Ventura College
Demolition and Utility Relocation for Applied Science Center, Project #39110
(issued November 16, 2011)

ADDENDUM #1
consists of the following:

1. RFI Questions/Answers:

Q: Please confirm that the District is not requesting "submission of financial information..." at this time, per the Statement of Bidder's Qualifications, Article 1.02 Financial, A. & B.

A. It is confirmed.

Q. Please confirm that Builder's Risk Insurance is required, as stated in Spec Section 00800 Special Conditions, Article 1.03, 5.

A. It is confirmed.

2. Add this to *Spec Section 312000 Earthwork*:

1.05 PROJECT RECORD DOCUMENTS

A. Contractor shall provide an as-built topographic survey at a scale of 1" –20' of the completed rough graded site. The topographic survey is to be provided in PDF and AutoCAD format and is to be on the same datum as the project plans.

3. Revise two electrical pages E100 and E105 of the plans.

4. This directive is hereby made part of the construction documents for this project:

"After Notice to Proceed has been issued, GC to install fence per Plans/Specs. After completion of fence line installation, GC to notify owner's representative, Heery International, to allow District staff to have seven (7) calendar days to remove any materials/equipment from the site that they deem valuable."

ADDENDUM NO. 1

BUILDING "R" TOILET ROOMS RENOVATION

NTD #2007-SH29-01

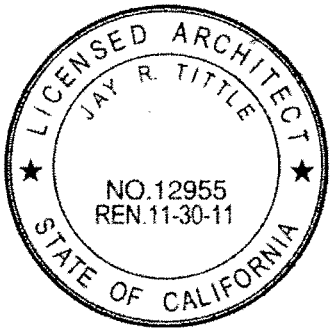
DSA A-#3-113596 FILE #19-C5

NTD ARCHITECTURE

Pasadena City College
1570 E. Colorado Blvd.
Pasadena, California 91106

November 10, 2011

NTD ARCHITECTURE
955 Overland Court, Suite 100
San Dimas, CA 91773



Jay R. Tittle, #C-12955

1. PART 1 - GENERAL

1.1. The following revisions and/or clarifications shall be made to the Bidding Requirements and Contract Documents. Revise and amend the Documents for the above named project in accordance with this Addendum. The bid shall reflect these addendum changes and each bidder shall make reference in their bid to this addendum.

1.2. All Bidding Requirements and Contract Documents shall apply to this addendum as originally indicated in the applicable portions of the contract documents, unless otherwise modified by this addendum.

1.3. GENERAL CLARIFICATIONS

1.3.1. The deadline for pre-bid RFI's is November 29, 2011 at 4:00 pm per Information for Bidders item #21. Submit pre-bid RFI's on the form attached.

2. PART 2 - PROJECT MANUALS

2.1. REVISIONS TO BIDDING/CONTRACT REQUIREMENTS

2.1.1. Bidding and Contract Documents:

2.1.1.1. Add "Documents and Specification for Bid Number 874, Measure P, Restroom Upgrade – R Building" documents as attached, including the following documents (included in bid package):

2.1.1.1.1. Appendix A – Environmental Impact Report, Mitigation Measures.

2.1.1.1.2. Appendix B – Asbestos Abatement Specifications.

2.1.1.1.3. Appendix C – General Construction Specifications.

2.2. REVISIONS TO SPECIFICATIONS

2.2.1. Section 00 00 00, Table of Contents:

2.2.1.1. Replace this section with attached revised Table of Contents.

2.2.2. Sections 01 11 00, 01 25 00, 01 31 13, 01 33 00, 01 45 29, 01 50 00, 01 60 00, 01 77 19:

2.2.2.1. Add these specification sections to the project manual for clarification to construction procedures.

2.2.3. Section 03 30 00, Cast-in-place Concrete:

2.2.3.1. Add this specification for reference to forming and pouring concrete curbs and other concrete work.

2.2.4. Section 07 90 00, Joint Protection:

2.2.4.1. Add this specification for reference to sealants and joint protection.

2.2.5. Section 08 71 00, Door Hardware:

2.2.5.1. Page 1, Clarification to section title: Change "Building R Toilet Rooms" to "Door Hardware".

2.2.6. Section 09 21 16, Gypsum Board Assemblies:

2.2.6.1. Add this specification for reference to gypsum board assemblies.

2.2.7. Section 09 91 00, Painting:

2.2.7.1. Page 8, paragraph 3.7.2.2.2: Omit this paragraph and sub-paragraphs in its entirety. Refer to paragraph 3.7.2.1 for P-2 paint.

2.2.8. Section 10 28 00, Toilet, Bath and Laundry Accessories:

2.2.8.1. Revise paragraph 2.2.2.1.1 to read as follows:

Type TPD-1: B-2746, double-roll dispenser with controlled delivery, surface mount.

2.2.8.2. Omit paragraphs 2.2.2.1.2 and 2.2.2.1.3 in its entirety.

2.2.8.3. Revise paragraph 2.2.2.2 to read as follows:

Seat Cover Dispenser SCD-1: NeatSeat FH33 by Sanitor, (800) 379-5314, surface mount, stainless steel.

2.2.8.4. Omit paragraph 2.2.2.3 in its entirety.

2.2.8.5. Replace paragraph 2.2.2.4 to read as follows:

Sanitary Napkin/Tampon Vendor: B-2706 50, (2) dispensing mechanisms (50¢ coin-operated) in one cabinet, Classic Series, surface-mounted. Provide one at north wall with final location to be determined.

2.2.8.6. Revise paragraph 2.2.3.1.1 to read as follows:

Type PTD-1: B-3944, with waste receptacle, Classic Series, recessed.

2.2.8.7. Omit paragraph 2.2.3.1.2 in its entirety.

2.2.8.8. Revise paragraph 2.2.3.2: Soap dispenser is owner-furnished/owner-installed (O.F.O.I). Provide concealed metal backing for mounting of each dispensers per detail 17/A9.2.

3. PART 3 - DRAWINGS

3.1. ARCHITECTURAL DRAWINGS

3.1.1. Drawing G0.1 – Modify as follows:

3.1.1.1. Revision to Description of Work: Alteration of existing Building "R" first floor toilet rooms will be separated into two phases as requested by the District/Owner. Phase 1 will be to renovate the east restroom and lobby under this bid. Phase 2 will be to renovate the west restroom upon the completion of the Center for the Arts building and therefore is not in contract (NIC). Refer to attached drawing AD1-A01 for clarification to work limits.

3.1.2. Drawing D2.1 – Modify as follows:

3.1.2.1. Revise to demolish remainder of existing wall behind urinals along grid 8 to south wall. Provide new wall partition and curb per new work floor plans.

3.1.3. Drawing A3.1 – Modify as follows:

3.1.3.1. Clarification to provide new in-fill wall partition at demo'ed door along grid 7. Provide wall type 4 for this in-fill, including new drywall and P-1 paint at classroom side.

3.1.3.2. Clarification to provide new wall partition behind urinals along grid 8 per wall type 7.

3.1.3.3. Clarification to provide thin-set ceramic floor tile at non-depressed slab area between grids 7 & 8 per Sect 09 30 13. Provide continuous marble threshold at transition along grid 8, Grade B, and shall be ½-inch high max and to comply with CBC Sect 1115B4.4.2. Provide waterproof and crack isolation membranes at all flooring per Sect 09 30 13.

3.1.4. Drawing A7.1 – Modify as follows:

3.1.4.1. Omit all mirrors per keynote #10.58.

3.1.4.2. Omit all electric hand dryer devices per keynote #10.64. Provide power wiring and conduit to J-box and stainless steel blank cover plate for each hand dryer location for future installation.

3.1.4.3. Add concealed metal backing per details 11/A9.1 & 17/A9.2 for O.F.O.I. mirrors in Vestibule 107. Allow for installation of 6'-0" wide x 4'-0" high mirror at final location to be determined by Owner/Project Manager.

3.1.5. Drawing A8.1 - Modify as follows:

3.1.5.1. Revisions to Finish Schedule: Revise Foyer Room 101 as follows:

3.1.5.1.1. Floor – Sub: "CONC".

3.1.5.1.2. Floor – Fin.: "VCT". Replace entire lobby floor with new VCT flooring and base per Sect 09 65 00.

3.1.5.1.3. Ceiling – Fin.: "ACP 1" to match existing ceiling.

3.1.5.2. Add the following general note: "1. Signs to match campus standard." All new signage shown is to be provided and installed in this base bid.

3.1.5.3. Detail 3, Add the following note to "metal studs": "Lintel at head per detail 4B/A9.2."

3.1.5.4. Detail 16, Clarification to refer to detail 12/A7.1 for lavatory clearance dimensions.

3.1.5.5. Add to finish schedule legend: CBU – Cementitious Backer units per Sect 09 21 16.

3.1.6. Drawing A9.1 – Modify as follows:

3.1.6.1. Detail 9/9A, Add the following note: "Ceramic tile over ½" cementitious backer (CBU) board per finish schedule."

3.2. ELECTRICAL DRAWINGS

3.2.1. Drawing E2.1 – Modify as follows:

3.2.1.1. Revise hand dryer locations per architectural. Provide power wiring and conduit to J-box and stainless steel blank cover plate for three (3) hand dryer locations for future installation.

3.2.2. Drawing E3.1 – Modify as follows:

3.2.2.1. Revise fire alarm control panel and associated devices per district standards and attached drawing AD1-E01 and cut sheets.

END OF ADDENDUM #1 INCLUDING REFERENCED ENCLOSURES

Enclosures:
(Note that these are listed here for clarity only. Refer to narrative above for detailed descriptions of revisions related to these enclosures.)

I) New Project Manual Documents Issued:
   a) Documents and Specifications for Bid Number 874, Measure P, Restroom Upgrade for R building, including Appendix A, B & C. (included in bid package).
   b) Pre-Bid RFI Request Form.
   c) Sect 00 00 00 – Table of Contents
   d) Sect 01 11 00 – Summary of Work
   e) Sect 01 25 00 – Product Options
   f) Sect 01 31 13 – Project Coordination
   g) Sect 01 33 00 – Submittal Procedures
   h) Sect 01 45 29 – Testing Laboratory Services
   i) Sect 01 50 00 – Temporary Facilities and Controls
   j) Sect 01 60 00 – Product Requirements
   k) Sect 01 77 19 – Closeout Requirements
   l) Sect 03 30 00 – Cast-in-place Concrete
   m) Sect 07 90 00 – Joint Protection
   n) Sect 09 21 16 – Gypsum Board Assemblies

II) New Drawings Issued:
   a) Drawing AD1-A01, Limits of work.
   b) Drawing AD1-A02, Revisions to Partial First Floor Plan A3.1.
   c) Drawing AD1-A03, Revisions to Interior Elevation Womens 103.
   d) Drawing AD1-A04, Revisions to Keynotes.
   e) Drawing AD1-E01, Revised fire alarm devices legend with associated cut sheets.

End of Enclosures

PASADENA CITY COLLEGE

R RESTROOM UPGRADE

Measure P
Voter-Approved Bond

RFI No.: 01

PCC CONTRACT No: _____ BID No: _____ DSA No.: _____ DATE: 11/9/2011

ARCHITECT: _____

CONTRACTOR: _____

SUBCONTRACTOR MAKING REQUEST: _____

CONSTRUCTION CONSULTANTS: Project Center - Measure P

SPECIFICATION REFERENCES: _____

DRAWING REFERENCES: _____

DETAIL REFERENCES: _____

QUESTION: _____

SKETCHES and/or DRAWINGS INCLUDED: _____

ISSUED FOR CONTRACTOR BY: _____ DATE: _____

ARCHITECT'S RESPONSE: _____

ADDITIONAL DRAWINGS / SK'S ISSUED: _____

ISSUED BY: _____ DATE: _____

Submitted by: PROJECT CENTER

cc: RFI File, Transmittal File.

TABLE OF CONTENTS

GENERAL DOCUMENTS

DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS

Documents and Specifications for Bid Number 874, Measure P, Restroom Upgrade – R Building

END OF TABLE OF CONTENTS

SECTION 01 11 00

SUMMARY OF WORK

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Summary of work under this contract

1.1.2. Regulatory Requirements

1.1.3. Contractor use of site and premises.

1.1.4. Owner occupancy.

1.2. SUMMARY OF WORK

1.2.1. Work under this contract includes the following task areas, as shown on the drawings, specified in the Project Manual, and defined in the project contract documents, including but not necessarily limited to:

1.2.1.1. Demolition of certain existing items.

1.2.1.2. Removal and salvage of certain existing finish components, equipment and improvements.

1.2.1.3. Renovation of existing interior toilet rooms.

1.2.1.4. Partial renovation of existing elevator lobby foyer.

1.2.2. Perform all work in accordance with the requirements of the General Conditions and related Contract Documents.

1.3. REGULATORY REQUIREMENTS.

1.3.1. Perform Work in accordance with the applicable provisions of Parts 1-5, 7, 8, 10 and 12, Title 24, California Code of Regulations.

1.3.2. Perform Work in accordance with the applicable provisions of local Codes and Regulations, including the following as adopted by jurisdictional authority

1.3.2.1. California Building Code

1.3.2.2. California Mechanical Code

1.3.2.3. California Plumbing Code

1.3.2.4. National Electrical Code.

1.3.2.5. California Code of Regulations, Title 24; applicable sections related to accessibility and energy conservation requirements.

1.3.3. During the entire construction period, it shall be the sole responsibility of the Contractor to maintain conditions at the Project Site to meet the requirements of the Federal Occupational Safety and Health Administration (OSHA) and California occupational regulations. This provision shall cover the Contractor's employees and all other persons working upon or visiting the site. The Contractor shall become fully informed of all applicable standards and regulations and inform all persons and representatives responsible for work under this Contract.

1.4. CONTRACTOR USE OF SITE AND PREMISES

1.4.1. Contractors use of site and premises shall allow:

1.4.1.1. Work by Others and Work by Owner.

1.4.1.2. Use of site and premises by public.

1.4.2. Access to Site: Coordinate with Owner and Project Manager.

1.4.3. Building Exits During Construction: Maintain all exits. Do not obstruct at any time.

1.4.4. Time and Construction Schedule Considerations:

1.4.4.1. Schedule all construction operations with Owner and Project Manager.

1.4.4.2. Construction operations generating excessive noise, such as use of pneumatic tools and powder actuated fastener equipment, shall be scheduled with the Owner and Project Manager.

1.4.4.3. Locate all noise generating equipment, such as cut-off saws, in a remote location away from administrative or classroom areas.

1.4.4.4. Schedule replenishing construction materials with Project Manager.

1.4.4.5. Owner reserves the right to modify such scheduled operations to accommodate college operations or classroom programs.

1.4.4.6. Provide Owner with notice prior to commencing such operations.

1.4.4.7. Construction operations, such as material deliveries, debris removal, and crane operations, shall not occur when students, staff or visitors are present at construction site. Schedule such operations around college schedule. Where, in the sole opinion of the Architect, the construction site is sufficiently remote or isolated that students, staff or visitors are not exposed to such operations, construction operations may proceed as scheduled by Contractor in conformance with the Project Manual.

1.4.4.8. After Owner takes beneficial occupancy of portions of project the Contractor, subcontractors and all support staff will not be allowed to enter such college facilities during hours college is in session. Where access is required to complete the work, coordinate access and scheduling with Owner's representative for non-college time.

1.4.5. Utility Outages and Shutdown: Provide notice of any utility interruption. No deviation to the commencement nor duration of the outage or shutdown from the schedule agreed upon is allowed.

1.4.6. Construction Yard and Storage Areas: Coordinate with Owner. Coordinate location with areas required by work performed under separate contract by others. Owner will establish acceptable path for products, staging areas, and trash disposal.

1.4.6.1. Coordinate location of all equipment parking, material and stockpile storage and construction parking with Owner and Project Manager.

1.5. OWNER OCCUPANCY

1.5.1. The Owner will occupy the site and existing facilities during entire period of construction for the conduct of normal college and business operations.

1.5.2. Cooperate with Owner to minimize conflict, and to facilitate Owner's operations.

1.5.3. Adjacent Floor/Area access: Coordinate scheduling of required access to adjacent rooms and floors incidental to the work of this contract. Provide minimum 7 working days notice to Owner for required access to such areas.

1.5.3.1. Do not core or drill through walls or floors into adjacent occupied areas.

2. PART 2 - PRODUCTS

\\Not Used

3. PART 3 - EXECUTION

\\Not Used

END OF SECTION

SECTION 01 25 00

PRODUCT OPTIONS

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Product Options.

