary of Products and pricing;
 - Marketing Materials
 - Electronic link to OMNIA Partners' website including the online registration page;
 - A dedicated toll-free number and email address for OMNIA Partners

C. Describe how Supplier will transition any existing Public Agency customers' accounts to the Master Agreement available nationally through OMNIA Partners. Include a list of current cooperative contracts (regional and national) Supplier holds and describe how the Master Agreement will be positioned among the other cooperative agreements.

- i. **Any existing customers will only be transferred to the Master Agreement upon request from such customers during a contract renewal or procurement process. Gordian does not intend to**

actively transition existing customers to the Master Agreement where such customers are currently under an active contract. Currently, Gordian works with the following regional and national cooperative purchasing agencies:

- i. Capital Region Council of Governments (CT)**
- ii. Keystone Purchasing Cooperative (PA)**
- iii. Educational Services Commission of New Jersey**
- iv. Cooperative Educational Services of New Mexico**
- v. BuyBoard (TX)**
- vi. PACE (TX)**
- vii. Sourcewell**

The Master Agreement will be positioned as an option through which prospective Gordian customers can procure the products and services contained in the Master Agreement. In our experience each prospective customer has a preferred cooperative purchasing agency, and the Master Agreement will be positioned as an optional procurement vehicle unless the prospective customer has been identified or engaged by Omnia, or has identified themselves as an Omnia member, in which case the Master Agreement will be presented as the preferred procurement option.

D. Acknowledge Supplier agrees to provide its logo(s) to OMNIA Partners and agrees to provide permission for reproduction of such logo in marketing communications and promotions. Acknowledge that use of OMNIA Partners logo will require permission for reproduction, as well.

i. Acknowledged.

E. Confirm Supplier will be proactive in direct sales of Supplier's goods and services to Public Agencies nationwide and the timely follow up to leads established by OMNIA Partners. All sales materials are to use the OMNIA Partners logo. At a minimum, the Supplier's sales initiatives should communicate:

- i. Master Agreement was competitively solicited and publicly awarded by a Principal Procurement Agency
- ii. Best government pricing
- iii. No cost to participate
- iv. Non-exclusive

Gordian confirms it will be proactive in the direct sales of our goods and services to public agencies nationwide and will timely follow up on leads established by Omnia Partners. Sales materials provided to leads

established by Omnia Partners will communicate the minimum required information set forth above.

F. Confirm Supplier will train its national sales force on the Master Agreement. At a minimum, sales training should include:

- i. Key features of Master Agreement
- ii. Working knowledge of the solicitation process
- iii. Awareness of the range of Public Agencies that can utilize the Master Agreement through OMNIA Partners
- iv. Knowledge of benefits of the use of cooperative contracts

Confirmed.

G. Provide the name, title, email and phone number for the person(s), who will be responsible for:

- i. Executive Support
 - i. **Daniel Cook, VP and General Manager, SLED**
d.cook@gordian.com
(202) 253-9255
- ii. Marketing
TBD
- iii. Sales
 - i. **Alyssa Chapman, VP of Sales, SLED**
a.chapman@gordian.com
(703) 485-5439
- iv. Sales Support
 - i. **Janice Nolan, Director of Sales Operations**
j.nolan@gordian.com
(412) 596-9426
- v. Financial Reporting
 - i. **Stefan Leonhardt, Controller**
s.leonhardt@gordian.com
(864) 752-2783
- vi. Accounts Payable
 - i. **Alison Anderson, Accounts Receivable Manager**
a.anderson@gordian.com
(864) 752-4559

- vii. Contracts
 - i. **Ammon Leshner, VP/General Counsel**
a.lesher@gordian.com
(864) 752-4545

H. Describe in detail how Supplier's national sales force is structured, including contact information for the highest-level executive in charge of the sales team.

- i. **Gordian's national sales force is structured by industry verticals: 1) State/Local/K12 Education (SLED); 2) Higher Education; 3) Healthcare; and 4) Federal. The executives charged with directly managing the sales resources in each of these verticals are:**

1. **Alyssa Chapman, VP of Sales, SLED**
A.Chapman@Gordian.com
2. **Matt Bausher, VP of Sales, Higher Education**
M.Bausher@Gordian.com
3. **Scott Creekmore, VP of Sales, Healthcare**
S.Creekmore@Gordian.com
4. **Lisa Cooley, VP of Federal Solutions**
L.Cooley@Gordian.com

I. Explain in detail how the sales teams will work with the OMNIA Partners team to implement, grow and service the national program.

- i. **Gordian's sales and marketing teams, in coordination with the Omnia Partners team, will coordinate on a national rollout of the Master Agreement and share information on targeted prospects and Omnia members who are not currently Gordian customers. Gordian's sales team is already familiar with cooperative purchasing and will be able to provide subject matter assistance to Omni's team when needed, but will also be capable of independently handling sales engagements with Omnia members to sell the value of utilizing the Master Agreement to procure Gordian's available products and services. Gordian utilizes SalesForce and will be able to tag and report on Omnia associated leads and sales engagements as requested, ensuring continuous and proactive pipeline and funnel management for Omnia.**

J. Explain in detail how Supplier will manage the overall national program throughout the term of the Master Agreement, including ongoing coordination of marketing and sales efforts, timely new Participating Public Agency account set-up, timely contract administration, etc.

i. **Gordian has found that each partnership engagement is unique, and the management of national programs must be tailored to the cooperative purchasing agency and its membership base. Gordian will work Omnia Partners on the management of the overall program and ensure that each entity has the appropriate designated peer contacts in all areas including executive management, sales, marketing, sales operations, accounting, accounts receivable and legal. Gordian already has the technology, processes and resources to support national cooperative programs, and will ensure these assets are utilized to ensure optimal success of the Master Agreement as a vehicle for establishing a national network of Omnia contractors capable of serving Omnia’s membership.**

K. State the amount of Supplier’s Public Agency sales for the previous fiscal year. Provide a list of Supplier’s top 10 Public Agency customers, the total purchases for each for the previous fiscal year along with a key contact for each.

i. **Gordian is a wholly-owned subsidiary of Fortive Corporation, a publicly owned corporation. All financial results are reported by Fortive Corporation in accordance with SEC regulations and can be located at the following: www.investors.fortive.com.**

L. Describe Supplier’s information systems capabilities and limitations regarding order management through receipt of payment, including description of multiple platforms that may be used for any of these functions.