1.1.2. Substitutions.

1.2. PRODUCT OPTIONS

1.2.1. Products Specified by Reference Standards or by Description Only: Any Product meeting those standards or description.

1.2.2. Products Specified by Naming a Manufacturers Product: Provide Products of the lead manufacturer named in compliance with specifications.

1.2.2.1. Products of alternate manufacturers not named are considered substitutions, and may be considered by Architect, provided products provide quality and performance equal to that specified.

1.2.2.2. Where another manufacturer is listed as an approved alternate manufacturer to the specified lead manufacturer, products supplied by listed alternate manufacturer shall comply with specified characteristics of the lead manufacturer, and demonstrate compliance by providing substitution documentation as required by this Section.

1.2.2.3. Where the substituted manufacturers standard product is not equal to that specified, the substituted manufacturer shall provide custom or non-standard products, system components, fabrication and configuration as necessary to comply with specified criteria, whether or not such criteria are the substituted manufacturers standard or stock item.

1.2.2.4. Consideration of whether a substituted product is equal to that specified will include all characteristics of the specified product, based on published data available from the specified manufacturer, whether listed in the specification or not.

1.2.2.5. Consideration of whether a substituted product is equal to that specified is solely the decision of the Architect.

1.2.2.6. Provide substitution documentation as specified in this Section.

1.2.3. Where product is specified followed by term "No Substitution Permitted", or similar phrase, do not submit alternate products for review. Any substitution request received will be returned rejected.

1.3. SUBSTITUTIONS

1.3.1. Instructions to Bidders specify time restrictions for submitting requests for Substitutions during the bidding period according to requirements specified in this Section.

1.3.2. Substitutions, including requests for substitution during bidding period, will be considered in accordance with the General Conditions and this Section.

1.3.3. Submit all Requests for Substitutions within ten (10) days prior to Bid Submission. Substitutions received after this period will be rejected.

1.3.3.1. Substitutions may be considered when a Product becomes unavailable through no fault of the Contractor.

1.3.4. Document each request with complete data substantiating compliance of proposed Substitution with Contract Documents and as follows.

1.3.4.1. Submit each request separately, using form provided in this Section.

1.3.4.2. Provide a typed, line by line comparison of the characteristics and attributes of the specified item with those of the proposed substitution. Where necessary, convert test data of the proposed substitution to the same test method of the specified item or product.

1.3.5. By submitting a request, the Contractor stipulates that the Contractor:

1.3.5.1. Has investigated proposed Product and determined that it meets or exceeds the quality level of the specified Product.

1.3.5.2. Will provide the same warranty for the Substitution as for the specified Product.

1.3.5.3. Will coordinate installation and make changes to other Work which may be required for the Work to be complete with no additional cost to Owner.

1.3.5.4. Waives claims for additional costs or time extension which may subsequently become apparent.

1.3.6. Contractor agrees to compensate Architect, at Architect's current billing rates, for review of Substitution requests that require modification of the Contract Documents.

1.3.6.1. Compensation shall be made by an adjustment to the Contract amount.

1.3.6.2. Compensation as agreed upon shall be paid by the Contractor whether the change is approved or rejected.

1.3.6.3. Where required by agency having jurisdiction Division of State Architect (DSA) approval(s), the Contractor shall pay all plan check fees or fees required to obtain approval.

1.3.6.4. The Contractor shall pay the Architect and its Consultants for all services rendered for drawings, calculations, review time, and/or agency DSA plan check time for each substitute item(s) for approval.

1.3.7. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request, or when acceptance will require revision to the Contract Documents.

1.3.8. Request for Substitution will only be considered when submitted within specified time period of Contract award, and when such request is accompanied by complete data substantiating compliance of proposed substitution with Contract Documents criteria and standard of quality.

1.3.9. Substitution Submittal Procedure:

1.3.9.1. Submit three copies of Request for Substitution for consideration. Limit each request to one proposed Substitution.

1.3.9.2. Submit Substitution Request Form as attached, shop drawings, Product data, certified test results and other documentation required by the Architect attesting to the proposed Product equivalence.

1.3.9.2.1. Substitution requests without such documentation will be rejected without review.

1.3.9.3. The Architect will notify Contractor, in writing, of decision to accept or reject request.

1.3.9.3.1. The Architect will review Substitution Request upon receipt and will request any additional data necessary to accept or reject substitution request.

1.3.9.3.2. Substitution Requests received after 9:00 AM on Friday will be logged as received on the following Monday at 8:00 AM.

1.3.9.3.3. The decision to accept or reject substitution request will be made within a reasonable period after Architect receives final documentation data.

1.3.9.3.4. Where substitution request is rejected, provide submittal for specified product within five days of receipt of notice rejection.

1.3.9.3.5. Where decision cannot be made within the time required for orderly and uninterrupted work progress, provide the specified product.

1.3.9.4. A maximum of one substitution request shall be submitted for any one item.

1.3.9.5. Substitutions with material effect on the project will be submitted for approval of agency having jurisdiction by DSA as a Change Order per Section 01 26 00, prior to fabrication or installation.

2. PART 2 – PRODUCTS

NOT USED

3. PART 3 – EXECUTION

NOT USED

END OF SECTION

CONTRACTOR'S SUBSTITUTION REQUEST FORM REQUEST # _____

Contractor: _____ NTD Proj. # _____ Date: _____

To: NTD Architecture, Attn.: NTD Project: _____

Reference: Drawing(s) _____ Spec Section(s) _____ Other _____

Disciplines Impacted: [ ] Structural [ ] Mechanical [ ] Electrical [ ] Architectural

[ ] Civil [ ] Landscape [ ] Kitchen [ ] _____

By submitting substitution, Contractor stipulates the following statements are correct:

1. Proposed substitution does not alter dimensions or dimensional relationships shown on drawings.
2. The Architect's costs caused by proposed substitution will be compensated per Section 01 25 00.
3. Proposed substitution does not adversely impact schedule or coordination of work by others.
4. Proposed substitution will not adversely impact warranty requirements.
5. Proposed substitution will not adversely impact availability of service, maintenance or replacement parts.

Summary of Proposed Substitution: _____

Reason for Proposed Substitution: _____

Comparison of proposed item to specified item per Section 01 25 00:	[ ] Attached	[ ] Under separate cover
Name and Location of three similar applications:	[ ] Attached	[ ] Under separate cover
Description of required changes to the drawings and project manual:	[ ] Attached	[ ] Under separate cover
Description of impact on applicable code requirements:	[ ] Attached	[ ] Under separate cover
Name and Location of maintenance service and parts supply:	[ ] Attached	[ ] Under separate cover

If Substitution Request is accepted, there will be:

Possible Cost Impact	[ ] Increase	[ ] Decrease	[ ] No Change
Possible Time Impact	[ ] Increase	[ ] Decrease	[ ] No Change

Action on this Substitution Request is requested as soon as possible, but no later than _____. **[ ] PRIORITY ATTENTION REQUIRED**

_____ Copies to: _____

Contractor's Representative

Architect's Response: Date: _____

[ ] Accepted [ ] Accepted as noted [ ] Denied [ ] Denied: Received late

_____ Copies to: _____

NTD Representative

_____ Copies to: _____

Owners Representative

SECTION 01 31 13

PROJECT COORDINATION

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Coordination.

1.1.2. Cutting and Patching

1.1.3. Preconstruction conference.

1.1.4. Progress meetings.

1.1.5. Preinstallation conferences.

1.2. COORDINATION

1.2.1. Contractor shall comply with the following project start-up and administrative requirements for work under the Contract:

1.2.1.1. Coordinate the work and work of subcontractors with work by others under separate contract on Project.

1.2.1.2. Establish procedures for the orderly progress and prosecution of the work, including, but not limited to, attendance at project meetings, communication and documentation procedures, submittal processing, and control of the site.

1.2.1.3. Coordinate work with all inspection and testing, including compliance with all agency inspection criteria, including DSA inspections.

1.2.1.4. Coordinate and monitor use of temporary utilities, conserving energy where feasible.

1.2.1.5. Prepare detailed schedule for all subcontractors in compliance with Section 01 33 00. Coordinate scheduling of work, submittals, and inspection/testing to assure the efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating items installed later. Monitor schedules for compliance with completion dates, modify and recommend adjustments. Manage subcontractors work, including monitoring of work force, work completed and impact on schedule

1.2.1.6. Coordinate completion and clean up the Work in preparation for Substantial Completion and for portions of Work designated for Owner's partial occupancy.

1.2.1.7. After Owner occupancy of premises, coordinate access to site for correction of defective Work and Work not in accordance with Contract Documents, to minimize disruption of Owner's activities.

1.2.2. Contractor shall comply with the following requirements for coordinating the Work:

1.2.2.1. Verify that utility requirement characteristics of operating equipment are compatible with building utilities. Coordinate work of various Sections having interdependent responsibilities for installing, connecting to, and placing in service, such equipment.

1.2.2.2. Coordinate space requirements and installation of mechanical and electrical work which are indicated diagrammatically on Drawings. Follow routing shown for pipes, ducts, and conduit, as closely as practicable; place runs parallel with line of building. Utilize spaces efficiently to maximize accessibility for other installations, for maintenance, and for repairs.

1.2.2.3. Unless otherwise indicated, where piping, ducts, and wiring occurs in finished areas, conceal such pipes, ducts, and wiring within the construction. Coordinate locations of fixtures and outlets with finish elements.

1.3. CUTTING AND PATCHING

1.3.1. Provide for cutting and patching in accordance with the General Conditions, as specified, or as required to implement the work of this Contract, whether shown or not.

1.3.2. Employ skilled and experienced installer to perform cutting and patching.

1.3.3. Submit written request 72 hours in advance of cutting or altering elements which affects:

1.3.3.1. Structural integrity of element.

1.3.3.2. Integrity of weather-exposed or moisture-resistant elements.

1.3.3.3. Efficiency, maintenance, or safety of element.

1.3.3.4. Visual qualities of sight-exposed elements.

1.3.4. Execute cutting, fitting, and patching including excavation and fill, to complete Work, and to:

1.3.4.1. Fit the several parts together, to integrate with other Work.

1.3.4.2. Uncover Work to install or correct ill-timed Work.

1.3.4.3. Remove and replace defective and non-conforming Work.

1.3.4.4. Remove samples of installed Work for testing.

1.3.4.5. Provide openings in elements of Work for penetrations of mechanical and electrical Work.

1.3.5. Execute work by methods which will avoid damage to other Work, and provide proper surfaces to receive patching and finishing.

1.3.6. Cut rigid materials using masonry saw or core drill unless otherwise approved by Architect.

1.3.7. Restore Work with new products in accordance with requirements of Contract Documents.

1.3.8. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

1.3.9. Maintain integrity of wall, ceiling, or floor construction; completely seal voids.

1.3.10. Refinish surfaces to match adjacent finishes. For continuous surfaces, refinish to nearest intersection; for an assembly, refinish entire unit.

1.4. PRECONSTRUCTION CONFERENCE

1.4.1. Architect will schedule a conference upon execution of the Contract.

1.4.2. Attendance Required: Owner, Owner's Project Inspector, Owner's Testing Service representative, Architect, Contractor and major Sub-contractors, including assigned superintendent and foreman. Obtain Architect's prior approval of major subcontractors attendance.

1.4.3. Agenda:

1.4.3.1. Organizational structure of project, schedule overview and other project characteristics.

1.4.3.2. Designation of responsible staff representing the parties required for implementation of the project, including Contractor, Architect and others.

1.4.3.3. Submission of list of Subcontractors, list of Products, schedule of values, and progress schedule.

1.4.3.4. Procedures and processing of field decisions, submittals, substitutions, proposal request, Change Orders and Contract closeout procedures.

1.4.3.5. Scheduling, including coordination with work of others.

1.4.3.6. Use of premises by Owner and Contractor.

1.4.3.7. Owner's requirements and partial occupancy.

1.4.3.8. Construction facilities and controls provided by Owner.

1.4.3.9. Temporary utilities considerations.

1.4.3.10. Security and housekeeping procedures.

1.4.3.11. Procedures for testing.

1.4.3.12. Procedures for maintaining record documents.

1.4.3.13. Requirements for start-up of equipment.

1.4.3.14. Inspection and acceptance of equipment put into service during construction period.

1.5. PROGRESS MEETINGS

1.5.1. Refer to General Conditions and Section 4.5.5.

1.5.2. Schedule and administer meetings throughout progress of the Work at approximately weekly intervals maximum.

1.5.2.1. Contractor shall assign the same staff members to represent and act on behalf of the Contractor at all progress meetings.

1.5.3. Make arrangements for meetings, prepare agenda with copies for participants, preside at meetings.

1.5.4. Attendance Required: Job superintendent, major Subcontractors and suppliers, Owner, Architect, Project Inspector and others as appropriate to agenda topics for each meeting.

1.5.5. Agenda:

1.5.5.1. Review minutes of previous meetings.

1.5.5.2. Review of Work progress.

1.5.5.3. Field observations, problems, and decisions.

1.5.5.4. Identification of problems which impede planned progress.

1.5.5.5. Review of submittals schedule and status of submittals.

1.5.5.6. Review of off-site fabrication and delivery schedules.

1.5.5.7. Maintenance of progress schedule.

1.5.5.8. Corrective measures to regain projected schedules.

1.5.5.9. Planned progress during succeeding work period.

1.5.5.10. Coordination of projected progress.

1.5.5.11. Maintenance of quality and work standards.

1.5.5.12. Effect of proposed changes on progress schedule and coordination.

1.5.5.13. Other business relating to Work.

1.6. PREINSTALLATION CONFERENCES

1.6.1. When required in individual specification Section, convene a pre-installation conference at work site prior to commencing work of the Section.

1.6.2. Require attendance of parties directly affecting, or affected by, work of the specific Section.

1.6.3. Notify Architect, Owner and Inspector of Record a minimum four (4) days in advance of meeting date.

1.6.4. Prepare agenda, preside at conference, record minutes, and distribute copies within two days after conference to participants, with two copies to Architect.

1.6.5. Review conditions of installation, preparation and installation procedures, and coordination with related work.

1.7. MINUTES OF MEETINGS

1.7.1. District shall compile detailed minutes of the meetings, except pre-installation conferences, and furnish one copy to the Owner, Contractor and Inspector. Minutes shall record discussion, actions taken, and issues assigned to parties responsible for resolution.

1.7.2. Recipients of minutes may make additional copies as they desire.

1.7.3. Published minutes will be accepted as properly stating the activities and decision of the Meeting unless they are challenged in writing prior to the next regularly scheduled Progress Meeting.

1.7.3.1. Persons challenging published minutes are responsible to reproduce and distribute copies of challenge to all recipients of the particular minutes being challenged.

1.7.3.2. Settle challenge as priority item of 'old business' at the next regularly scheduled meeting.

1.7.4. Except for pre-installation conferences, Contractor shall not prepare or distribute meeting minutes. Architect will not review or take action on any meeting minutes prepared by Contractor.

2. PART 2 - PRODUCTS

Not Used

3. PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Submittal procedures.

1.1.2. Construction progress schedules.

1.1.3. Proposed Products list.

1.1.4. Shop drawings.

1.1.5. Product data.

1.1.6. Samples.

1.1.7. Manufacturers' instructions.

1.1.8. Manufacturers' certificates.

1.2. SUBMITTAL PROCEDURES

1.2.1. Transmit required submittals to Architect per criteria in the General Conditions and as specified.

1.2.1.1. Transmit submittals within time periods established by the General Conditions and as required to maintain orderly and sequential progress of the work.

1.2.1.2. Maintain complete and current submittal log, indicating status of all submittals and re-submittals. Provide summary of submittal status at pay request meeting.

1.2.2. Failure to make timely submittals will not be reason for extension of Contract Time.

1.2.3. Architect's review of submittals shall not relieve the Contractor for compliance with the Contract Documents, or for responsibility for deviations from Contract Documents.

1.2.3.1. In review of submittals, Architect will not provide dimensions or elevations for field conditions, or for conditions available from a detailed review of documents.

1.2.4. Electronic Documents for Contractors Use.

1.2.4.1. At Architect's sole discretion, Architect will provide a file containing selected electronic file backgrounds for Contractor's use in shop drawing preparation.

1.2.4.2. Contractor shall sign Architect provided release form regarding such electronic file information.

1.2.4.3. Electronic files will be provided in AutoCAD format, in the Architects current version, as background views only, without dimensions, doors, notes and similar information. No seals, title blocks or approval stamps will be included on backgrounds.

1.2.4.4. Unless otherwise established, and at Architects sole discretion, only plan and section views of architectural, structural, mechanical, and electrical documents will be provided. Under no circumstances will the complete project AutoCAD file be provided.

1.2.4.5. The Architect will provide a single CD based file containing backgrounds for all discipline for the contractors use. Contractor shall be responsible for distribution of background files to subcontractors and vendors.

1.2.4.6. The Architect will prepare a cost for preparation of electronic file package. If the Contractor agrees to such cost, the cost will be processed as a deductive change order to the contract.

1.2.5. Copying of Contract Documents for use as submittals is not acceptable. Contractor shall produce original documents for shop drawings and other submittals.

1.2.6. Provide submittals as required for the orderly progress of the work. Where no time period is established, provide submittals no later than the midpoint between notice of award and scheduled start date of the work related to the submittal.

1.2.7. The Architect's action will be taken within a reasonable time period, while allowing sufficient time, in the Architect's professional judgment, to permit adequate review.

1.2.8. Transmit each submittal separately with Architect accepted form.

1.2.8.1. Combine required material for a single specification Section into a single submittal. Incomplete or partial submittals will be returned without action for re-submittal in proper form.

1.2.8.2. Do not combine data from more than one specification section or drawing component into a single submittal. Such submittals received will be returned without action for re-submittal in proper form.

1.2.8.3. Submittals not reviewed by General Contractor will be returned without action for proper review and re-submittal.

1.2.8.4. Unless otherwise specified, submit product data in quantity required by Contractor for construction, plus three copies for Architect's use. Architect will review a maximum of six (6) copies of submittal.

1.2.9. Sequentially number the transmittal forms. Re-submittals to have original number with an alphabetic or numeric suffix.

1.2.10. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number(s), and specification Section number, as appropriate.

1.2.11. Apply Contractor's stamp, signed or initialed certifying that review, verification of Products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.

1.2.12. Schedule submittals to expedite the Project, and deliver to Architect at business address. Coordinate submission of related items.

1.2.13. Identify variations from Contract Documents and Product or system limitations which may be detrimental to successful performance of the completed Work.

1.2.13.1. Clearly identify, with bold clouding, or other graphic notation, all deviations from Contract Documents. Provide boxed note at clouded deviation specifically requesting approval of proposed change. Provide documentation of proposed change, including additional graphics and data as required by Architect.

1.2.14. Provide space for Contractor and Architect review stamps.

1.2.15. Revise and resubmit submittals as required, identify all changes made since previous submittal.

1.2.15.1. Provide re-submittals within seven days of receipt of returned submittal.

1.2.16. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.2.16.1. Distribute all copies of reviewed submittals at no additional cost to Owner for duplication, blueprinting, mailing or other costs.

1.2.17. Do not send submittals unless required by Specification. Submittals transmitted to Architect not required by specification will be returned without review.

1.2.18. Architect will notify Contractor of availability of documents for pickup at Architect's office, and log such date as the date returned to Contractor. Architect is not obligated to transmit or deliver submittals to Contractor.

1.3. PROPOSED PRODUCTS LIST AND PRODUCT DATA

1.3.1. Where specified in individual sections, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number for each product and supporting product data.

1.3.1.1. For products specified only by reference standards, give manufacturer, trade name, model or catalog designation, and reference standards.

1.3.2. Unless otherwise specified, submit product data in quantity required by Contractor for construction, plus three copies for Architect's use. Architect will review a maximum of six (6) copies of submittal.

1.3.3. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this Project. Mark out items that are not applicable to the project.

1.3.4. After review, distribute in accordance with this Section and provide copies for Project Record Documents described in Section 01 77 19 – Closeout Requirements.

1.4. SHOP DRAWINGS

1.4.1. Submit in the form defined in the General Conditions and as specified.

1.4.1.1. Submit shop drawings in black or colored image on white bond paper format – blue print copies are not acceptable.

1.4.1.2. Submit a minimum of four (4) and maximum of six (6) copies. Architect will retain three copies for Architect's use.

1.4.1.3. Architect will return one copy of marked up and stamped shop drawing to Contractor.

1.4.2. Provide the following information on each sheet:

1.4.2.1. Project name and location.

1.4.2.2. Contractor name and address.

1.4.2.3. Subcontractor, manufacturer, or fabricator name and address.

1.4.2.4. Date and scale of drawings

1.4.2.5. Space for Contractor's review and approval stamp.

1.4.3. After review, reproduce and distribute in accordance with this Section and as described for Project Record Drawings in Section 01 77 19 – Closeout Requirements.

1.5. MANUFACTURER'S INSTRUCTIONS AND CERTIFICATES

1.5.1. When specified in individual specification Sections, submit manufacturers certificates and instructions for delivery, storage, assembly, installation, start - up, adjusting, and finishing, in quantities specified for Product Data.

1.5.2. Identify conflicts between manufacturers' instructions and Contract Documents.

1.5.3. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

1.5.4. Certificates may be recent or previous test results on material or Product, but must address current regulatory requirements and be acceptable to Architect.

1.6. SAMPLES

1.6.1. Submit samples to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work.

1.6.2. Include identification on each sample, with full Project information.

1.6.3. Submit the number of samples of selected finish color, texture, and pattern as specified in individual specification Sections, with a minimum of five samples provided. Where multiple samples are specified, the Architect will retain four sets.

1.6.4. Submittal Procedure for Color Section:

1.6.4.1. Initial Submittal: Using manufacturers standard sample delivery system, submit two sets of samples of colors and finishes from the full range of manufacturers' standard colors (and custom colors if specified), textures, and patterns for Architect initial selection.

1.6.4.2. The Architect will notify Contractor of initial selection by ASI.

1.6.4.3. Following receipt of initial selection, submit the number of samples of selected finish color, texture, and pattern as specified in individual specification Sections, with a minimum of five samples provided. Where multiple samples are specified, the Architect will retain three sets.

1.7. CONSTRUCTION PROGRESS SCHEDULES

1.7.1. Submit Construction Schedule in accordance with the General Conditions and as specified.

1.7.2. Contractor shall engage at his own expense all necessary personnel skilled in preparation of time and cost application of network techniques for construction projects.

1.7.3. Initial Schedule preparation:

1.7.3.1. Submit Initial Schedule within 14 days of date of Notice to Proceed.

1.7.3.2. Architect and Owner will meet with the Contractor to review and comment on the Contractor's Initial Schedule within five (5) days of its receipt.

1.7.3.3. The Contractor shall finalize and re-submit the schedule within five (5) days of the review meeting. Upon acceptance by the Owner, the accepted Initial Schedule will become the project Baseline Contract Schedule. The Baseline Schedule shall not be revised without written approval of the Owner.

1.7.3.4. Contractor's failure to incorporate all elements of work required for the performance of the contract or any inaccuracy in the Baseline Contract Schedule shall not excuse the Contractor from performing all work required for a completed project within the specified contract time period, notwithstanding the Owner's acceptance of the Baseline Contract Schedule.

1.7.4. Monthly Interval Updates

1.7.4.1. The Contractor shall submit to the Owner each month, with one copy to the Architect, an up-dated Schedule of the work. The schedule shall be submitted no later than five (5) workdays from the status date.

1.7.4.2. The Updated Schedule shall include:

1.7.4.2.1. The Contractor's estimated percentage complete (progress) for each activity in progress.

1.7.4.2.2. Actual start/finish dates for activities.

1.7.4.2.3. Identification of errors, if any, from the previous updated schedule.

1.7.4.3. Submit updated schedule with each pay request, reflecting all adjustments in construction schedule and sequence.

1.7.4.4. Contractor shall submit a narrative report as part of his monthly review and update, in form agreed upon by Contractor and Architect. Narrative report shall include description of problem areas; current and anticipated delaying factors and their estimated impact on performance of other activities and completion dates; and an explanation of corrective action taken or proposed.

1.7.5. Pay Requests will not be processed without submission of updated schedule.

1.7.6. Schedule Format and Content: Provide overall schedule in horizontal bar chart form or other Architect approved format, for each building and site work, with separate line for each major work activity, and scheduled on a weekly basis. Integrate all portions of project to identify critical path. Where specified, prepare schedule based on Phases as shown on drawings and specified.

1.7.6.1. The data included on the bar chart shall consist of the activity number, activity description, early start and finish date, original duration, remaining duration, percent complete, resource units per day, and total float.

1.7.6.2. The schedule activities shall be coded to include activity responsibility and the area of work. Area codes shall distinguish construction activities related to individual buildings or areas within buildings (e.g. demolition, rough-in plumbing, partitions, fixtures, etc.).

1.7.6.3. No activity in the schedule shall have a duration longer than twenty (20) workdays, with the exception of fabrication and procurement activities, unless otherwise approved by the Owner. Activity durations shall be the total number of actual days required to perform the work including consideration of weather impacts.

1.7.6.4. Identify all utility and service interruptions and connections, including disconnection of existing buildings.

1.7.6.5. Detailed network activities shall include, in addition, submittal and approval of shop drawings, procurement of critical materials and equipment, fabrication of special material and equipment and their installation and testing. All activities of the Owner that affect progress, and contract required dates for completion of all or parts of the work shall be shown.

1.7.6.6. Sheet size of diagrams shall be at least 30 by 42 inches. Each updated copy shall show a date of the last revision.

1.7.6.7. Initial submittal and complete revisions shall be submitted in six (6) copies.

1.7.6.8. Periodic reports shall be submitted in six (6) copies.

1.7.7. Float Time

1.7.7.1. Float or slack time is defined as the amount of time between the earliest start date and the latest start date or the amount of time between the earliest finish date and the latest finish date of a scheduled activity.

1.7.7.2. Float or slack time is not for the exclusive use or benefit of either the Contractor or the Owner. The Contractor acknowledges and agrees that actual delays affecting path of activities containing float, will not have any effect upon the Contract completion date, provided that the actual delay does not exceed the float time associated with those activities.

1.7.8. For scheduling purposes, the Owner/ will be officially closed on the following holidays during each school year:

Holiday	Month
New Year's Day	January
Martin Luther King Birthday	January
Lincolns Day	February
Presidents Day	February
Spring Break	April
Memorial Day	May
Independence Day	July
Labor Day	September
Veterans Day	November
Thanksgiving Break	November
Winter Break	December & January

1.7.8.1. It shall be the responsibility of the Contractor to confirm the month, day, and year for the above holidays with the Owner facilities management. Contractor shall coordinate and schedule his work accordingly. The project site will be available to the Contractor during the holidays but there is no guarantee that other Owner facilities or services will be made available to the Contractor during the holiday schedule.

1.7.9. Construction Schedule Revisions

1.7.9.1. Updating the construction schedule to reflect actual progress shall not be considered to be a revision of the Schedule.

1.7.9.2. If during the process of schedule updating it becomes apparent that the Construction Schedule no longer represents the actual prosecution and progress of the work by more than 10 days, the Owner may require the Contractor to submit a revised schedule at no additional cost to the Owner. The Owner shall have the right to withhold progress payments from the Contractor at its discretion, if the Contractor fails to submit a timely, detailed and workable schedule showing recovery necessary to achieve scheduled completion.

1.7.10. Final Schedule: At the completion of the contract and prior to the release of any bonds or final payment by the Owner, the Contractor shall submit to the Owner, with copy to the Architect for approval, a final schedule, showing the actual job history.

1.7.11. Time Extension Requests: The monthly updated construction schedules submitted by the Contractor shall not show a completion date later than the Contract Time, subject to any time extensions approved by the Owner.

1.7.11.1. Contractor shall submit Time Extension Requests within 10 days of an event Contractor believes qualifies for a contract time extension, including contract modifications provided by Architect or Owner.

1.7.11.2. The Time Extension Request shall include a notification letter with a detailed narrative justifying the time extension requested.

1.7.11.3. Accompanying letter, provide schedule analysis entitled "Time Extension Request Schedule" incorporating narrative analysis into the latest (qualifying) update schedule.

1.7.11.4. Time Extension Request shall forecast the adjusted project completion date and impact to any intermediate milestones.

1.7.11.5. When Contractor does not submit a Time Extension Request within ten (10) working days, it is mutually agreed that the particular event, including ASI's, RFI response, or CCD/Change Order (including Proposed Change Order) or delay/disruption does not impact the construction schedule and hence no time extension is due to the Contractor.

1.7.11.6. The Owner shall not be under any obligation to consider any time extension request unless the requirements of the contract documents are complied with. The Owner shall not be responsible or liable to the Contractor for any constructive acceleration due to failure of the Owner to grant time extensions under the terms of this contract, should Contractor fail to comply with the time extension submission and justification requirements stated herein.

1.8. CONSTRUCTION PROGRESS SCHEDULES

1.8.1. Submit Construction Schedule in accordance with the General Conditions and as specified.

1.8.1.1. Submit initial schedule within 10 days of date of Notice to Proceed.

1.8.1.2. Submit updated schedule with each pay request, reflecting all adjustments in construction schedule and sequence.

1.8.1.3. Pay Requests will not be processed without submission of updated schedule.

1.8.2. Provide overall Construction Schedule in horizontal bar chart form or other Architect approved format, for each building and site work, with separate line for each major work activity, and scheduled on a weekly basis. Integrate all portions of project to identify critical path. Prepare schedule based on Phases as shown on drawings and specified.

1.8.3. Group related and coordinated activities. Identify early/late start and finish dates, major milestones, float dates, and duration of each activity.

1.8.4. Identify all utility and service interruptions and connections, including disconnection of existing buildings.

1.9. SUBSTITUTIONS

1.9.1. Substitutions will be considered in accordance with the General Conditions and Section 01 25 00.

1.9.2. Substitutions will not be considered when indicated or implied on shop drawings or other forms of submittal without separate written request for substitution.

2. PART 2 - PRODUCTS

Not Used

3. PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 01 45 29

TESTING LABORATORY SERVICES

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Selection and payment.

1.1.2. Contractor submittals.

1.1.3. Laboratory responsibilities.

1.1.4. Laboratory reports.

1.1.5. Limits on testing laboratory authority.

1.1.6. Contractor responsibilities.

1.1.7. Schedule of inspections and tests.

1.2. REFERENCES

1.2.1. Title 24, CCR.

1.2.2. ASTM D 3740 - Practice for Evaluation of Agencies in Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction.

1.2.3. ASTM E 329 - Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.

1.3. SELECTION AND PAYMENT

1.3.1. Owner will employ and pay for services of an independent testing laboratory, approved by DSA, to perform inspection and testing as specified in this Section.

1.3.1.1. Unless specified as the Owner's responsibility, all other testing, mix design preparation and related quality control and certification requirements shall be paid by the Contractor at no additional cost to Owner.

1.3.1.2. All concrete mix designs shall be prepared at Contractor's cost and in compliance with Section 03 30 10//03 30 00.

1.3.2. Only DSA, local legally constituted public authorities having jurisdiction over the Work, the Architect, and the Owner or their designated representatives shall be authorized to direct testing and inspection to determine compliance or non-compliance to the requirements of the Work.

1.3.3. The Contractor shall reimburse the Owner, through Contract adjustment, for inspection and testing costs caused by the following Contractor actions:

1.3.3.1. All testing costs incurred after initial test established non-conformance with contract requirements.

1.3.3.2. Inspection costs caused by Contractor's scheduling of work requiring inspections of less than 4 hours duration.

1.3.3.3. Inspection costs caused by Contractor's failure to complete work requiring inspection within the scheduled duration period shown on Contractor's initial construction schedule.

1.3.3.4. Inspection costs caused by Contractor's failure to order sufficient or required quantity of material.

1.3.3.5. Inspection costs of items repaired following damage caused by Contractor.

1.3.3.6. Inspection costs caused by Contractor's substitution of material, system or process, where such inspection and testing is required by the Architect, Owner or jurisdictional authority to demonstrate compliance with specified criteria.

1.3.3.7. Inspection costs caused by Contractor's use of batch plant that does not comply with criteria waiving batch plant inspection.

1.3.3.8. Inspection costs caused by Contractor's use of a supplier or subcontractor requiring inspection services to be performed at a location exceeding a 100 mile radius of project site.

1.3.3.9. Inspection costs caused by Contractor's failure to complete work within normal hours and days, requiring overtime costs.