Gordian utilizes a combination of information systems to track orders through receipt of payment. For Job Order Contracting, Gordian’s JOC software tracks and records the procurement of construction volume by each customer, which provides the basis for our fees. Gordian’s Netsuite ERP system then automates the invoicing, payment and reporting processes for all products and services sold by Gordian. The marking, tracking, reporting and payment of all fees associated with the Master Agreement will be consistent with Gordian’s existing cooperative purchasing agency clients, and no new systems, processes, or capabilities will need to be implemented to service the Master Agreement.

M. Provide the Contract Sales (as defined in Section 10 of the OMNIA Partners Administration Agreement) that Supplier will guarantee each year under the Master Agreement for the initial three years of the Master Agreement (“Guaranteed Contract Sales”).

\$_____.00 in year one
\$_____.00 in year two
\$_____.00 in year three

To the extent Supplier guarantees minimum Contract Sales, the administration fee shall be calculated based on the greater of the actual Contract Sales and the Guaranteed Contract Sales.

Gordian does not guarantee contract sales for any cooperative purchasing agency.

- N. Even though it is anticipated many Public Agencies will be able to utilize the Master Agreement without further formal solicitation, there may be circumstances where Public Agencies will issue their own solicitations. The following options are available when responding to a solicitation for Products covered under the Master Agreement.
- i. Respond with Master Agreement pricing (Contract Sales reported to OMNIA Partners).
 - ii. If competitive conditions require pricing lower than the standard Master Agreement not-to-exceed pricing, Supplier may respond with lower pricing through the Master Agreement. If Supplier is awarded the contract, the sales are reported as Contract Sales to OMNIA Partners under the Master Agreement.
 - iii. Respond with pricing higher than Master Agreement only in the unlikely event that the Public Agency refuses to utilize Master Agreement (Contract Sales are not reported to OMNIA Partners).
 - iv. If alternative or multiple proposals are permitted, respond with pricing higher than Master Agreement, and include Master Agreement as the alternate or additional proposal.

Detail Supplier's strategies under these options when responding to a solicitation.

In the event a Public Agency conducts a competitive solicitation to procure any of Gordian's products and services, the Master Agreement will not form the basis of any response to a competitive solicitation and will not be deemed as the contracting vehicle for any contract resulting from a competitive solicitation. The Master Agreement will be applicable to those procurements made by Omnia members who elect to procure Gordian's products and services through a piggyback of the Master Agreement and not through a separate solicitation process.

**EXHIBIT F
FEDERAL FUNDS CERTIFICATIONS**

**FEDERAL CERTIFICATIONS
ADDENDUM FOR AGREEMENT FUNDED BY U.S. FEDERAL GRANT**

TO WHOM IT MAY CONCERN:

Participating Agencies may elect to use federal funds to purchase under the Master Agreement. This form should be completed and returned.

DEFINITIONS

Contract means a legal instrument by which a non-Federal entity purchases property or services needed to carry out the project or program under a Federal award. The term as used in this part does not include a legal instrument, even if the non-Federal entity considers it a contract, when the substance of the transaction meets the definition of a Federal award or subaward

Contractor means an entity that receives a contract as defined in Contract.

Cooperative agreement means a legal instrument of financial assistance between a Federal awarding agency or pass-through entity and a non-Federal entity that, consistent with 31 U.S.C. 6302-6305:

(a) Is used to enter into a relationship the principal purpose of which is to transfer anything of value from the Federal awarding agency or pass-through entity to the non-Federal entity to carry out a public purpose authorized by a law of the United States (see 31 U.S.C. 6101(3)); and not to acquire property or services for the Federal government or pass-through entity's direct benefit or use;

(b) Is distinguished from a grant in that it provides for substantial involvement between the Federal awarding agency or pass-through entity and the non-Federal entity in carrying out the activity contemplated by the Federal award.

(c) The term does not include:

(1) A cooperative research and development agreement as defined in 15 U.S.C. 3710a; or

(2) An agreement that provides only:

(i) Direct United States Government cash assistance to an individual;

(ii) A subsidy;

(iii) A loan;

(iv) A loan guarantee; or

(v) Insurance.

Federal awarding agency means the Federal agency that provides a Federal award directly to a non-Federal entity

Federal award has the meaning, depending on the context, in either paragraph (a) or (b) of this section:

(a)(1) The Federal financial assistance that a non-Federal entity receives directly from a Federal awarding agency or indirectly from a pass-through entity, as described in § 200.101 Applicability; or

(2) The cost-reimbursement contract under the Federal Acquisition Regulations that a non-Federal entity receives directly from a Federal awarding agency or indirectly from a pass-through entity, as described in § 200.101 Applicability.

(b) The instrument setting forth the terms and conditions. The instrument is the grant agreement, cooperative agreement, other agreement for assistance covered in paragraph (b) of § 200.40 Federal financial assistance, or the cost-reimbursement contract awarded under the Federal Acquisition Regulations.

(c) Federal award does not include other contracts that a Federal agency uses to buy goods or services from a contractor or a contract to operate Federal government owned, contractor operated facilities (GOCOs).

(d) See also definitions of Federal financial assistance, grant agreement, and cooperative agreement.

Non-Federal entity means a state, local government, Indian tribe, institution of higher education (IHE), or nonprofit organization that carries out a Federal award as a recipient or subrecipient.

Nonprofit organization means any corporation, trust, association, cooperative, or other organization, not including IHEs, that:

- (a) Is operated primarily for scientific, educational, service, charitable, or similar purposes in the public interest;
- (b) Is not organized primarily for profit; and
- (c) Uses net proceeds to maintain, improve, or expand the operations of the organization.

Obligations means, when used in connection with a non-Federal entity's utilization of funds under a Federal award, orders placed for property and services, contracts and subawards made, and similar transactions during a given period that require payment by the non-Federal entity during the same or a future period.

Pass-through entity means a non-Federal entity that provides a subaward to a subrecipient to carry out part of a Federal program.