1.4. QUALITY ASSURANCE

1.4.1. Laboratory: Authorized to operate in State in which Project is located, and currently approved by DSA.

1.4.2. Laboratory Staff: Maintain a full time registered Engineer on staff to review services.

1.4.3. Testing Equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to either National Bureau of Standards (NBS) Standards or accepted values of natural physical constants.

1.4.4. Welding Inspectors shall be certified in accordance with AWS QC1 Standard for AWS Certification of Welding Inspectors.

1.5. LABORATORY RESPONSIBILITIES

1.5.1. Perform specified inspection, sampling, and testing of Products in accordance with specified standards.

1.5.2. Ascertain compliance of materials and mixes with requirements of Contract Documents.

1.5.3. Promptly notify Architect of observed irregularities or non - conformance of Work or Products.

1.5.4. Perform special inspections for areas of work as shown on drawings and specified in respective sections of the specifications in compliance with Section 4-333, Part 1, Title 24, CCR.

1.5.5. Perform additional inspections and tests required by Architect.

1.6. LABORATORY REPORTS

1.6.1. After each inspection and test, promptly submit copies of laboratory report to Architect, Structural Engineer, Contractor, Owner, Project Inspector, DSA, and other parties as required by referenced sections and applicable regulations.

1.6.2. Include:

1.6.2.1. Date issued.

1.6.2.2. Project title, NTD project number and DSA Application Number.

1.6.2.3. Name of inspector.

1.6.2.4. Date and time of sampling or inspection.

1.6.2.5. Method of obtaining sample.

1.6.2.6. Identification of product and Specifications section.

1.6.2.7. Location in the Project.

1.6.2.8. Type of inspection or test.

1.6.2.9. Date of test.

1.6.2.10. Results of tests.

1.6.2.11. Conformance with Contract Documents.

1.6.2.12. Indicate samples taken but not tested.

1.6.3. When requested by Architect, provide interpretation of test results.

1.6.4. Testing agency shall provide a verified report in compliance with Chapter 4, Part 1, Section 4-336 DSA, of Title 24, CCR.

1.6.4.1. Provide such reports in duplicate, on approved form.

1.6.4.2. Provide reports each time work on the project is suspended and at completion of project.

1.6.4.3. Reports shall document actions taken, tests made, and other aspects of the construction operations for the period prescribed.

1.6.5. In addition, Testing Agency shall provide semi-monthly reports as required by Section 4-337 DSA, Part 1, Title 24, CCR.

1.7. LIMITS ON TESTING LABORATORY AUTHORITY

1.7.1. Laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.

1.7.2. Laboratory may not approve or accept any portion of the Work.

1.7.3. Laboratory may not assume any duties of Contractor.

1.7.4. Laboratory has no authority to stop the Work.

1.8. CONTRACTOR RESPONSIBILITIES

1.8.1. Deliver or make available to laboratory at designated location, adequate samples of materials proposed to be used which require testing, along with proposed mix designs.

1.8.2. Do not incorporate material or products requiring compliance with specified testing and inspection criteria without receiving documentation of compliance from approved agency.

1.8.3. Cooperate with laboratory personnel, and provide access to the Work and to manufacturer's facilities.

1.8.4. Provide incidental labor and facilities to provide access to Work to be tested, to assist testing laboratory in obtaining and handling samples, to obtain and handle samples at the site or at source of Products to be tested, to facilitate tests and inspections, storage and curing of test samples.

1.8.4.1. Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.

1.8.4.2. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

1.8.4.3. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

1.8.5. Contractor shall prepare integrated schedule for the course of construction showing all required inspection and testing. Determine the time required for the laboratory to perform testing and to issue reports and findings. Provide all required testing and inspection time within the construction schedule.

1.8.5.1. Notify Architect, Project Inspector and laboratory minimum two working days prior to expected time for operations requiring inspection and testing services.

1.8.5.2. Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1.8.6. Notify the Owner's representative a sufficient time in advance of the manufacture or material to be supplied by Owner under the Contract Documents, which must by terms of the Contract be tested, in order that the Owner may arrange for testing at the source of supply.

1.9. SCHEDULE OF INSPECTIONS AND TESTS BY OWNER'S TESTING AGENCY

1.9.1. Concrete (Title 24, Part 2, Chapter 19A)

1.9.1.1. Materials

1.9.1.1.1. Portland Cement - 1704A.4.1, 1903A, 1916A.1

1.9.1.1.2. Concrete Aggregates - 1704A.4.1, 1903A, 1903A.5.

1.9.1.1.3. Reinforcing Bars - 1704A.4.1, 1903A.7, 1916A.2

1.9.1.1.4. Admixtures– 1903A, 1903A.4

1.9.1.2. Concrete Quality

1.9.1.2.1. Proportions of Concrete – 1904A; 1905A.1; 1905A.2 1905A.3, 1905A.4; 1905A.5

1.9.1.2.2. Strength Tests – 1905A.1.1, 1905A.6

1.9.1.3. Concrete Inspection

1.9.1.3.1. Job Site Inspection – 1704A.4.5, 1704A.4.6 and 1905A.7

1.9.1.3.2. Batch Plant Inspection - 1704A.4.2

1.9.1.3.3. Waiver of Batch Plant Inspection 1704A.4.3

1.9.1.3.4. Drilled-in Expansion Anchors – 1916A.7

1.9.1.3.5. Adhesive Installed Anchors – 1916A.7

1.9.2. Cold Formed Steel (Title 24, Part 2, Chapter 22A)

1.9.2.1. Materials

1.9.2.1.1. Cold Formed Steel – 2209A.1

1.9.2.1.2. Material Identification – 2203A.1

1.9.2.2. Structural Steel Inspection

1.9.2.2.1. Welding Inspection – 1704A.3.1

1.9.3. Miscellaneous Fasteners

1.9.3.1. Anchorage test methods as shown on drawings and specified in respective sections.

2. PART 2 - PRODUCTS

Not Used

3. PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 50 00

TEMPORARY FACILITIES AND CONTROLS

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Temporary Utilities: Electricity, lighting, telephone service, and sanitary facilities.

1.1.2. Temporary Controls: Barriers, enclosures and fencing, protection of the Work, and related operational requirements.

1.1.3. Construction Facilities: Access, parking, and progress cleaning.

1.2. TEMPORARY UTILITIES AND USAGE

1.2.1. Refer to General Conditions and Section 4.5.2.2.

1.3. TEMPORARY SANITARY FACILITIES

1.3.1. Refer to General Conditions and Section 4.5.2.3.

1.4. BARRIERS AND BARRICADES

1.4.1. Refer to General Conditions and Section 4.5.2.9.

1.4.2. Provide temporary gate or barricades per Section 4.5.2.4 and paint surfaces exposed to view from Owner-occupied areas with approved water based paint and in color as selected by Owner.

1.5. PROTECTION OF INSTALLED WORK

1.5.1. Refer to General Conditions and Section 4.5.2.4.

1.6. PARKING AND TRAFFIC CONTROL

1.6.1. Parking Criteria

1.6.1.1. Coordinate location and parking spaces for Contractor's forces, if allowed, with Owner/Project Manager. Refer to General Conditions.

1.6.2. Traffic Control

1.6.2.1. Traffic maintenance: Prior to start of work, determine the routing of construction vehicles, and the safeguards and procedures necessary to carry out the work. Obtain the Owner's approval of the traffic routes, and for any removal, temporary relocation and reinstallation of traffic control signal. In addition:

1.6.2.1.1. Be responsible for controlling construction traffic within and adjacent to the site.

1.6.2.1.2. Provide entrances, lifts and safeguards required or necessary to the progress of the work, and effectively control such traffic to provide minimum hazard to the work and all persons.

1.6.2.1.3. Route construction equipment, trucks, and similar vehicles via existing public streets to and from the site as approved by the governing authorities.

1.6.2.1.4. Where construction traffic occurs when Owner personnel, students and staff are on site campus, provide "spotter" responsible for leading construction traffic through *site* campus areas.

1.6.2.1.5. Obtain and pay for permits and inspections made necessary by use of public street, sidewalks, curbs, and paving. Post guarantees and bonds that may be required, and repair and make good any damages thereto acceptable to the authorities having jurisdiction.

1.6.2.1.6. Construct and maintain temporary walks for pedestrians. Keep streets adjacent to the site open to vehicular and pedestrian traffic.

1.6.2.1.7. Maintain constant access for police, fire and ambulance service.

1.6.2.1.8. Provide and maintain for proper control of traffic and safety of all concerned. Provide all necessary barricades, suitable and sufficient lights, reflectors, and danger signals.

1.6.2.1.9. Provide warning and closure signs, directional and detour signs, and whatever additional measures are necessary.

1.6.2.1.10. Indicate on a 24-hour basis restricted and dangerous conditions existing on or adjacent to the site. Illuminate barricades, danger signals, warning signs and obstructions at night. Keep warning lights burning from sunset until sunrise.

1.7. ACCESS ROADS

1.7.1. Coordinate location of access roads with Owner.

1.7.1.1. Contractor shall maintain temporary access roads as required to implement the work under this contract, including currently developed access road.

1.7.2. Provide and maintain access to fire lanes and fire hydrants at all times, free of obstructions. Coordinate location, locking device and dimension of gates with fire department having jurisdiction.

1.7.2.1. Provide trench plates as required to resist traffic loads, including fire department vehicles.

1.7.2.2. Where trench plates occur in pedestrian paths, install with transitions as required to comply with accessibility regulations.

1.7.2.3. Obtain Fire Marshal approval of all trench plate installations.

1.7.3. Do not permit delivery trucks to block, park or wait on public streets.

1.7.4. Coordinate site access through locked access gates with Owner. Keys to such gates will not be released to Contractor.

1.8. PROGRESS CLEANING

1.8.1. Refer to General Conditions and Section 4.5.2.6.

1.9. JOBSITE TEMPORARY OFFICES

1.9.1. Refer to General Conditions and Section 4.5.2.

1.10. RECORD DOCUMENTS: JOB SET

1.10.1. Contractor shall maintain, on site, one copy of the following contract documents, defined as the Record Job Set. Stamp set "RECORD JOB SET - DO NOT REMOVE". During the course of construction, use this set to record actual revisions to the Work.

1.10.1.1. Construction Drawings.

1.10.1.2. Project Manual/Specifications.

1.10.1.3. Addenda.

1.10.1.4. Change Orders and other Modifications to the Contract.

1.10.1.5. Reviewed shop drawings, product data, and samples.

1.10.2. Store Record Job Set separate from documents used for construction.

1.10.3. Transfer information concurrent with construction progress. Record Job Sets will be reviewed at each Progress Meeting.

1.10.3.1. Where Record Job Sets do not reflect actual field conditions, the Architect may delay certification of Payment Request until sets are updated to the Architects satisfaction.

1.10.3.2. Cost of Record Job Set preparation shall be paid by Contractor at no additional cost to Owner.

1.10.4. Specifications: Legibly mark and record at each Part 2 Product section description of actual Products installed, including the following:

1.10.4.1. Manufacturer's name and product model and number.

1.10.4.2. Product substitutions or alternates utilized.

1.10.4.3. Changes made by Addenda and Modifications.

1.10.5. Recording Data: Legibly mark each item to record actual construction including:

1.10.5.1. Measured actual horizontal and vertical locations of underground utilities, sub-drains, services and appurtenances, to a tolerance of 2 inches plus/minus, referenced to permanent surface improvements. Include elevations of all water lines, utilities, sanitary and storm drain inverts and storm drain/sub-drain/canyon drain system outfalls.

1.10.5.2. Field changes of dimension and detail, including alignments, gutter slopes, slope bank locations, drainage structures, and related site improvements.

1.10.5.3. Earthwork Engineering Record Documents, consisting of actual field elevations of grading and earthwork, to a tolerance of 0.1 feet. The actual elevation of each elevation shown on drawings shall be recorded. In addition, provide actual elevations at 50 foot intervals along all finish grade contours as shown on drawings, including all grade breaks and the top and toe of all slopes.

1.10.5.3.1. Where actual field elevations exceed specified tolerances, correct field condition and re-survey prior to preparation of final Record Set.

1.10.5.3.2. Record actual elevation in a rectangular box directly above the elevation or contour shown on drawings, using red, permanent ink.

1.10.5.4. Measured locations of internal utilities, services, and appurtenances concealed in construction, to a tolerance of 1 inch plus/minus, referenced to visible and accessible features of the Work.

1.10.5.5. Field changes of major architectural features, such as door relocation, wall furring, field changes of dimension and detail, and material transitions.

1.10.5.6. Details not on original Contract Drawings.

1.11. REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

1.11.1. Remove temporary utilities, equipment, facilities, and materials, prior to Final Application for Payment.

1.11.2. Clean and repair damage caused by installation or use of temporary work.

1.11.3. Restore existing facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.12. SECURITY

1.12.1. Refer to General Conditions and Section 4.5.2.4.

1.12.2. Provide security and facilities as necessary to protect work and personnel from vandalism, unauthorized entry, theft, damage, or assault.

1.12.3. Within a 48 hour period, replace or repair, to specified condition Architects satisfaction, all surfaces or items damaged by graffiti during course of construction.

1.12.4. Where Owner has given approval to take fire detection system off-line, return system to active status at completion of work or end of each work period.

1.12.4.1. Fire Safety During Construction: Comply with provisions of Article 87, California Fire Code, CCR, including, but not limited to, access roads, fire extinguisher and fire watch regulations.

1.12.4.2. Where security or fire detection systems are disabled for any reason, including where Owner has given approval for such system shut-down, provide fire watch or security guard service as directed by Owner and at no additional cost to the Owner.

1.12.5. After beneficial occupancy by Owner, all Contractor staff, subcontractors and suppliers shall notify Owners administrative staff when on site, and sign in and out with staff as directed by Owner. Notify staff when work is completed or shut-down for that work period.

1.12.5.1. Do not enter staff rooms at any time without approval of staff.

1.12.5.2. All Contractor's staff, subcontractors and suppliers shall avoid interaction, contact and communication with students. Under no circumstances shall Contractors staff, subcontractors and suppliers be in contact with students without Owner staff present.

1.12.6. Remove all radio or other music generating devices operated sufficiently loud so as to be objectionable, as determined solely by the Owner, to neighbors, or Owner's operations.

1.12.7. Dogs and other pets are not permitted on campus without prior approval by Owner.

1.12.8. No smoking or use of any tobacco products is permitted on Owner's property.

1.12.9. All Contractor staff, subcontractors and suppliers shall present a professional and civil manner to staff, visitors, neighbors and students. Use of language or behavior judged offensive, obscene or suggestive by the Owner is not permitted. Clothing that is suggestive, is marked with images that suggest or promote drug, alcohol or tobacco use, or represents behavior judged offensive, obscene or suggestive by the Owner is not permitted. Immediately remove from campus any Contractor personnel exhibiting such behavior.

1.12.10. Persons under the influence of or engaged in the use of drugs or controlled substances, as defined by Schedules I through V of Section 202 of the Controlled Substances Act and regulations defined at 21 CFR 1308 - 1308.15, shall be immediately removed from campus.

1.12.11. Use of alcoholic beverages is prohibited on site *campus*. Persons under the influence of or engaged in the use of alcoholic beverages shall be immediately removed from campus.

1.13. DOCUMENTATION OF EXISTING CONDITIONS

1.13.1. Prior to beginning any alterations, including wall demolition or fixture removal, prepare a record of existing improvements affected by the work of this contract. If the record documents do not clearly show damage as a pre-existent condition, Contractor shall be responsible for repair or replacement of such damaged improvements.

1.14. USE OF ELEVATORS (WHERE PROVIDED)

1.14.1. Do not use existing elevators for construction operations unless required and allowed/coordinated with Owner/Project manager.

1.14.2. If used, protect interior wall surfaces with pads and flooring with removable sheet goods.

1.14.3. Remove protective pads and floor covering and vacuum clean interior after each period of use.

1.15. USE OF EXPLOSIVES

1.15.1. Use of explosives is prohibited.

1.16. GENERAL CONSTRUCTION SPECIFICATIONS

1.16.1. Refer to General Conditions and District's Construction Specifications.

2. PART 2 – PRODUCTS

Not Used

3. PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Products.

1.1.2. Transportation and handling.

1.1.3. Storage and protection.

1.2. PRODUCTS

1.2.1. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the Work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the Work. Products may also include existing materials or components required for reuse.

1.2.2. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

1.2.3. Provide interchangeable components of the same manufacturer, for similar components.

1.3. TRANSPORTATION AND HANDLING

1.3.1. Transport and handle Products in accordance with manufacturer's instructions.

1.3.2. Promptly inspect shipments to assure that Products comply with requirements, quantities are correct, and Products are undamaged.

1.3.3. Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement or damage.

1.4. STORAGE AND PROTECTION

1.4.1. Store and protect Products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive Products in weather-tight, climate controlled enclosures.

1.4.2. Where approved by Architect and permitted by General Conditions, provide off-site storage and protection in a bonded warehouse when site does not permit on-site storage or protection.

1.4.3. Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.

2. PART 2 - PRODUCTS

Not Used

3. PART 3 - EXECUTION

Not Used

END OF SECTION

SECTION 01 77 19

CLOSEOUT REQUIREMENTS

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Closeout Procedures.

1.1.2. Final Cleaning.

1.1.3. Adjusting.

1.1.4. Project Record Documents.

1.1.5. Operation and Maintenance Data.

1.1.6. Warranties.

1.1.7. Spare Parts and Maintenance Materials.

1.2. SUBSTANTIAL COMPLETION AND PUNCH LIST PROCEDURES

1.2.1. At such time as each Contractor believes project is substantially complete, notify Architect and Project Manager and request Punch List Inspection.

1.2.2. Architect and Architect's Consultants will conduct an inspection in order to determine acceptance of work and identify items remaining to complete. The Architect will prepare a Punch List of such items and transmit to Contractor.

1.2.3. If Architect determines that punch list items remaining are sufficiently minor, and that Owner can occupy work and use it for its intended purpose, then Architect will prepare a Notice of Substantial Completion for Owner's signature.

1.2.3.1. If work is not substantially complete, Contractor shall continue construction until such time as project status justifies subsequent inspection. Architect and Project Manager and Architect's Consultant costs incurred in such subsequent inspections will be paid by Contractor by Owner-Contractor contract adjustment.

1.2.3.2. Contractor shall complete all items on Punch List within 30 days, or as stated on Notice of Substantial Completion.

1.2.4. Provide submittals to Architect/Owner required by governing or other authorities, including all DSA required forms and approvals.

1.3. FINAL COMPLETION PROCEDURES

1.3.1. At such time as Contractor believes project is complete and following completion of Punch List items, notify Architect and request Final Inspection

1.3.1.1. Submit written certification that Contract Documents have been reviewed, Work has been inspected, and that Work is complete in accordance with Contract Documents and ready for Architect Final inspection.

1.3.1.2. Upon receipt of request for final inspection, Architect will perform a Final Inspection and recommend actions as defined by the General Conditions.

1.3.1.3. If Architect determines work is acceptable under the Contract Documents, Contractor shall submit Final Application for Payment and close-out documents.

1.3.2. Final Application for Payment

1.3.2.1. Contractor shall submit final Application for Payment identifying total adjusted Contract Sum, previous payments, and sum remaining due.

1.3.2.2. When requested by Architect, provide evidence of payment, lien releases and consent of surety to make final payment to Contractor.

1.3.2.3. The District's Board will take an action to accept the project and authorize the filing of a Notice of Completion.

1.3.2.4. Final Payment, including retention, will be released to the Contractor no sooner than 35 days following the filing of the Notice of Completion in compliance with County recording requirements, and subject to no filing of subcontractor stop notices or other claims against the District.

1.3.3. Contractor shall provide all close-out documents required by Contract Documents within ten days of the last day of the contract period.

1.3.3.1. Close out documents include, but are not necessarily limited to:

1.3.3.1.1. Project Job Set and Record Set.

1.3.3.1.2. Operational and maintenance manuals and data.

1.3.3.1.3. Warranties and Guarantees.

1.3.3.1.4. Keys and keying schedules.

1.3.3.1.5. Spare parts, extra stock and materials.

1.3.3.1.6. All jurisdictional approval documents, including Final Verified reports, certification of fire alarm and related documents.

1.4. FINAL CLEANING

1.4.1. Contactor shall conduct all final cleaning required to comply with requirements of this Section prior to final inspection.

1.4.2. Use cleaning materials which do not create hazards to health or property and which will not damage surfaces. Use only those cleaning materials and methods recommended by manufacturer of the surface material to be cleaned. Use cleaning materials only on surfaces recommended by cleaning material manufacturer.

1.4.3. Employ experienced workers or professional cleaners for final cleaning. Comply with instructions of manufacturer for surface being cleaned.

1.4.4. Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner

1.4.5. Contractor shall clean all completed interior work, including but not necessarily limited to, surfaces exposed to view in final construction, all cabinet/casework interiors and surfaces, and all equipment and fixtures.

1.4.5.1. Remove temporary labels, stains and foreign substances. Where stain cannot be removed, replace item to the satisfaction of the Project Manager and Architect.

1.4.5.2. Polish transparent and glossy surfaces.

1.4.5.3. Wet wipe painted and prefinished surfaces. Do not leave residue or wipe marks.

1.4.5.4. Where HVAC system was operated during construction, clean permanent filters and replace disposable filters immediately prior to final inspection. Clean ducts, blowers and coils if units were operated without filters during construction.

1.4.5.5. Perform final cleaning of all plumbing and electrical components. Polish all glossy surfaces, wet wipe all other finished exposed surfaces and elements.

1.4.6. Clean all completed building exterior surfaces and site work, including but not necessarily limited to, surfaces exposed to view in final construction, all roof surfaces, all site paving surfaces, and all equipment and fixtures.

1.4.6.1. Remove temporary labels, stains and foreign substances from exterior surfaces.

1.4.6.2. Polish exterior signage components and similar glossy surfaces.

1.4.6.3. Remove dirt and dust from all exterior surfaces by approved means. Clean all sealant joints and similar applications.

1.4.6.4. Remove debris, construction products, fasteners, and trash from all roof surfaces.

1.4.6.5. Rake grounds that are neither paved nor planted to a smooth even-textured surface.

1.4.6.6. Clean all paving surfaces as necessary to remove construction dust and dirt, including debris from joints using approved methods. Remove all construction stains by approved means. Remove asphalt and seal coat splatter from curb faces.

1.4.7. Remove waste and surplus materials, rubbish, and construction facilities from the site and legally dispose of.

1.5. ADJUSTING

1.5.1. Adjust operating Products and equipment to ensure smooth and unhindered operation.

1.6. RECORD DOCUMENTS: RECORD SET

1.6.1. Upon completion of the Work, obtain one set of reproducible drawings made from *DSA* approved stamped originals from the Architect for preparation of Record Set. Cost to duplicate *DSA* originals will be paid by Contractor at no further cost to Owner.

1.6.1.1. Neatly and accurately transfer data from record job set prints specified in Section 01 50 00.

1.6.1.2. Graphic quality shall be equal to that of the original document. Submit sample of drafting and graphic capability and obtain Architect's approval before proceeding with transfer.

1.6.1.3. Cost of Record Set reproducibles and all preparation shall be paid by Contractor at no additional cost to Owner.

1.6.2. Sign and date Record Job Sets and Record Sets, certifying that the information and data added is accurate and complete.

1.6.3. Record drawings not complying with specified criteria shall be rejected.

1.6.4. Prior to submission for final payment, review Record Set with Architect and obtain approval of the scope of transfer. Following approval, submit Record Job Sets and Record Set to Architect with claim for final Application for Payment.

1.7. OPERATION AND MAINTENANCE DATA

1.7.1. Submit two sets prior to final inspection, bound in 8-1/2 x 11 inch text pages, three ring binders with durable plastic covers.

1.7.2. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS", title of project, and subject matter of binder when multiple binders are required.

1.7.3. Internally subdivide the binder contents with permanent page dividers, logically organized as described below; with tab titling clearly printed under reinforced laminated plastic tabs.

1.7.4. Contents: Prepare a Table of Contents for each volume, with each Product or system description identified, type on 24 pound white paper.

1.7.5. Part 1: Directory, listing names, addresses, and telephone numbers of Architect, Contractor, Subcontractors, and major equipment suppliers.

1.7.6. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of Subcontractors and suppliers. Identify the following:

1.7.6.1. Significant design criteria.

1.7.6.2. List of equipment.

1.7.6.3. Parts list for each component.

1.7.6.4. Operating instructions.

1.7.6.5. Maintenance instructions for equipment and systems.

1.7.6.6. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.

1.7.7. Part 3: Project documents and certificates, including the following:

1.7.7.1. Shop drawings and product data.

1.7.7.2. Certificates.

1.7.7.3. Photocopies of warranties.

1.7.8. Submit one copy of completed volumes in final form 15 days prior to final inspection. This copy will be returned after final inspection, with Architect comments. Revise content of documents as required prior to final submittal.

1.7.9. Submit final volumes revised, within 15 days after final inspection.

1.8. WARRANTIES

1.8.1. Provide duplicate notarized copies.

1.8.2. Execute and assemble documents from Subcontractors, suppliers, and manufacturers.

1.8.3. Provide Table of Contents and assemble in three ring binder with durable plastic cover.

1.8.4. Submit prior to final Application for Payment.

1.8.5. For items of Work delayed beyond date of Substantial Completion, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

1.9. SPARE PARTS AND MAINTENANCE MATERIALS

1.9.1. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification Sections.

1.9.2. Deliver to Project site and place in location as directed; obtain receipt prior to final payment.

2. PART 2 - PRODUCTS

Not used

3. PART 3 - EXECUTION

Not used

END OF SECTION

SECTION 03 30 00

CAST-IN-PLACE CONCRETE

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Formwork and anchorage.

1.1.2. Concrete reinforcement and accessories.

1.1.3. Cast-in-place concrete.

1.2. REFERENCES

1.2.1. ACI 117 - Specification for Tolerances for Concrete Construction and Materials.

1.2.2. ACI 301 - Specification for Structural Concrete.

1.2.3. ACI 302.1R - Guide for Concrete Floor and Slab Construction.

1.2.4. ACI 305R - Hot Weather Concreting, and ACI 306R, Cold Weather Concreting.

1.2.5. ACI 308 - Standard Practice for Curing Concrete.

1.2.6. ACI 318 - Building Code Requirements for Structural Concrete.

1.2.7. ASTM C 33 - Concrete Aggregates.

1.2.8. ASTM C 94 - Ready-Mixed Concrete.

1.2.9. ASTM C 150 - Portland Cement.

1.2.10. ASTM C 309 - Liquid Membrane-Forming Compounds for Curing Concrete.

1.2.11. ASTM D1752 - Preformed Sponge Rubber and Cork Expansion Joint Fillers.

1.3. SUBMITTALS

1.3.1. Provide submittals under provisions of Section 01 33 00.

1.3.2. Product Data/Materials List: Submit data indicating product standards, physical and chemical characteristics, technical specifications, limitations, maintenance instructions, and general recommendations regarding each material proposed for the work in this Section.

1.3.3. Test Reports: Submit certified copies of mill test report of reinforcing steel analysis to testing laboratory, indicating products meet or exceed specified requirements.

1.3.3.1. Steel Source and Description

1.3.3.2. Ultimate tensile strength, Bend test, Elongation percentage and Yield point.

1.3.3.3. Heat number and Chemical analysis.

1.3.4. Mix designs: Prepare mix designs for Architect's review. Include the following information in mix design data:

1.3.4.1.1. Design Method, mix number.

1.3.4.1.2. Specified compressive strength, maximum aggregate size, slump, and placement method.

1.3.4.1.3. Application and location in structure.

1.3.4.1.4. Water-Cement Ratio.

1.3.4.1.5. Cement: Type, amount, and compliance with specified criteria statement.

1.3.4.1.6. Aggregates: Source(s), gradations (individual and combined).

1.3.4.1.7. Signature and stamp of licensed civil engineer responsible for mix design.

1.4. QUALITY ASSURANCE

1.4.1. Comply with applicable portions of referenced ACI 315 and ACI 347 standards for construction of concrete work specified in this Section.

1.4.2. Comply with Chapters 7 and 12 of ACI 318 for details of reinforcement and laps at bar splices respectively.

1.5. REGULATORY REQUIREMENTS

1.5.1. *Conform to applicable sections of Chapter 19A, Part 2, Title 24, CCR.*

1.6. PRODUCT HANDLING

1.6.1. On delivery to Project Site, place materials in area protected from weather.

1.6.2. Store materials above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation and ventilation. Handle materials to prevent damage.

2. PART 2 - PRODUCTS

2.1. FORM MATERIALS

2.1.1. Conform to ACI 347.

2.1.2. Softwood Plywood - Vertical and horizontal surfaces.

2.1.2.1. Grade Certification: APA Grade stamped, complying with PS-1.

2.1.2.2. Type: APA Plyform, Exterior Type.

2.1.2.3. Class/Face Veneer: Class I or II, B-B Veneer.

2.1.2.4. Panel Finish: Where concrete will be exposed to view in final project, with painted and non-painted finish, provide HDO resin fiber overlay.

2.1.3. Lumber Forms: Any grade or species, S4S.

2.1.4. Form Ties:

2.1.4.1. Concealed Condition: Meadow Burke Penta-Tie or equal. Snap-off type, fixed length, cone type, 1 inch back break dimension, free of defects that could leave holes larger than one inch in concrete surface; provide flush plugs for cone holes or grout fill as specified.

2.1.4.2. Exposed Condition: Snap-off type, fixed length, cone type, 1 inch back break dimension, free of defects that could leave holes larger than one inch in concrete surface; provide semi-recessed plugs for cone holes.

2.1.5. Form Release Agent: Cresset or equal, colorless, water based material which will not stain concrete, or absorb moisture, or impair natural bonding or color characteristics of coating intended for use on concrete.

2.1.5.1. Select type suitable and appropriate for achieving CCS 2 surface at exposed concrete applications.

2.1.6. Corners: Chamfered, rigid plastic or wood strip type; 3/4 x 3/4 inch size; maximum possible lengths.

2.1.7. Form Stakes: Steel bar stock, pre-drilled for nails.

2.1.8. Formwork Panel Edge: Provide foam edge stripping at exposed formwork panel edges to minimize mortar leakage.

2.2. REINFORCING STEEL

2.2.1. Reinforcing Steel:

2.2.1.1. Non-Welded Systems: ASTM A615, deformed billet steel bars, uncoated.

2.2.1.1.1. Bar size #4 and larger: Grade 60.

2.2.1.1.2. Bar size less than #4: Grade 40.

2.2.1.2. Provide reinforcing steel complying with ASTM A 706, Grade 60, deformed, uncoated steel, where shown.

2.2.2. Welded Steel Wire Fabric: ASTM A185,Plain Type; flat sheets; plain finish.

2.2.3. Dowels: Same as 2.2.1.

2.2.4. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.2.5. Fabricate concrete reinforcing in accordance with CRSI Manual of Standard Practice, ACI 315, and ACI 318.

2.2.6. Do NOT bend or straighten bars in manner that will weaken or injure bar. Do not re-bend bars #5 and larger.

2.2.7. Do NOT use heat to bend bars.

2.2.8. Remove and replace reinforcement with following fabrication defects:

2.2.8.1. Bar lengths, depths and bends exceeding specified fabrication tolerances.

2.2.8.2. Bends or kinks not shown on drawings or final shop drawings.

2.2.8.3. Bars with reduced cross-section due to excessive rusting or other causes.

2.2.9. Locate reinforcing splices as shown on Drawings. Obtain approval of Structural Engineer for splices not shown on drawings.

2.3. CONCRETE MATERIALS

2.3.1. Cement: Conform to *CBC Section 1903A, and* ASTM C150; normal - Type V, low alkali, grey color.

2.3.2. Fine and Coarse Aggregates: Conform to *CBC Section 1903A,* ASTM C33 and the following:

2.3.2.1. Coarse Aggregate: Clean, hard, fine-grained, sound, crushed rock or washed gravel;

2.3.2.1.1. Slabs, Columns, Walls: Class Designation 5S per ASTM C 33, Table 3, with 1 inch grading.

2.3.2.1.2. Foundations: Class Designation 3S per ASTM C 33, Table 3, with 1-inch grading.

2.3.2.2. Fine Aggregate: Washed natural or manufactured sand, hard, strong, durable particles: not more than 1 percent deleterious materials.

2.3.2.3. Aggregate shall be non-reactive per ASTM C 289.

2.3.3. Water: Clean, potable, and not detrimental to concrete.

2.3.4. Concrete slab-on-grade base: Clean, washed sand, complying with ASTM C 33.

2.4. ACCESSORIES

2.4.1. Membrane Curing Blankets

2.4.1.1. Provide Whitecap or equal 483-Curelap light colored plastic faced 10 oz. burlap curing blankets complying with ASTM C 171.