Recipient means a non-Federal entity that receives a Federal award directly from a Federal awarding agency to carry out an activity under a Federal program. The term recipient does not include subrecipients.

Simplified acquisition threshold means the dollar amount below which a non-Federal entity may purchase property or services using small purchase methods. Non-Federal entities adopt small purchase procedures in order to expedite the purchase of items costing less than the simplified acquisition threshold. The simplified acquisition threshold is set by the Federal Acquisition Regulation at 48 CFR Subpart 2.1 (Definitions) and in accordance with 41 U.S.C. 1908. As of the publication of this part, the simplified acquisition threshold is \$250,000, but this threshold is periodically adjusted for inflation. (Also see definition of § 200.67 Micro-purchase.)

Subaward means an award provided by a pass-through entity to a subrecipient for the subrecipient to carry out part of a Federal award received by the pass-through entity. It does not include payments to a contractor or payments to an individual that is a beneficiary of a Federal program. A subaward may be provided through any form of legal agreement, including an agreement that the pass-through entity considers a contract.

Subrecipient means a non-Federal entity that receives a subaward from a pass-through entity to carry out part of a Federal program; but does not include an individual that is a beneficiary of such program. A subrecipient may also be a recipient of other Federal awards directly from a Federal awarding agency.

Termination means the ending of a Federal award, in whole or in part at any time prior to the planned end of period of performance.

The following certifications and provisions may be required and apply when Participating Agency expends federal funds for any purchase resulting from this procurement process. Pursuant to 2 C.F.R. § 200.326, all contracts, including small purchases, awarded by the Participating Agency and the Participating Agency's subcontractors shall contain the procurement provisions of Appendix II to Part 200, as applicable.

APPENDIX II TO 2 CFR PART 200

(A) Contracts for more than the simplified acquisition threshold currently set at \$250,000, which is the inflation adjusted amount determined by the Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council (Councils) as authorized by 41 U.S.C. 1908, must address administrative, contractual, or legal remedies in instances where contractors violate or breach contract terms, and provide for such sanctions and penalties as appropriate.

Pursuant to Federal Rule (A) above, when a Participating Agency expends federal funds, the Participating Agency reserves all rights and privileges under the applicable laws and regulations with respect to this procurement in the event of breach of contract by either party.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

(B) Termination for cause and for convenience by the grantee or subgrantee including the manner by which it will be effected and the basis for settlement. (All contracts in excess of \$10,000)

Pursuant to Federal Rule (B) above, when a Participating Agency expends federal funds, the Participating Agency reserves the right to immediately terminate any agreement in excess of \$10,000 resulting from this procurement process in the event of a

breach or default of the agreement by Offeror as detailed in the terms of the contract.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

(C) Equal Employment Opportunity. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 CFR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."

Pursuant to Federal Rule (C) above, when a Participating Agency expends federal funds on any federally assisted construction contract, the equal opportunity clause is incorporated by reference herein.

Does offeror agree to abide by the above? YES ATL Initials of Authorized Representative of offeror

(D) Davis-Bacon Act, as amended (40 U.S.C. 3141-3148). When required by Federal program legislation, all prime construction contracts in excess of \$2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. 3141-3144, and 3146-3148) as supplemented by Department of Labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction"). In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency. The contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States"). The Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.

Pursuant to Federal Rule (D) above, when a Participating Agency expends federal funds during the term of an award for all contracts and subgrants for construction or repair, offeror will be in compliance with all applicable Davis-Bacon Act provisions.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

(E) Contract Work Hours and Safety Standards Act (40 U.S.C. 3701-3708). Where applicable, all contracts awarded by the non-Federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5). Under 40 U.S.C. 3702 of the Act, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the work week. The requirements of 40 U.S.C. 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.

Pursuant to Federal Rule (E) above, when a Participating Agency expends federal funds, offeror certifies that offeror will be in compliance with all applicable provisions of the Contract Work Hours and Safety Standards Act during the term of an award for all contracts by Participating Agency resulting from this procurement process.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

(F) Rights to Inventions Made Under a Contract or Agreement. If the Federal award meets the definition of "funding agreement" under 37 CFR §401.2 (a) and the recipient or subrecipient wishes to enter into a contract with a small

business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement," the recipient or subrecipient must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements," and any implementing regulations issued by the awarding agency.

Pursuant to Federal Rule (F) above, when federal funds are expended by Participating Agency, the offeror certifies that during the term of an award for all contracts by Participating Agency resulting from this procurement process, the offeror agrees to comply with all applicable requirements as referenced in Federal Rule (F) above.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

(G) Clean Air Act (42 U.S.C. 7401-7671q.) and the Federal Water Pollution Control Act (33 U.S.C. 1251-1387), as amended—Contracts and subgrants of amounts in excess of \$150,000 must contain a provision that requires the non-Federal award to agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251- 1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA)

Pursuant to Federal Rule (G) above, when federal funds are expended by Participating Agency, the offeror certifies that during the term of an award for all contracts by Participating Agency member resulting from this procurement process, the offeror agrees to comply with all applicable requirements as referenced in Federal Rule (G) above.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

(H) Debarment and Suspension (Executive Orders 12549 and 12689)—A contract award (see 2 CFR 180.220) must not be made to parties listed on the government wide exclusions in the System for Award Management (SAM), in accordance with the Executive Office of the President Office of Management and Budget (OMB) guidelines at 2 CFR 180 that implement Executive Orders 12549 (3 CFR part 1986 Comp., p. 189) and 12689 (3 CFR part 1989 Comp., p. 235), "Debarment and Suspension." SAM Exclusions contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549.

Pursuant to Federal Rule (H) above, when federal funds are expended by Participating Agency, the offeror certifies that during the term of an award for all contracts by Participating Agency resulting from this procurement process, the offeror certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by any federal department or agency. If at any time during the term of an award the offeror or its principals becomes debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation by any federal department or agency, the offeror will notify the Participating Agency.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

(I) Byrd Anti-Lobbying Amendment (31 U.S.C. 1352)—Contractors that apply or bid for an award exceeding \$100,000 must file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award.

Pursuant to Federal Rule (I) above, when federal funds are expended by Participating Agency, the offeror certifies that during the term and after the awarded term of an award for all contracts by Participating Agency resulting from this procurement process, the offeror certifies that it is in compliance with all applicable provisions of the Byrd Anti-Lobbying Amendment (31 U.S.C. 1352). The undersigned further certifies that:

(1) No Federal appropriated funds have been paid or will be paid for on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with the awarding of a Federal contract, the making of a Federal grant, the making of a Federal loan, the entering into a cooperative agreement, and the extension, continuation, renewal, amendment, or modification of a Federal contract, grant, loan, or cooperative agreement.

(2) If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of congress, or an employee of a Member of Congress in connection with this Federal grant or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying", in accordance with its instructions.

(3) The undersigned shall require that the language of this certification be included in the award documents for all covered sub-awards exceeding \$100,000 in Federal funds at all appropriate tiers and that all subrecipients shall certify and disclose accordingly.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

RECORD RETENTION REQUIREMENTS FOR CONTRACTS INVOLVING FEDERAL FUNDS

When federal funds are expended by Participating Agency for any contract resulting from this procurement process, offeror certifies that it will comply with the record retention requirements detailed in 2 CFR § 200.333. The offeror further certifies that offeror will retain all records as required by 2 CFR § 200.333 for a period of three years after grantees or subgrantees submit final expenditure reports or quarterly or annual financial reports, as applicable, and all other pending matters are closed.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

CERTIFICATION OF COMPLIANCE WITH THE ENERGY POLICY AND CONSERVATION ACT

When Participating Agency expends federal funds for any contract resulting from this procurement process, offeror certifies that it will comply with the mandatory standards and policies relating to energy efficiency which are contained in the state energy conservation plan issued in compliance with the Energy Policy and Conservation Act (42 U.S.C. 6321 et seq.; 49 C.F.R. Part 18).

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

CERTIFICATION OF COMPLIANCE WITH BUY AMERICA PROVISIONS

To the extent purchases are made with Federal Highway Administration, Federal Railroad Administration, or Federal Transit Administration funds, offeror certifies that its products comply with all applicable provisions of the Buy America Act and agrees to provide such certification or applicable waiver with respect to specific products to any Participating Agency upon request. Purchases made in accordance with the Buy America Act must still follow the applicable procurement rules calling for free and open competition.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

CERTIFICATION OF ACCESS TO RECORDS – 2 C.F.R. § 200.336

Offeror agrees that the Inspector General of the Agency or any of their duly authorized representatives shall have access to any documents, papers, or other records of offeror that are pertinent to offeror's discharge of its obligations under the Contract for the purpose of making audits, examinations, excerpts, and transcriptions. The right also includes timely and reasonable access to offeror's personnel for the purpose of interview and discussion relating to such documents.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

CERTIFICATION OF APPLICABILITY TO SUBCONTRACTORS

Offeror agrees that all contracts it awards pursuant to the Contract shall be bound by the foregoing terms and conditions.

Does offeror agree? YES ATL Initials of Authorized Representative of offeror

Offeror agrees to comply with all federal, state, and local laws, rules, regulations and ordinances, as applicable. It is further acknowledged that offeror certifies compliance with all provisions, laws, acts, regulations, etc. as specifically noted above.

Offeror's Name: The Gordian Group, Inc.

Address, City, State, and Zip Code:

30 Patewood Drive, Bldg. 2, Suite 350, Greenville, SC 29615

Phone Number: 800-874-2291

Fax Number:

864-233-9100

Printed Name and Title of Authorized

Representative: Ammon T. Leshner, VP and General Counsel

Email Address:

a.lesher@gordian.com

Signature of Authorized Representative:



Date: August 3, 2020

FEMA SPECIAL CONDITIONS

Awarded Supplier(s) may need to respond to events and losses where products and services are needed for the immediate and initial response to emergency situations such as, but not limited to, water damage, fire damage, vandalism cleanup, biohazard cleanup, sewage decontamination, deodorization, and/or wind damage during a disaster or emergency situation. By submitting a proposal, the Supplier is accepted these FEMA Special Conditions required by the Federal Emergency Management Agency (FEMA).

"Contract" in the below pages under FEMA SPECIAL CONDITIONS is also referred to and defined as the "Master Agreement".

"Contractor" in the below pages under FEMA SPECIAL CONDITIONS is also referred to and defined as "Supplier" or "Awarded Supplier".

Conflicts of Interest

No employee, officer, or agent may participate in the selection, award, or administration of a contract supported by a FEMA award if he or she has a real or apparent conflict of interest. Such a conflict would arise when the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization which employs or is about to employ any of these parties, has a financial or other interest in or a tangible personal benefit from a firm considered for award. 2 C.F.R. § 200.318(c)(1); See also Standard Form 424D, ¶ 7; Standard Form 424B, ¶ 3. i. FEMA considers a "financial interest" to be the potential for gain or loss to the employee, officer, or agent, any member of his or her immediate family, his or her partner, or an organization which employs or is about to employ any of these parties as a result of the particular procurement. The prohibited financial interest may arise from ownership of certain financial instruments or investments such as stock, bonds, or real estate, or from a salary, indebtedness, job offer, or similar interest that might be affected by the particular procurement. ii. FEMA considers an "apparent" conflict of interest to exist where an actual conflict does not exist, but where a reasonable person with knowledge of the relevant facts would question the impartiality of the employee, officer, or agent participating in the procurement. c. Gifts. The officers, employees, and agents of the Participating Public Agency nor the Participating Public Agency ("NFE") must neither solicit nor accept gratuities, favors, or anything of monetary value from contractors or parties to subcontracts. However, NFE's may set standards for situations in which the financial interest is de minimus, not substantial, or the gift is an unsolicited item of nominal value. 2 C.F.R. § 200.318(c)(1). d. Violations. The NFE's written standards of conduct must provide for disciplinary actions to be applied for violations of such standards by officers, employees, or agents of the NFE. 2 C.F.R. § 200.318(c)(1). For example, the penalty for a NFE's employee may be dismissal, and the penalty for a contractor might be the termination of the contract.

Contractor Integrity

A contractor must have a satisfactory record of integrity and business ethics. Contractors that are debarred or suspended as described in Chapter III, ¶ 6.d must be rejected and cannot receive contract awards at any level.