2.4.2. Membrane Curing Compound and Sealers

2.4.2.1. *Curing Compound: Atlas Quantum-Cure, or equal, zero VOC, NSF/ANSI Standard61 certified (www.atlastechproducts.com) when tested in accordance with ASTM C-156, curing compound shall have maximum moisture evaporation of 0.65 kg/ sq M, water-based, clear with fugitive dye.*

2.4.2.2. Sealer: Atlas Tech-1315 at locations designated S1, complying with ASTM C 1315, Type 1 Clear Class A and B,

2.4.3. Non-Shrink Grout: Premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing admixtures, capable of developing a minimum compressive strength of 8,000 psi at 28 days when tested in accordance with CRD-C-621 and ASTM C 1107.

2.4.4. Admixtures: Concrete admixtures shall be subject to prior approval by DSA. Calcium chloride or admixtures containing chloride shall not be used. Admixture(s) shall not adversely affect concrete strength or color of colored concrete, where occurs.

2.4.5. Polymer Modified Concrete: Provide Sika Armatec 110 polymer modified concrete, with 3/8 inch minus aggregate conforming to manufacturers criteria.

2.4.6. Bonding Agent: Provide Sika Armatec 110 bonding agent/adhesive conforming to manufacturers criteria.

2.5. SCREED SYSTEMS AND JOINT FORMING MATERIALS

2.5.1. Screed Systems: Provide Grann Adjustable Quick Screed or equal chairs, available through Dayton Richmond (800-745-3700).

2.5.2. Formed Construction Joints: Meadow Burke Keyed Kold or equal, galvanized steel, tongue and groove type.

2.5.3. Isolation Joint at radiused conditions: W.R. Meadows, www.wrmeadows.com, or equal, Ceramar, 3/8 inch thick by full depth of slab.

2.5.4. Isolation Joint at perimeter conditions: W.R. Meadows or equal, Sealtight Fiber, 3/8 inch thick by full depth of slab.

2.5.5. Weakened plane/control joints: Provide Soff-Cut system or sawcutting at all slab areas. Use of cast-in-place concrete joints is not acceptable.

JOINT SEALERS

2.5.6. Provide sealants per Section 07 90 00.

2.6. CONCRETE MIX

2.6.1. Prepare concrete mix design in accordance with Section 01 45 00 *and CBC Section 1905A.2-1905A.6.*

2.6.1.1. Provide concrete mixes as necessary to attain strengths and characteristics as noted on the drawings and in the specifications.

2.6.1.2. Concrete strength: 3500 psi at 28 days, unless noted otherwise on drawings.

2.6.1.3. Interior floor slabs on grade concrete strength: 4500 psi at 28 days.

2.6.1.4. Concrete slump: Maximum slump shall not exceed 4 inches, +/-1 inch.

2.6.1.5. In addition, provide concrete mixes for all interior slab-on-grade applications with maximum water-cement ratio of 0.45.

2.6.1.6. *Do not air entrain concrete mix placed for interior slabs. At concrete with exterior exposure, provide 4.5 percent air entrainment.*

2.6.2. Mix concrete in accordance with ASTM C94 *and CBC Section 1905A.8.*

2.6.2.1. Deliver to Inspector on site, with each mixer load of concrete, certificate bearing signature of the Weighmaster and Testing Laboratory batch plant inspector stating quantities of each material contained in load and time mixer was loaded.

2.6.2.2. Delivery Requirements:

2.6.2.2.1. Licensed Weighmaster shall positively identify materials as to quantity and certify each load by ticket.

2.6.2.2.2. Ticket shall be transmitted to Project Inspector by truck driver.

2.6.2.2.3. Project Inspector shall keep daily record of pours, identify each truck, its load and time of receipt and transmit duplicate copy of record to *DSA*.

2.6.2.2.4. Concrete arriving at Work without Weighmaster ticket will be rejected.

2.6.2.2.5. Weighmaster shall furnish affidavit to *DSA* on form satisfactory to *DSA*, certifying concrete furnished conforms to proportions established by mix designs.

2.6.2.3. Representative of Testing Laboratory shall maintain continuous inspection of batch plant preparation of concrete, including review of aggregate and cement , loading and mixing procedures, and final quantities contained in each truck load.

2.6.2.3.1. Where batch plant is certified as conforming to quality control and equipment criteria defined by *CBC Section 1704A.4.4, Chapter 17A, Part 2, Title 24, CCR*, batch plant inspection may be waived, following acceptance of such certification by *DSA*.

2.6.2.3.2. In the absence of such certification, batch plant inspection may be waived for concrete used on single story wood framed structures when criteria defined in *CBC Section 1704A.4.4, Chapter 17A, Part 2, Title 24, CCR are met.* Comply with initial batch plant inspection and criteria specified in paragraph 2.6.2.2 of this Section.

2.7. SOURCE QUALITY CONTROL AND TESTS

2.7.1. Provide for testing under the provisions of Section 01 45 00.

2.7.2. Reinforcing

2.7.2.1. Reinforcing Bars: Section 1916A.2, Chapter 19A, Part 2, Title 24, CCR and AWS D1.4.

2.7.2.2. Cost of testing for unidentified stock shall be reimbursed to the Owner by the Contractor.

2.7.3. Cement and Aggregate

2.7.3.1. Cement: *CBC* Section *1903A and 1916A.1, Chapter 19A, Part 2, Title 24, CCR.*

2.7.3.2. Aggregate: *CBC* Section *1903A, Chapter 19A, Part 2, Title 24, CCR.*

2.7.3.3. Batch Plant Inspection: CBC Section 1704A.4.2, Chapter 19A, Part 2, Title 24, CCR and criteria specified in this Section.

2.8. OTHER MATERIALS

2.8.1. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

3. PART 3 - EXECUTION

3.1. SURFACE CONDITIONS

3.1.1. Inspection

3.1.1.1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

3.1.1.2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

3.1.1.3. Verify all excavations have been inspected and approved by the Architect. Verify all reinforcement and forms have been inspected and approved.

3.1.1.4. Verify concrete elevations, dimensions, and alignment with work specified in other sections.

3.1.1.5. Verify requirements for concrete cover over reinforcement.

3.1.1.6. Identify, verify, and coordinate placement of piping and conduit sleeves through concrete.

3.1.1.7. Identify, verify, and coordinate the location, dimension, and requirements of all depressions, recesses, block-outs and other provisions.

3.1.1.8. Verify anchors, seats, plates, reinforcement and other items embedded in concrete are accurately placed, positioned securely, and will permit proper concrete placement.

3.1.2. In the event of discrepancy, immediately notify the Architect.

3.1.3. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2. FORMWORK AND REINFORCING

3.2.1. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 347.

3.2.2. Verify lines, levels, and measurement before proceeding with formwork.

3.2.3. Do not apply form release agent where concrete surfaces receive special finishes or applied coatings which may be affected by agent.

3.2.4. Coordinate work of other Sections in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchors, and other inserts.

3.2.5. Locate and set in place items which will be cast directly into concrete.

3.2.5.1. Set all anchor bolts, hold downs and related embeds with plywood templates, anchored to formwork as required to maintain in alignment and position during concrete placement.

3.2.6. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Provide crush plates or other approved guards where stripping operation may damage concrete. Kerf wood inserts to permit easy removal.

3.2.7. Chamfer exposed corners. Seal Joints between chamfer and form panel. Miter chamfer strips at changes in direction.

3.2.8. Openings in structural members which are not indicated on Drawing are not permitted.

3.2.9. Foundation Formwork

3.2.9.1. Hand trim sides and bottom of earth forms; remove loose dirt.

3.2.9.2. Construct wood edge forms, as specified below, to extend not less than 2 inches below soil level. Do not permit stakes to extend into or through footing zone. Form all concrete without penetrating footing concrete.

3.2.9.3. Fill over-excavated footings and foundations with concrete at no additional contract cost.

3.2.9.4. Excavate as necessary to accommodate installation and removal of formwork.

3.2.9.5. Prior to pouring footings or foundations, remove all debris, loose material, and water from excavation. Where water has accumulated in excavation, obtain Architects and Geotechnical Engineers review of the suitability of sub-grade condition.

3.2.9.6. Do not place concrete on mud or saturated soils. Repair sub-grade as required by Architect at no additional contract cost.

3.2.10. Wall and structure formwork

3.2.10.1. Provide bracing to ensure stability of formwork.

3.2.10.2. Align form joints.

3.2.10.3. Place plywood panels with horizontal joints level, vertical joints plumb.

3.2.10.3.1. Unless noted otherwise, place panel edge at center of surface and extend in equal dimension in each direction.

3.2.10.3.2. Set form tie so that visible cones are placed in a uniform and aligned pattern. Maintain cones level and vertically aligned.

3.2.10.4. Keep form joints to a minimum. Use maximum size panels.

3.2.10.5. Back all joints by a stud or solid blocking, and provide shaped filler where necessary for smoothness. Provide foam form edge striping to prevent grout washout.

3.2.10.6. Reused panels shall be thoroughly cleaned, damaged edges or surfaces repaired, and both sides and edges coated with specified material.

3.2.10.7. Nail plywood along edges and to intermediate supports with common wire nails spaced as necessary to maintain alignment and prevent warping.

3.2.11. Apply form release agent on formwork in accordance with manufacturer's recommendations. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

3.2.11.1. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are effected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces wet prior to placement of concrete.

3.2.12. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads, and in accordance with the following:

3.2.12.1. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

3.2.12.2. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

3.2.13. Place all concrete reinforcing in accordance with CRSI Placing Reinforcing Bars and *Section 1907A, Chapter 19A, Part 2, Title 24 CCR* .

3.2.14. Before placing, clean reinforcing of loose scale, rust, oil, dirt, and any coating adversely affecting concrete bond.

3.2.15. Place, support and secure reinforcement against displacement. Do not deviate from required position. Do not bend or straighten bars after placement.

3.2.16. Accommodate placement of formed openings. Maintain concrete cover around reinforcing as indicated.

3.2.17. Provide dowel joints at concrete joints as shown on drawings.

3.2.18. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions. Before concrete is deposited upon or against concrete that has taken its initial set or has hardened, mechanically roughen hardened concrete to minimum 1/4" amplitude. Remove all encrustations from forms and reinforcements .

3.3. PLACING CONCRETE

3.3.1. Place concrete in accordance with ACI 304 *and CBC Section 1905A.7.*

3.3.2. Ready mix concrete shall be delivered in accordance with ASTM C94. Concrete shall be placed within 90 minutes after start of mixing.

3.3.3. Conform to ACI 305R when concreting during hot weather or when weather conditions may cause rapid evaporation of moisture. Conform to ACI 306R for concrete placement in cold weather conditions.

3.3.4. Ensure reinforcement, inserts, embedded parts, formed joint fillers, and joint devices are not disturbed during concrete placement.

3.3.5. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.

3.3.6. Place concrete continuously between predetermined expansion, control, and construction joints.

3.3.6.1. Place construction joints only at locations shown on drawings or as approved by Architect.

3.3.6.2. Install construction joints in accordance with *CBC Section 1906A.4,*

3.3.6.3. Once concrete operation has begun, it shall be continued until the specific panel, component, or section is complete. Use of cold joints is not permitted without specific prior approval of the Architect and per Section 1906A.4 Chapter 19A, , Part 2, Title 24, CCR.

3.3.7. Thoroughly consolidate concrete during placement using mechanical vibrators. Do not allow vibrators to contact forms or reinforcing.

3.3.8. Screed floors and slabs on grade level or slope to drain as noted on drawings.

3.4. CONCRETE FINISHING

3.4.1. Slab Finish

3.4.1.1. Produce hard and impervious surfaces, free from defects and blemishes.

3.4.1.2. Provide steel troweled finish, Class 3, per ACI 302.1R. Steel troweling shall consist of three separate operations. Obtain Architect's approval of finish prior to proceeding.

3.4.1.3. At all corridors, utility areas, and similar surfaces not receiving subsequent finish, provide medium swirl texture.

3.4.1.4. Slabs receiving carpet or resilient floor finish: Provide smooth trowel finish, ACI 302.1R Class 3, free of ridges and defects.

3.4.1.5. Slabs receiving thin set ceramic tile, waterproofing membranes or traffic topping : Provide steel trowel and very light broom finish.

3.4.2. All Other Surfaces

3.4.2.1. All column, wall, and beam surfaces shall be as-cast, subject to repair of surface deficiencies as specified.

3.4.3. Surface Defects

3.4.3.1. Surface defects shall be as defined in ACI 309.2R.

3.4.3.2. Surface irregularities shall be as defined in ACI 347 for Class B surfaces for semi exposed surfaces, and Class A surfaces at all exposed to view conditions.

3.4.3.3. All surface defects shall be repaired per approved methods and as specified.

3.5. EXPANSION AND WEAKENED PLANE JOINT INSTALLATION

3.5.1. Locate and form expansion control and contraction joints. Coordinate location with joint pattern shown for finish flooring.

3.5.2. Place formed construction joints in floor slab. Set top screed to required elevations. Secure to resist movement of wet concrete.

3.5.3. Install isolation joints between slab edges and vertical structural elements.

3.5.4. Install sealants in accordance with Section 07 90 00.

3.5.5. Provide Soff-cut or equal weakened plane joints at locations shown on drawings.

3.5.5.1. Saw cut slab before random shrinkage cracks form, and as soon as slab is firm enough to not be damaged by saw blade. Complete sawcutting within 12 hours of pour.

3.6. CURING AND PROTECTION

3.6.1. Maintain concrete above 50 degrees F and in a thoroughly moist condition for at least the first 7 days after placing concrete.

3.6.2. Floor Surface Curing

3.6.2.1. Cure floor surfaces in accordance with ACI 308.

3.6.2.2. Curing Blanket Placement: Install blankets immediately after finishing and joint placement is completed. Place over all surfaces, including face of footings and depressions. Anchor as required to maintain in place for a period of 7 days.

3.6.2.3. Membrane Curing/sealing Compounds: Apply in accordance with manufacturer's instructions.

3.7. FIELD QUALITY CONTROL

3.7.1. Field inspection and testing per *CBC Section 1903A* will be performed in accordance with provisions of Sections 01 45 00 and 01 45 29.

3.7.2. Provide free access to Work and cooperate with appointed testing and inspection firm.

3.7.3. Comply with requirements of *CBC Section 1905A.6.2,* regarding frequency of testing for concrete test specimens.

3.7.4. One slump test will be taken for each set of test cylinders taken.

3.7.4.1. Prepare concrete sample(s) for wach type of concrete placed each day.

3.7.4.2. Prepare one sample for each 50 cubic yards or fraction thereof.

3.7.4.3. Prepare one sample for each 2,000 square feet of slab or wall surface are placed, or a fraction thereof.

3.8. TOLERANCES

3.8.1. All tolerances shall be as defined in ACI 117 and as specified.

3.8.2. Classification shall be per General Building: Cast-in-Place, ACI 117, Section 4.0, unless noted otherwise.

3.8.3. Unless noted otherwise, depressions in slab floors between high spots shall be a maximum 3/16 inch in ten feet, using a metal straight edge placed at any location on slab, and measured within 72 hours of pour.

3.8.4. For the following applications, depressions in slab floors between high spots shall be a maximum 1/8 inch in ten feet, using a metal straight edge placed at any location on slab, and measured within 72 hours of pour.

3.8.4.1. Slabs receiving thin-set ceramic tile as specified in Section 09 30 13.

3.9. PATCHING

3.9.1. Exposed formed concrete surfaces, both interior and exterior, including surfaces designated to receive painted finish, shall provide surfaces suitable for subsequent finishing, free from imperfect joints, fins, "honeycombing", air pockets or "bug" holes, or other such imperfections.

3.9.2. Remove rough spots, stains and hardened mortar or grout from intended smooth surfaces by rubbing such surfaces lightly with fine Carborundum stone. Use liberal amount of water and rub sufficiently to remove defects without changing texture of concrete.

3.9.3. Filling Snap Tie Cone Holes:

3.9.3.1. Break off tie rods at bottom of cone holes.

3.9.3.2. Concealed Applications: Flush hole with water, and allow to dry. Coat entire inner surface of cone hole with liquid bonding agent, then grout holes solid with approved cement grout and grind smooth.

3.9.3.3. Exposed Applications: Flush hole with water, and allow to dry. Coat entire inner surface of cone hole with liquid bonding agent. Insert semi-recessed plug with approved cement.