Public Policy

A contractor must comply with the public policies of the Federal Government and state, local government, or tribal government. This includes, among other things, past and current compliance with the:

- a. Equal opportunity and nondiscrimination laws
- b. Five affirmative steps described at 2 C.F.R. § 200.321(b) for all subcontracting under contracts supported by FEMA financial assistance; and FEMA Procurement Guidance June 21, 2016 Page IV- 7
- c. Applicable prevailing wage laws, regulations, and executive orders

Affirmative Steps

For any subcontracting opportunities, Contractor must take the following Affirmative steps:

1. Placing qualified small and minority businesses and women's business enterprises on solicitation lists;

2. Assuring that small and minority businesses, and women's business enterprises are solicited whenever they are potential sources;
3. Dividing total requirements, when economically feasible, into smaller tasks or quantities to permit maximum participation by small and minority businesses, and women's business enterprises;
4. Establishing delivery schedules, where the requirement permits, which encourage participation by small and minority businesses, and women's business enterprises; and
5. Using the services and assistance, as appropriate, of such organizations as the Small Business Administration and the Minority Business Development Agency of the Department of Commerce.

Prevailing Wage Requirements

When applicable, the awarded Contractor (s) and any and all subcontractor(s) agree to comply with all laws regarding prevailing wage rates including the Davis-Bacon Act, applicable to this solicitation and/or Participating Public Agencies. The Participating Public Agency shall notify the Contractor of the applicable pricing/prevailing wage rates and must apply any local wage rates requested. The Contractor and any subcontractor(s) shall comply with the prevailing wage rates set by the Participating Public Agency.

Federal Requirements

If products and services are issued in response to an emergency or disaster recovery the items below, located in this FEMA Special Conditions section of the Federal Funds Certifications, are activated and required when federal funding may be utilized.

2 C.F.R. § 200.326 and 2 C.F.R. Part 200, Appendix II, Required Contract Clauses

1. Termination for Convenience:

The right to terminate this Contract for the convenience of the Participating Public Agency is retained by the Participating Public Agency. In the event of a termination for convenience by the Participating Public Agency, the Participating Public Agency shall, at least ten (10) calendar days in advance, deliver written notice of the termination for convenience to Contractor. Upon Contractor's receipt of such written notice, Contractor immediately shall cease the performance of the Work and shall take reasonable and appropriate action to secure and protect the Work then in place. Contractor shall then be paid by the Participating Public Agency, in accordance with the terms and provisions of the Contract Documents, an amount not to exceed the actual labor costs incurred, the actual cost of all materials installed and the actual cost of all materials stored at the project site or away from the project site, as approved in writing by the Participating Public Agency but not yet paid for and which cannot be returned, and actual, reasonable and documented demobilization costs, if any, paid by Contractor and approved by the Participating Public Agency in connection with the Scope of Work in place which is completed as of the date of termination by the Participating Public Agency and that is in conformance with the Contract Documents, less all amounts previously paid for the Work. No amount ever shall be owed or paid to Contractor for lost or anticipated profits on any part of the Scope of Work not performed or for consequential damages of any kind.

2. Equal Employment Opportunity:

The Participating Public Agency highly encourages Contractors to implement Affirmative Action practices in their employment programs. This means Contractor should not discriminate against any employee or applicant for employment because of race, color, religion, sex, pregnancy, sexual orientation, political belief or affiliation, age, disability or genetic information.

During the performance of this contract, the contractor agrees as follows:

- (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. The contractor will take affirmative

action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, sexual orientation, gender identity, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer, recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the contracting officer setting forth the provisions of this nondiscrimination clause.

(2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.

(3) The contractor will not discharge or in any other manner discriminate against any employee or applicant for employment because such employee or applicant has inquired about, discussed, or disclosed the compensation of the employee or applicant or another employee or applicant. This provision shall not apply to instances in which an employee who has access to the compensation information of other employees or applicants as a part of such employee's essential job functions discloses the compensation of such other employees or applicants to individuals who do not otherwise have access to such information, unless such disclosure is in response to a formal complaint or charge, in furtherance of an investigation, proceeding, hearing, or action, including an investigation conducted by the employer, or is consistent with the contractor's legal duty to furnish information.

(4) The contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided by the agency contracting officer, advising the labor union or workers' representative of the contractor's commitments under section 202 of Executive Order 11246 of September 24, 1965, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(5) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(6) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(7) In the event of the contractor's non-compliance with the nondiscrimination clauses of this contract or with any of such rules, regulations, or orders, this contract may be canceled, terminated or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.

(8) The contractor will include the provisions of paragraphs (1) through (8) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as may be directed by the Secretary of Labor as a means of enforcing such provisions including sanctions for noncompliance: *Provided*, however, that in the event the contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

3. "During the performance of this contract, the contractor agrees as follows:

- (1) The contractor will not discriminate against any employee or applicant for employment because of race, color, religion, sex, or national origin. The contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, color,

religion, sex, or national origin. Such action shall include, but not be limited to the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.

- (2) The contractor will, in all solicitations or advertisements for employees placed by or on behalf of the contractor, state that all qualified applicants will receive considerations for employment without regard to race, color, religion, sex, or national origin.
- (3) The contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- (4) The contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.
- (5) The contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
- (6) In the event of the contractor's noncompliance with the nondiscrimination clauses of this contract or with any of the said rules, regulations, or orders, this contract may be canceled, terminated, or suspended in whole or in part and the contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions as may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as otherwise provided by law.
- (7) The contractor will include the portion of the sentence immediately preceding paragraph (1) and the provisions of paragraphs (1) through (7) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event a contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency the contractor may request the United States to enter into such litigation to protect the interests of the United States."