3.10. DEFECTIVE CONCRETE

3.10.1. Concrete will be considered defective if strength characteristics indicated by tests of molded cylinders and core tests fall below the minimum 28-day strengths specified or indicated. Replace or adequately strengthen such defective concrete in a manner acceptable to the Architect and Structural Engineer.

3.10.2. Concrete will be considered defective if any one of the following conditions occurs:

3.10.2.1. Any concrete work not formed as indicated or is not in conformance with specified tolerances.

3.10.2.2. Any concrete with voids or honeycomb that has been cut, resurfaced or filled, unless under the direction of the Structural Engineer.

3.10.2.3. Any concrete with sawdust, shavings, wood, or embedded debris.

3.10.2.4. Any concrete placed more than 90 minutes after batching.

3.10.2.5. Replace or repair such defective concrete to the satisfaction of the Architect at no extra cost to the Owner.

3.11. EQUIPMENT BASES

3.11.1. Provide concrete bases and anchorage for mechanical, electrical, and other work as required and shown on the drawings and in accordance with reviewed Shop Drawings of related trades.

3.12. MISCELLANEOUS CONCRETE WORK

3.12.1. Provide areaways, cast-in-place valve boxes, pits, splash blocks, bases, and other miscellaneous concrete as shown and required to complete the Work. Conform to applicable requirements as specified in this section.

END OF SECTION

SECTION 07 90 00

JOINT PROTECTION

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Sealants and joint treatment necessary to provide a positive barrier against passage of moisture and air.

1.1.2. Sealants at material joints necessary to provide closure for ease of cleaning and maintenance.

1.1.3. Sealants at all penetrations of sound rated walls and floors.

1.2. SUBMITTALS

1.2.1. Materials List/Product Data: Submit complete materials list, including catalogue data, of all materials, equipment, and products.

1.2.2. Samples: Accompanying Materials List, submit two (2) samples of each type of specified sealant, including color range available.

1.2.3. Test Data:

1.2.3.1. Staining: Provide test data, performed on concrete, demonstrating no staining or discoloration of adjacent substrate from sealant or primer.

1.2.4. Certifications: As a condition of acceptance, submit certification stating that sealants and joint treatments are installed per submittal and are complete and ready for intended function.

1.3. QUALITY ASSURANCE

1.3.1. Qualifications: Provide adequate numbers of skilled staff, thoroughly trained and experienced in the necessary craft and installation methods associated with the specified products.

1.4. COORDINATION

1.4.1. Coordination: Sequence all work to assure an orderly progress in the project, without removal of previously installed work, and so as to prevent damage to finishes and products.

1.5. DELIVERY, STORAGE, AND HANDLING

1.5.1. Protection: Use all means necessary to protect work in this Section before, during and after installation and to protect the installed work and materials of all other trades.

1.5.2. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

1.5.3. Product Storage: Do not retain on site any material which has exceeded the shelf life recommended by the manufacturer.

1.6. GUARANTEE

1.6.1. Contractor's Guarantee:

1.6.1.1. Provide Owner with written Guarantee per Section 00 65 36 on Contractor's letterhead, and signed by General Contractor and sealant system subcontractor.

1.6.1.2. Provide guarantee for a time period of five years, commencing from the date of final acceptance of the project, against the following defects:

1.6.1.2.1. Adhesive or cohesive sealant joint failure.

1.6.1.2.2. Pin holes or blistering of sealant joint.

1.6.1.2.3. Staining of adjacent substrate or surrounding material.

1.6.1.2.4. Chalking or color change exceeding manufacturers published data.

1.6.1.3. Make inspections and emergency repairs to defects or leaks in the sealant system within twenty-four (24) hours of receipt of notice from the Owner.

1.6.1.4. Restore the affected areas to the standard of the original specifications as soon as weather permits.

2. PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Basis of Design: Characteristics of specific products, where named in this Section, are indicated to establish required level of quality, appearance, and performance. The Architect will consider requests for substitutions, under the provisions of Section 01 25 00.

2.2. SEALANTS

2.2.1. General:

2.2.1.1. All sealants for any one Type shall be the product of a single manufacturer, suitable for the intended use, and per the following product characteristics.

2.2.1.2. Unless noted otherwise, use sealants in application as defined below.

2.2.1.3. For other applications provide products especially formulated for the proposed use and approved in advance by the Architect.

2.2.2. Product Characteristics:

2.2.2.1. Interior applications in conjunction with sanitary conditions (non-food use):

2.2.2.1.1. Products: General Electric Silicone Sanitary Sealant 1702, Dow Corning 786, Pecora 898 Sanitary Silicone Sealant, or equal.

2.2.2.2. Interior sound control applications.

2.2.2.2.1. Products: USG Sheetrock Acoustical Sealant, Pecora AC-20 FTR, Tremco Acoustical Sealant, or equal.

2.2.2.3. Unless noted otherwise, at interior openings, joints, material transitions and bedding, at locations shown on drawings, and other conditions where anticipated joint movement will be 25% or less.

2.2.2.3.1. Products: Pecora 864, Dow Corning 795, Sonneborn Omniseal, or equal.

2.2.2.4. For other applications provide products especially formulated for the proposed use and approved in advance by the Architect.

2.2.3. Colors:

2.2.3.1. Colors for each sealant application will be selected by the Architect from standard colors normally available from the manufacturers complete line of running line colors, including premium and special color lines for each specified product.

2.2.3.2. Should such standard color not be available from the approved manufacturer except at additional charge, provide such colors at no additional cost to the Owner.

2.2.3.3. In concealed installations, and in partially or fully exposed installations where approved by the Architect, use standard gray or black sealant.

2.3. ACCESSORIES

2.3.1. Pre-compressed Joint Filler: Provide Willseal 600 or equal, precompressed joint filler material, full width of wall, thickness sized for 20% compression.

2.3.2. Primers: Provide primer as specifically recommended for this installation by the manufacturer of the sealant used and have been tested for staining, adhesion and durability on all applicable surfaces.

2.3.3. Back-Up Materials: Use only those backup materials which are specifically recommended for this installation by the sealant manufacturer, non-absorbent and non-staining.

2.3.4. Masking Tape: For masking around joints, provide an appropriate masking tape which will effectively prevent application of sealant on surfaces not scheduled to receive it, and which is removable without damage to substrate.

2.4. OTHER MATERIALS

2.4.1. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor subject to the approval of the Architect.

3. PART 3 - EXECUTION

3.1. SURFACE CONDITIONS

3.1.1. Inspection:

3.1.1.1. Prior to work of this Section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

3.1.1.2. Verify that work of this Section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

3.1.1.3. In the event of discrepancy, immediately notify the Architect.

3.1.1.4. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2. PREPARATION

3.2.1. Concrete and Masonry Surfaces:

3.2.1.1. Install only on surfaces which are dry, sound, and well brushed, wiping free from dust.

3.2.1.2. At open joints, remove dust by mechanically blown compressed air if so required.

3.2.1.3. To remove oil and grease, use sandblasting or wire brushing.

3.2.1.4. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing.

3.2.1.5. Remove laitance and mortar from joint cavities.

3.2.2. Steel Surfaces:

3.2.2.1. Unprimed or unfinished steel surfaces in contact with sealant:

3.2.2.2. Sandblast as required to achieve acceptable surface for bond.

3.2.2.3. If sandblasting is not practical, or would damage adjacent finish, scrape the metal or wire brush to remove mill scale and rust.

3.2.2.4. Use solvent to remove oil and grease, wiping the surfaces with clean white rags only.

3.2.2.5. Remove protective coatings on steel by sandblasting or by using a solvent which leaves no residue.

3.3. INSTALLATION OF ACCESSORY MATERIALS

3.3.1. When using backup of tube or rod stock, avoid lengthwise stretching of material. Do not twist or braid hose or rod backup stock.

3.3.2. Prime joints in accordance with manufacturers recommendations.

3.3.3. Provide an approved bond-breaker where recommended by sealant manufacturer.

3.4. INSTALLATION OF SEALANTS

3.4.1. Prior to start of installation in each joint, verify the joint type according to details on the drawings, or as otherwise directed by the Architect, and verify that the required proportion of width of joint to depth of joint has been secured.

3.4.2. Equipment:

3.4.2.1. Apply sealant under pressure with power-actuated hand gun or manually-operated hand gun, or by other appropriate means.

3.4.2.2. Use guns with nozzle of proper size, and providing sufficient pressure to completely fill the joints as designed.

3.4.2.3. Do not use pourable sealant installation method at hardscape paving joints.

3.4.3. Thoroughly and completely mask joints where the appearance of primer or sealant on adjacent surfaces would be objectionable.

3.4.4. Install the sealant in strict accordance with the manufacturer's recommendations, thoroughly filling joints to the recommended depth.

3.4.4.1. Use of sealant dams contained within the hardscape joint is not permitted. Install sealant without interruption from end to end of joint.

3.4.5. Tool joints to the profile shown on the Drawings, or as otherwise required if such profiles are not shown on the Drawings.

3.4.5.1. Tool joints to a smooth and consistent transition. Do not leave ripples, strings, or surface tooling marks in sealant.

3.4.6. Unless otherwise specified, at all sound rated wall and floor assemblies, seal penetrations and recessed items through the floors and walls with Type 7 sealant. Seal all penetrations such as electrical device cover plates, pipes, fire extinguisher cabinets and similar penetrations in room surfaces.

3.5. CLEANING

3.5.1. Remove masking tape immediately after joints have been tooled.

3.5.2. Clean adjacent surfaces free from sealant as the installation progresses, using solvent or cleaning agent recommended by the manufacturer of the sealant used.

3.5.3. Upon completion of the work of this Section, promptly remove from the job site all debris, containers, and surplus material derived from this portion of the Work.

END OF SECTION

SECTION 09 21 16

GYPSUM BOARD ASSEMBLIES

1. PART 1 - GENERAL

1.1. SECTION INCLUDES

1.1.1. Gypsum board.

1.1.2. Joint treatment and surface finishes.

1.1.3. Metal support and furring systems.

1.1.4. Cementitious backer board for ceramic tile.

1.1.5. Metal suspension system for drywall ceiling assemblies.

1.2. WORK INSTALLED BUT FURNISHED UNDER OTHER SECTIONS

1.2.1. Section 08 31 13 - Access Doors and Frames.

1.3. REFERENCES

1.3.1. ASTM C 36 - Gypsum Wallboard.

1.3.2. ASTM C 442 - Specification for Gypsum Backing Board and Coreboard.

1.3.3. ASTM C 630 - Water Resistant Gypsum Backing Board.

1.3.4. ASTM C 645 – Nonstructural Steel Framing Members

1.3.5. ASTM C 1002 - Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases.

1.3.6. ASTM C 1177 – Glass Mat Gypsum Substrate for Use as Sheathing.

1.3.7. ASTM D 3273 – Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber.

1.3.8. ASTM E 119 - Fire Tests of Building Construction and Materials.

1.3.9. Gypsum Association, "Levels of Gypsum Board Finish"

1.3.10. ASTM C 28 - Gypsum Plasters.

1.3.11. ASTM C 36 - Gypsum Wallboard.

1.3.12. ASTM C 37 - Gypsum Lath.

1.3.13. ASTM C 588 and C 587 - Gypsum Base for Veneer Plaster and Gypsum Veneer Plaster.

1.4. REGULATORY REQUIREMENTS

1.4.1. Conform to CBC Chapter 7A, Part 2, Title 24, CCR for fire rated assemblies.

1.4.2. Conform to CBC Chapter 25A, Part 2, Title 24, CCR for finish materials installation.

1.4.3. Conform to DSA Interpretation of Regulations document IR M-4 IR 25-5 (supercedes IR M-4 under CBC 2007) for gypsum board ceiling suspension.

1.5. SUBMITTALS

1.5.1. Provide submittals under provisions of Division 01 33 00.

1.5.2. Submit product data indicating materials, joint toppings and finish materials, and accessories.

1.5.3. Submit manufacturer's installation instructions.

1.6. QUALITY ASSURANCE

1.6.1. Manufacturer: Provide company who has produced the specified products for a period of 5 years prior to beginning work of this Section and maintains the capability to provide the specified products in compliance with the delivery and quantity criteria for the Project.

1.6.2. Installer: For installation of work, use only personnel who are thoroughly trained and experienced in the skills required, have installed similar applications of the specified products within one year prior to beginning work of this Section, and who are completely familiar with the manufacturers' recommended methods of installation as well as the requirements of this work.

2. PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Basis of Design: Characteristics of specific products, where named in this Section, are indicated to establish required level of quality, appearance, and performance. Architect will consider requests for substitutions, under the provisions of Section 01 25 00.

2.2. GYPSUM BOARD

2.2.1. Manufacturer: United States Gypsum (USG), www.usg.com, Georgia-Pacific (G-P) www.gpgypsum.com or equal.

2.2.2. Board Type:

2.2.2.1. Non-Rated: USG Regular per ASTM C36.

2.2.2.1.1. Edge: SW Tapered.

2.2.2.1.2. Thickness: 5/8 inch.

2.2.2.2. Fire Rated: USG FireCode Core (Type X) per ASTM C36.

2.2.2.2.1. Edge: SW Tapered.

2.2.2.2.2. Thickness: 5/8 inch.

2.2.2.3. Water Resistant: USG Mold Tough FireCode Core, Type X, per ASTM C1396.

2.2.2.3.1. Edge: Tapered.

2.2.2.3.2. Thickness: 5/8 inch.

2.3. ACCESSORIES

2.3.1. Acoustical Sealant: USG, Non-hardening, non-skinning, conforming to ASTM C557 and C919, for use in conjunction with non-rated gypsum board assemblies.

2.3.2. Drywall Joint and Edge Accessories:

2.3.2.1. Corner Bead: USG or approved alternate, paper faced metal.

2.3.2.2. Edge Trim: USG or approved alternate, paper faced metal.

2.3.2.3. Expansion Joint: USG 093 or approved alternate, metal.

2.3.2.4. Drywall Reveal: Fry, DRM Series, reveal dimension as shown on drawings.

2.3.3. Joint and Finishing Systems:

2.3.3.1. Provide systems produced by same manufacturer as boards.

2.3.3.2. Joint Systems: USG Ready Mixed Compounds, complying with ASTM C475, vinyl based, certified asbestos free.

2.3.3.3. Finishing System Materials: USG Multi-Purpose or approved alternate, complying with ASTM C475, non-aggregate, vinyl based, certified asbestos free.

2.3.3.4. Primer: Manufacturer's approved primer, compatible with finishes specified in other Sections.

2.3.4. Fasteners:

2.3.4.1. Gypsum board screws: type and length as required by installation and UL Listing criteria.

2.3.4.2. Gypsum board nails: type and length as required by installation and UL Listing criteria. Nails not permitted at interior gypsum board applications.

2.3.4.3. Cementitious Backer Unit screws: corrosion resistant, type and length as required by manufacturer, installation and UL Listing criteria. Nails not permitted.

2.3.5. Adhesive: Manufacturer's approved adhesive for attachment to concrete surfaces.

2.3.6. Underlayment Membrane: Membrane complying with ANSI A 108.2-3.8.

2.3.7. Metal Furring Components:

2.3.7.1. Resilient Channels: USG, Series RC-1, 1/2 inch depth.

2.3.7.2. Wall Furring Channels: Provide USG Metal Furring Channel, 20 gage, corrosion resistant steel.

2.4. CEMENTITIOUS BACKER UNIT (CBU)

2.4.1. Manufacturer: USG or equal.

2.4.2. Series: USG Durock Cement Board.

2.4.2.1. Characteristics:

2.4.2.1.1. Edge: Smooth wrapped edge.

2.4.2.1.2. Thickness: 5/8 inch or as indicated.

2.4.2.1.3. Indentation Resistance: 2300 psi, 1 inch disc at 0.02 inch indentation per ASTM D2394.

2.4.2.1.4. Water Absorption: 10 percent maximum at 24 hours per ASTM C473.

2.4.2.1.5. Flexural Strength: 750 psi per ASTM C947.

2.4.2.2. Fire and Life Safety Criteria:

2.4.2.2.1. Surface Burning/Smoke contributed: Maximum values of 5/0 per ASTM E84.

2.4.2.2.2. Listing: UL Listed as a component in rated wall and floor assemblies per ASTM E119.

2.5. METAL SUSPENSION SYSTEM FOR DRYWALL CEILING ASSEMBLIES

2.5.1. Manufacturer: USG or equal.

2.5.2. Type: Runner and furring channel grid system.

2.5.3. Components:

2.5.3.1. Main Runner: Provide hot rolled channels , complying with CBC, Chapter 25, Part 2, Title 24, CCR, including Section 1614A, galvanized.