4. Davis Bacon Act and Copeland Anti-Kickback Act.

- a. Applicability of Davis-Bacon Act. The Davis-Bacon Act only applies to the emergency Management Preparedness Grant Program, Homeland Security Grant Program, Nonprofit Security Grant Program, Tribal Homeland Security Grant Program, Port Security Grant Program, and Transit Security Grant Program. It does not apply to other FEMA grant and cooperative agreement programs, including the Public Assistance Program.
- b. All prime construction contracts in excess of \$2,000 awarded by non-Federal entities must include a provision for compliance with the Davis-Bacon Act (40 U.S.C. §§ 3141-3144 and 3146-3148) as supplemented by Department of Labor regulations at 29 C.F.R. Part 5 (Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction)). See 2 C.F.R. Part 200, Appendix II, ¶ D.
- c. In accordance with the statute, contractors must be required to pay wages to laborers and mechanics at a rate not less than the prevailing wages specified in a wage determination made by the Secretary of Labor. In addition, contractors must be required to pay wages not less than once a week.
- d. The non-Federal entity must place a copy of the current prevailing wage determination issued by the Department of Labor in each solicitation. The decision to award a contract or subcontract must be conditioned upon the acceptance of the wage determination. The non-Federal entity must report all suspected or reported violations to the Federal awarding agency.
- e. In contracts subject to the Davis-Bacon Act, the contracts must also include a provision for compliance with the Copeland "Anti-Kickback" Act (40 U.S.C. § 3145), as supplemented by Department of Labor regulations at 29 C.F.R. Part 3 (Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States). The Copeland Anti- Kickback Act provides that each contractor or subrecipient must be prohibited from inducing, by any means, any person employed in the construction, completion, or repair of public work, to give up any part of the compensation to which he or she is otherwise entitled. The non-Federal entity must report all suspected or reported violations to FEMA.
- f. The regulation at 29 C.F.R. § 5.5(a) does provide the required contract clause that applies to compliance with both the Davis-Bacon and Copeland Acts. However, as discussed in the previous subsection, the Davis-Bacon Act does not apply to Public Assistance recipients and subrecipients. In situations where the Davis-Bacon Act does not apply, neither does the Copeland "Anti-Kickback Act." However, for purposes of grant programs where both clauses do apply, FEMA requires the following contract clause:

"Compliance with the Copeland "Anti-Kickback" Act.

- (1) Contractor. The contractor shall comply with 18 U.S.C. § 874, 40U.S.C. § 3145, and the requirements of 29 C.F.R. pt. 3 as may be applicable, which are incorporated by reference into this contract.
- (2) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clause above and such other clauses as the FEMA may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor

with all of these contract clauses

- (3) Breach. A breach of the contract clauses above may be grounds for termination of the contract, and for debarment as a contractor and subcontractor as provided in 29 C.F.R. § 5.12.”

5. Contract Work Hours and Safety Standards Act.

- a. Applicability: This requirement applies to all FEMA grant and cooperative agreement programs.
- b. Where applicable (see 40 U.S.C. § 3701), all contracts awarded by the non-Federal entity in excess of \$100,000 that involve the employment of mechanics or laborers must include a provision for compliance with 40 U.S.C. §§ 3702 and 3704, as supplemented by Department of Labor regulations at 29 C.F.R. Part 5. See 2 C.F.R. Part 200, Appendix II, ¶ E.
- c. Under 40 U.S.C. § 3702, each contractor must be required to compute the wages of every mechanic and laborer on the basis of a standard work week of 40 hours. Work in excess of the standard work week is permissible provided that the worker is compensated at a rate of not less than one and a half times the basic rate of pay for all hours worked in excess of 40 hours in the workweek.
- d. The requirements of 40 U.S.C. § 3704 are applicable to construction work and provide that no laborer or mechanic must be required to work in surroundings or under working conditions which are unsanitary, hazardous or dangerous. These requirements do not apply to the purchases of supplies or materials or articles ordinarily available on the open market, or contracts for transportation or transmission of intelligence.
- e. The regulation at 29 C.F.R. § 5.5(b) provides the required contract clause concerning compliance with the Contract Work Hours and Safety Standards Act:

“Compliance with the Contract Work Hours and Safety Standards Act.

- (1) Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- (2) Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1) of this section the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1) of this section.
- (3) Withholding for unpaid wages and liquidated damages. The (write in the name

of the Federal agency or the loan or grant recipient) shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2) of this section.

- (4) Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1) through (4) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1) through (4) of this section.”

6. Rights to Inventions Made Under a Contract or Agreement.

- a. Stafford Act Disaster Grants. This requirement does not apply to the Public Assistance, Hazard Mitigation Grant Program, Fire Management Assistance Grant Program, Crisis Counseling Assistance and Training Grant Program, Disaster Case Management Grant Program, and Federal Assistance to Individuals and Households – Other Needs Assistance Grant Program, as

FEMA awards under these programs do not meet the definition of “funding agreement.”

- b. If the FEMA award meets the definition of “funding agreement” under 37 C.F.R. § 401.2(a) and the non-Federal entity wishes to enter into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that “funding agreement,” the non-Federal entity must comply with the requirements of 37 C.F.R. Part 401 (Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements), and any implementing regulations issued by FEMA. See 2 C.F.R. Part 200, Appendix II, ¶ F.
- c. The regulation at 37 C.F.R. § 401.2(a) currently defines “funding agreement” as any contract, grant, or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal government. This term also includes any assignment, substitution of parties, or subcontract of any type entered into for the performance of experimental, developmental, or research work under a funding agreement as defined in the first sentence of this paragraph.

7. Clean Air Act and the Federal Water Pollution Control Act. Contracts of amounts in excess of \$150,000 must contain a provision that requires the contractor to agree to comply with all applicable standards, orders, or regulations issued pursuant to the Clean Air Act (42 U.S.C. §§ 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. §§ 1251-1387). Violations must be reported to FEMA and the Regional Office of the Environmental Protection Agency. See 2 C.F.R. Part 200, Appendix II, ¶ G.

- a. The following provides a sample contract clause concerning compliance for contracts of amounts in excess of \$150,000:

“Clean Air Act

- (1) The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act, as amended, 42 U.S.C. § 7401 et seq.
- (2) The contractor agrees to report each violation to the (name of the state agency or local or Indian tribal government) and understands and agrees that the (name of the state agency or local or Indian tribal government) will, in turn, report each violation as required to assure notification to the (name of recipient), Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.
- (3) The contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA.

Federal Water Pollution Control Act

- (1) The contractor agrees to comply with all applicable standards, orders or regulations issued pursuant to the Federal Water Pollution Control Act, as amended, 33 U.S.C. 1251 et seq.
- (2) The contractor agrees to report each violation to the (name of the state agency or local or Indian tribal government) and understands and agrees that the (name of the state agency or local or Indian tribal government) will, in turn, report each violation as required to assure notification to the (name of recipient), Federal Emergency Management Agency, and the appropriate Environmental Protection Agency Regional Office.
- (3) The contractor agrees to include these requirements in each subcontract exceeding \$150,000 financed in whole or in part with Federal assistance provided by FEMA.”

8. Debarment and Suspension.

- a. Applicability: This requirement applies to all FEMA grant and cooperative agreement programs.
- b. Non-federal entities and contractors are subject to the debarment and suspension regulations implementing Executive Order 12549, *Debarment and Suspension* (1986) and Executive Order 12689, *Debarment and Suspension* (1989) at 2 C.F.R. Part 180 and the Department of Homeland Security’s regulations at 2 C.F.R. Part 3000 (Non procurement Debarment and Suspension).
- c. These regulations restrict awards, subawards, and contracts with certain parties that are debarred, suspended, or otherwise excluded from or ineligible for participation in Federal assistance programs and activities. See 2 C.F.R. Part 200, Appendix II, ¶ H; and *Procurement Guidance for Recipients and Subrecipients Under 2 C.F.R. Part 200 (Uniform Rules): Supplement to the Public Assistance Procurement Disaster Assistance Team (PDAT) Field Manual Chapter IV, ¶ 6.d, and Appendix C, ¶ 2 [hereinafter PDAT Supplement]*. A contract award must not be made to parties listed in the SAM Exclusions. SAM Exclusions is the list maintained by the General Services Administration that contains the names of parties debarred, suspended, or otherwise excluded by agencies, as well as parties declared ineligible under statutory or regulatory authority other than Executive Order 12549. SAM exclusions can be accessed at www.sam.gov. See 2 C.F.R. § 180.530; *PDAT Supplement*, Chapter IV, ¶ 6.d and Appendix C, ¶ 2.
- d. In general, an “excluded” party cannot receive a Federal grant award or a contract within

the meaning of a "covered transaction," to include subawards and subcontracts. This includes parties that receive Federal funding indirectly, such as contractors to recipients and subrecipients. The key to the exclusion is whether there is a "covered transaction," which is any non-procurement transaction (unless excepted) at either a "primary" or "secondary" tier. Although "covered transactions" do not include contracts awarded by the Federal Government for purposes of the non-procurement common rule and DHS's implementing regulations, it does include some contracts awarded by recipients and subrecipient.

- e. Specifically, a covered transaction includes the following contracts for goods or services:
 - (1) The contract is awarded by a recipient or subrecipient in the amount of at least \$25,000.
 - (2) The contract requires the approval of FEMA, regardless of amount.
 - (3) The contract is for federally required audit services.
 - (4) A subcontract is also a covered transaction if it is awarded by the contractor of a recipient or subrecipient and requires either the approval of FEMA or is in excess of \$25,000.
- d. The following provides a debarment and suspension clause. It incorporates an optional method of verifying that contractors are not excluded or disqualified:

"Suspension and Debarment

- (1) This contract is a covered transaction for purposes of 2 C.F.R. pt. 180 and 2 C.F.R. pt. 3000. As such the contractor is required to verify that none of the contractor, its principals (defined at 2 C.F.R. § 180.995), or its affiliates (defined at 2 C.F.R. § 180.905) are excluded (defined at 2 C.F.R. § 180.940) or disqualified (defined at 2 C.F.R. § 180.935).
- (2) The contractor must comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C and must include a requirement to comply with these regulations in any lower tier covered transaction it enters into.
- (3) This certification is a material representation of fact relied upon by (insert name of subrecipient). If it is later determined that the contractor did not comply with 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C, in addition to remedies available to (name of state agency serving as recipient and name of subrecipient), the Federal Government may pursue available remedies, including but not limited to suspension and/or debarment.
- (4) The bidder or proposer agrees to comply with the requirements of 2 C.F.R. pt. 180, subpart C and 2 C.F.R. pt. 3000, subpart C while this offer is valid and throughout the period of any contract that may arise from this offer. The bidder or proposer further agrees to include a provision requiring such compliance in its lower tier covered transactions."

9. Byrd Anti-Lobbying Amendment.

- a. Applicability: This requirement applies to all FEMA grant and cooperative agreement programs.

- b. Contractors that apply or bid for an award of \$100,000 or more must file the required certification. See 2 C.F.R. Part 200, Appendix II, ¶ 1; 44 C.F.R. Part 18; PDAT Supplement, Chapter IV, 6.c; Appendix C, ¶ 4.
- c. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by 31 U.S.C. § 1352. Each tier must also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the non-Federal award. See PDAT Supplement, Chapter IV, ¶ 6.c and Appendix C, ¶ 4.
- d. The following provides a Byrd Anti-Lobbying contract clause:

"Byrd Anti-Lobbying Amendment, 31 U.S.C. § 1352 (as amended)

Contractors who apply or bid for an award of \$100,000 or more shall file the required certification. Each tier certifies to the tier above that it will not and has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee of any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant, or any other award covered by 31 U.S.C. § 1352. Each tier shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award. Such disclosures are forwarded from tier to tier up to the recipient."

APPENDIX A, 44 C.F.R. PART 18 – CERTIFICATION REGARDING LOBBYING

Certification for Contracts, Grants, Loans, and Cooperative Agreements (To be submitted with each bid or offer exceeding \$100,000)

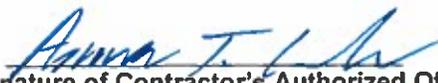
The undersigned [Contractor] certifies, to the best of his or her knowledge, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form- LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and

contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31, U.S.C. § 1352 (as amended by the Lobbying Disclosure Act of 1995). Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

The Contractor, The Gordian Group, Inc., certifies or affirms the truthfulness and accuracy of each statement of its certification and disclosure, if any. In addition, the Contractor understands and agrees that the provisions of 31 U.S.C. § 3801 *et seq.*, apply to this certification and disclosure, if any.


Signature of Contractor's Authorized Official

Ammon T. Leshner, VP and General Counsel
Name and Title of Contractor's Authorized Official

August 3, 2020
Date

10. Procurement of Recovered Materials.

- a. Applicability: This requirement applies to all FEMA grant and cooperative agreement programs.
- b. A non-Federal entity that is a state agency or agency of a political subdivision of a state and its contractors must comply with Section 6002 of the Solid Waste Disposal Act, Pub. L. No. 89-272 (1965) (codified as amended by the Resource Conservation and Recovery Act at 42 U.S.C. § 6962). See 2 C.F.R. Part 200, Appendix II, ¶ J; 2 C.F.R. § 200.322; PDAT Supplement, Chapter V, ¶ 7.
- c. The requirements of Section 6002 include procuring only items designated in guidelines of the EPA at 40 C.F.R. Part 247 that contain the highest percentage of recovered materials practicable, consistent with maintaining a satisfactory level of competition, where the purchase price of the item exceeds \$10,000 or the value of the quantity acquired by the preceding fiscal year exceeded \$10,000; procuring solid waste management services in a manner that maximizes energy and resource recovery; and establishing an affirmative procurement program for procurement of recovered materials identified in the EPA guidelines.
- d. The following provides the clause that a state agency or agency of a political subdivision of a state and its contractors can include in contracts meeting the above contract thresholds:

"(1) In the performance of this contract, the Contractor shall make maximum use of products containing recovered materials that are EPA- designated items unless the product cannot be acquired—

- (i) Competitively within a timeframe providing for compliance with

the contract performance schedule;

(ii) Meeting contract performance requirements; or

(iii) At a reasonable price.

(2) Information about this requirement, along with the list of EPA- designate items, is available at EPA's Comprehensive Procurement Guidelines web site, <https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program>."

11. Additional FEMA Requirements.

a. The Uniform Rules authorize FEMA to require additional provisions for non- Federal entity contracts. FEMA, pursuant to this authority, requires or recommends the following:

b. Changes.

To be eligible for FEMA assistance under the non-Federal entity's FEMA grant or cooperative agreement, the cost of the change, modification, change order, or constructive change must be allowable, allocable, within the scope of its grant or cooperative agreement, and reasonable for the completion of project scope. FEMA recommends, therefore, that a non-Federal entity include a changes clause in its contract that describes how, if at all, changes can be made by either party to alter the method, price, or schedule of the work without breaching the contract. The language of the clause may differ depending on the nature of the contract and the end-item procured.

c. Access to Records.

All non-Federal entities must place into their contracts a provision that all contractors and their successors, transferees, assignees, and subcontractors acknowledge and agree to comply with applicable provisions governing Department and FEMA access to records, accounts, documents, information, facilities, and staff. See DHS Standard Terms and Conditions, v 3.0, ¶ XXVI (2013).

d. The following provides a contract clause regarding access to records:

"Access to Records. The following access to records requirements apply to this contract:

(1) The contractor agrees to provide (insert name of state agency or local or Indian tribal government), (insert name of recipient), the FEMA Administrator, the Comptroller General of the United States, or any of their authorized representatives access to any books, documents, papers, and records of the Contractor which are directly pertinent to this contract for the purposes of making audits, examinations, excerpts, and transcriptions.

(2) The Contractor agrees to permit any of the foregoing parties to reproduce by any means whatsoever or to copy excerpts and transcriptions as reasonably needed.

(3) The contractor agrees to provide the FEMA Administrator or his authorized representatives access to construction or other work sites pertaining to the work

being completed under the contract.”

12. DHS Seal, Logo, and Flags.

- a. All non-Federal entities must place in their contracts a provision that a contractor shall not use the DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre-approval. See DHS Standard Terms and Conditions, v 3.0, ¶ XXV (2013).
- b. The following provides a contract clause regarding DHS Seal, Logo, and Flags: “The contractor shall not use the DHS seal(s), logos, crests, or reproductions of flags or likenesses of DHS agency officials without specific FEMA pre- approval.”

13. Compliance with Federal Law, Regulations, and Executive Orders.

- a. All non-Federal entities must place into their contracts an acknowledgement that FEMA financial assistance will be used to fund the contract along with the requirement that the contractor will comply with all applicable federal law, regulations, executive orders, and FEMA policies, procedures, and directives.
- b. The following provides a contract clause regarding Compliance with Federal Law, Regulations, and Executive Orders: “This is an acknowledgement that FEMA financial assistance will be used to fund the contract only. The contractor will comply will all applicable federal law, regulations, executive orders, FEMA policies, procedures, and directives.”

14. No Obligation by Federal Government.

- a. The non-Federal entity must include a provision in its contract that states that the Federal Government is not a party to the contract and is not subject to any obligations or liabilities to the non-Federal entity, contractor, or any other party pertaining to any matter resulting from the contract.
- b. The following provides a contract clause regarding no obligation by the Federal Government: “The Federal Government is not a party to this contract and is not subject to any obligations or liabilities to the non-Federal entity, contractor, or any other party pertaining to any matter resulting from the contract.”

15. Program Fraud and False or Fraudulent Statements or Related Acts.

- a. The non-Federal entity must include a provision in its contract that the contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to its actions pertaining to the contract.
- b. The following provides a contract clause regarding Fraud and False or Fraudulent or Related Acts: “The contractor acknowledges that 31 U.S.C. Chap. 38 (Administrative Remedies for False Claims and Statements) applies to the contractor’s actions pertaining to this contract.”

Additional contract clauses per 2 C.F.R. § 200.325

For applicable construction/reconstruction/renovation and related services: A payment and performance

bond are both required for 100 percent of the contract price. A "performance bond" is one executed in connection with a contract to secure fulfillment of all the contractor's obligations under such contract. A "payment bond" is one executed in connection with a contract to assure payment as required by law of all persons supplying labor and material in the execution of the work provided in the contract.

Offeror agrees to comply with all terms and conditions outlined in the FEMA Special Conditions section of this solicitation.

Offeror's Name: The Gordian Group, Inc.

Address, City, State, and Zip Code: 30 Patewood Drive, Bldg. 2, Suite 350, Greenville SC 29615

Phone Number: 800-874-2291 Fax Number: 864-233-9100

Printed Name and Title of Authorized Representative: Ammon T. Lesher, VP and General Counsel

Email Address: a.lesher@gordian.com

Signature of Authorized Representative:  Date: _____