2.5.3.2. Cross-Furring: Provide galvanized hat channels, , complying with CBC, Chapter 25, Part 2, Title 24, CCR, including Section 1614A.

2.5.3.3. Vertical Hanger Wire: Prestretched steel wire, Number 8, galvanized.

2.6. OTHER MATERIALS

2.6.1. Provide all other materials, not specifically described but required for complete and proper installation of this work, as selected by the contractor and subject to the approval of the Architect.

3. PART 3 - EXECUTION

3.1. SURFACE CONDITIONS

3.1.1. Inspection

3.1.1.1. Prior to work of this section, carefully inspect previously installed work. Verify all such work is complete to the point where this installation may properly commence.

3.1.1.2. Verify that work of this section may be installed in strict accordance with the original design, all pertinent codes and regulations, and all pertinent portions of the referenced standards.

3.1.1.2.1. Verify framing members are properly installed and will comply with specified tolerances.

3.1.1.2.2. Verify that openings, curbs, pipes, sleeves, ducts, and vents are solidly set, and blocking and backing is in place.

3.1.1.3. In the event of discrepancy, immediately notify the Architect.

3.1.1.4. Do not proceed with installation in areas of discrepancy until all such discrepancies have been fully resolved.

3.2. PREPARATION

3.2.1. Insulation Coordination:

3.2.1.1. Verify insulation is fitted tightly within spaces, around cut openings, behind and around electrical and mechanical items within or behind partitions, and to items passing through partitions.

3.2.1.2. Install insulation specified in this Section as a component in rated floor/ceiling and roof/ceiling systems.

3.2.2. Metal Suspension System:

3.2.2.1. Install metal suspension system for drywall ceiling surfaces in accordance with USG AC 3152 and *CBC Chapter 25.*

3.3. GYPSUM BOARD INSTALLATION

3.3.1. Install gypsum board in accordance with manufacturer's instructions and designated system number for fire rated assemblies.

3.3.1.1. Unless noted otherwise, utilize water resistant type for wall surfaces within four feet of the outermost edge of any plumbing fixture or moisture generating equipment. Extend water resistant gypsum board full height.

3.3.1.2. Do not use water resistant gypsum board on ceiling applications.

3.3.2. Where gypsum board extends across concrete curbs, install with specified adhesive, consisting of vertical beads placed at 4 inches on center full height. Bond to curb with rollers exerting sufficient pressure to assure full contact and surface alignment with board at framing above.

3.3.3. Use screws of proper length when fastening gypsum board to framing, spaced at 8 inches on center maximum at each support.

3.3.4. Erect single layer fire rated gypsum board vertically, with edges and ends occurring over firm bearing.

3.3.5. Double Layer Applications: Place second layer parallel to first layer. Offset joints of second layer from joints of first layer a minimum of one stud spacing, and as required by referenced test standard.

3.3.6. Edge and Trim Installation:

3.3.6.1. Install corner beads at all external corners. Use longest practical length.

3.3.6.2. Install corner beads at all conditions where gypsum board abuts dissimilar materials.

3.3.6.3. Install angle reinforcement at interior corners.

3.3.6.4. Tape and finish joint reinforcement as specified.

3.3.7. Install acoustical sealant at wall edge perimeter, including floor edge, and at all penetrations where fire stopping is not required.

3.3.8. Cementitious Backer Unit Installation:

3.3.8.1. Install backer board in accordance with manufacturer's recommendations, including USG Systems Folder SA-934.

3.3.8.2. Apply specified underlayment membrane to framing with approved adhesive or tape. Lap membrane 4 inches in shingle fashion at all joints.

3.3.8.3. Install backer board with joints over supports. Space ends and edges 1/8 inch apart.

3.3.8.4. Install backer board using screws at maximum 8 inches on center at each support.

3.3.8.5. Prefill all joints with approved latex fortified mortar meeting ANSI 118.4. Tape all joints and level.

3.3.9. Gypsum Plaster Installation:

3.3.9.1. Provide framing or blocking/backing as required to support lath in compliance with *CBC*.

3.3.9.2. Install metal lath in accordance with manufacturer's recommendations.

3.3.9.3. Apply gypsum scratch and brown coats with finish plaster in accordance with manufacturer's recommendations.

3.3.9.4. Provide texture as selected by Architect.

3.4. GYPSUM BOARD FINISH AND JOINT TREATMENT

3.4.1. Comply with descriptions and Finish Levels as specified and in accordance with referenced standard.

3.4.2. LEVEL 2 Finish: Gypsum board located above ceiling areas, plenums, and similar surfaces not visible in completed construction:

3.4.2.1. Embed tape at all joints and interior angles in joint compound.

3.4.2.2. Apply one separate coat of joint compound over all joints, angles, fastener heads, and accessories.

3.4.2.3. Surface shall be free of excess joint compound. Tool marks and ridges are acceptable.

3.4.3. LEVEL 3 Finish: Gypsum board designated to receive rigid FRP or solid paneling.

3.4.3.1. Embed tape at all joints and interior angles in joint compound.

3.4.3.2. Apply two separate coats of joint compound over all joints, angles, fastener heads, and accessories.

3.4.3.3. All joint compound shall be smooth and free of tool marks and ridges.

3.4.3.4. Apply uniform coat of approved primer over entire surface with roller.

3.4.4. LEVEL 4 Finish: Gypsum board designated to receive vinyl wallcovering – *verify Level 5 not required by VWC manufacturer.*

3.4.4.1. Embed tape at all joints and interior angles in joint compound.

3.4.4.2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories.

3.4.4.3. Surface shall be smooth and free of tool marks and ridges.

3.4.4.4. Apply uniform coat of approved primer over entire surface with roller.

3.4.5. LEVEL 4 Finish - Knock-Down Finish: Gypsum board designated to receive flat paint finish.

3.4.5.1. Embed tape at all joints and interior angles in joint compound.

3.4.5.2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories. Apply uniform coat of approved primer over entire surface with roller.

3.4.5.3. Apply texture coating over entire surface. Finish in "Knock-Down" texture as illustrated in USG Construction Handbook. Surface shall be smooth and free of tool marks and ridges.

3.4.5.4. Apply uniform coat of approved primer over entire surface with roller.

3.4.6. LEVEL 5 Finish - Orange Peel: Gypsum board surfaces receiving eggshell, semi-gloss or gloss paint finish.

3.4.6.1. Embed tape at all joints and interior angles in joint compound.

3.4.6.2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories. Apply uniform coat of approved primer over entire surface with roller.

3.4.6.3. Apply texture coating over entire surface. Finish in "Orange Peel" texture as illustrated in USG Construction Handbook. Surface shall be smooth and free of tool marks and ridges.

3.4.6.4. Apply uniform coat of approved primer over entire surface with roller.

3.4.7. LEVEL 5 Finish - Smooth: Gypsum board surfaces receiving eggshell, semi-gloss or gloss paint finish.

3.4.7.1. Embed tape at all joints and interior angles in joint compound.

3.4.7.2. Apply three separate coats of joint compound over all joints, angles, fastener heads, and accessories. Apply uniform coat of approved primer over entire surface with roller.

3.4.7.3. Apply thin skim coat of joint compound over entire surface. Sand as necessary. Surface shall be smooth and free of tool marks and ridges.

3.4.7.4. Apply uniform coat of approved primer over entire surface with roller.

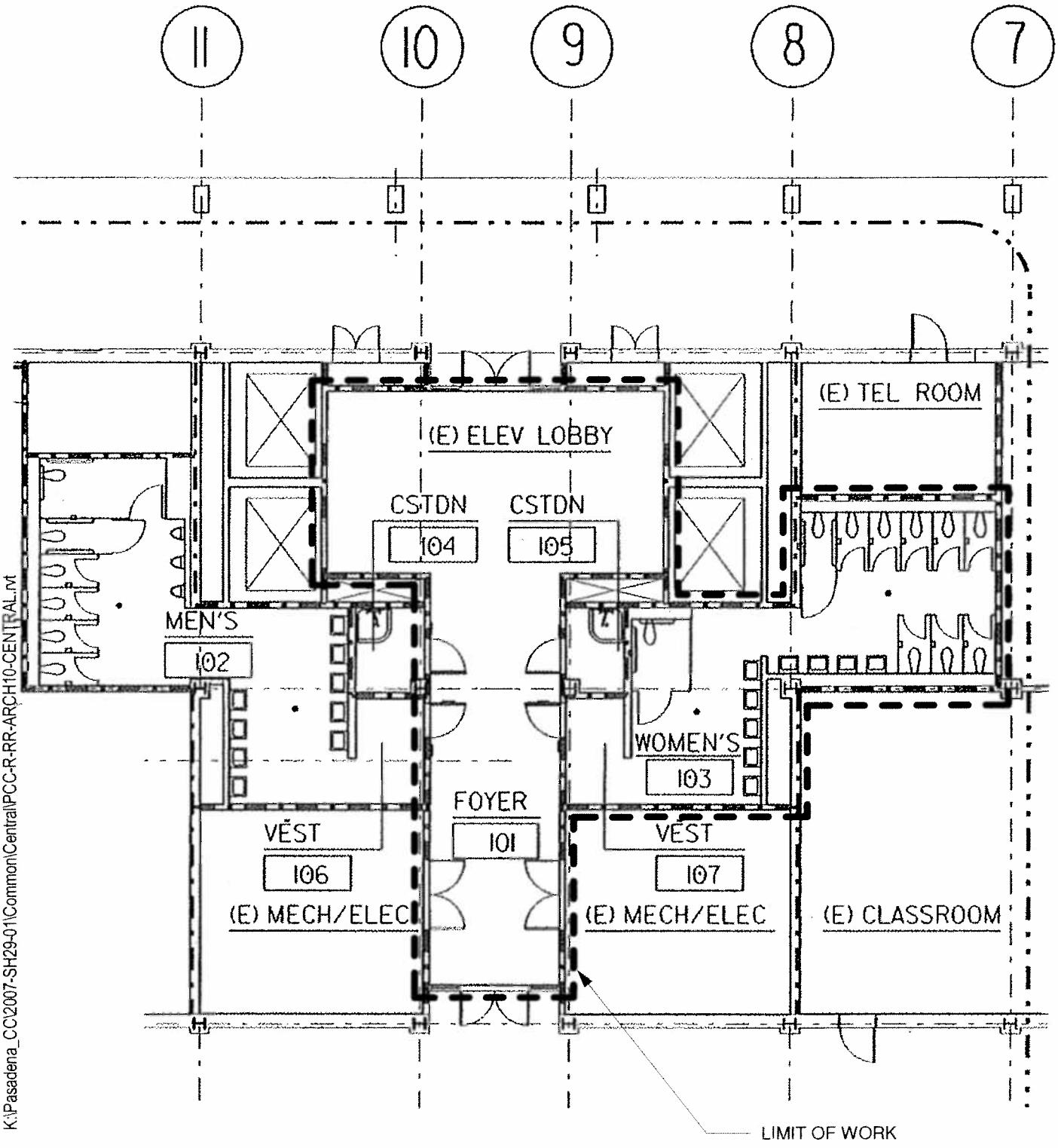
3.5. TOLERANCES

3.5.1. Comply with the following tolerances for level, plumb and flat. Where substrate framing will not comply with specified tolerances, correct deficiencies as required.

3.5.1.1. Level and Plumb: Plus or minus 1/4 inch in 10 feet, non-cumulative.

3.5.1.2. Flatness: No gaps exceeding 1/8 inch at any point under a 10 foot straight edge placed on surface in any orientation.

END OF SECTION



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LICENSED ARCHITECT
JAY R TITTLE
NO.C12955
EXP 11-30-11
STATE OF CALIFORNIA

TITLE: LIMIT OF WORK

BLDG "R" TOILET ROOMS RENOVATION

PASADENA CITY COLLEGE

APPL. NO: 03-113596 FILE NO: 19-C5

NTD ARCHITECTURE
955 Overland Court, Suite 100, San Dimas, California 91773
San Diego • Los Angeles • Auburn • Visalia • Salinas • Phoenix • Tucson

SHEET REF:	A2.1
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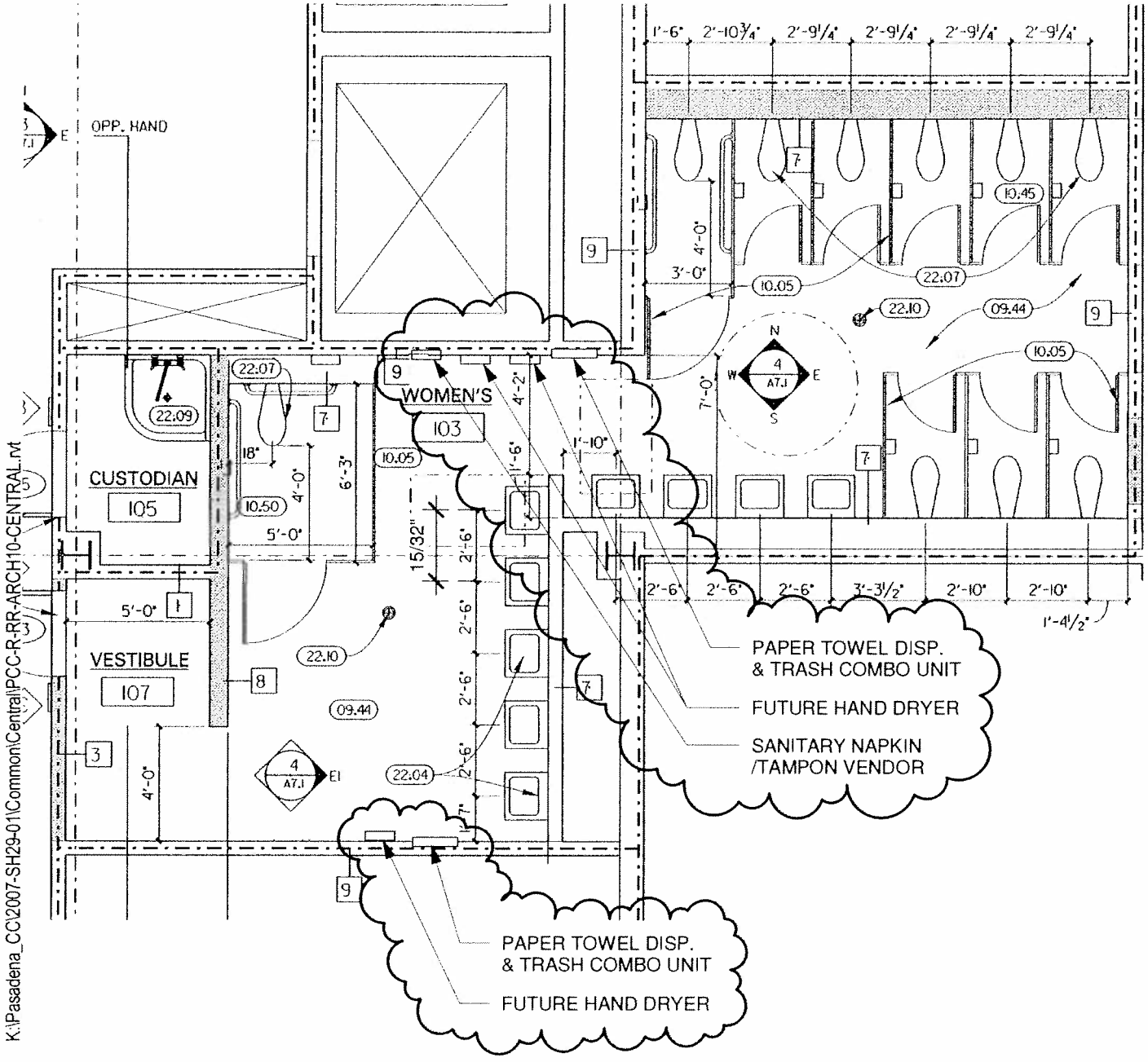
CONTR. REF:	
DATE:	11/09/11
JOB NO:	2007-SH29-01
DRAWING:	AD1-A01



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LICENSED ARCHITECT
JAY R TITTLE
NO.C12955
EXP 11-30-11
STATE OF CALIFORNIA

TITLE: ENLARGED PLAN - WOMEN'S 103

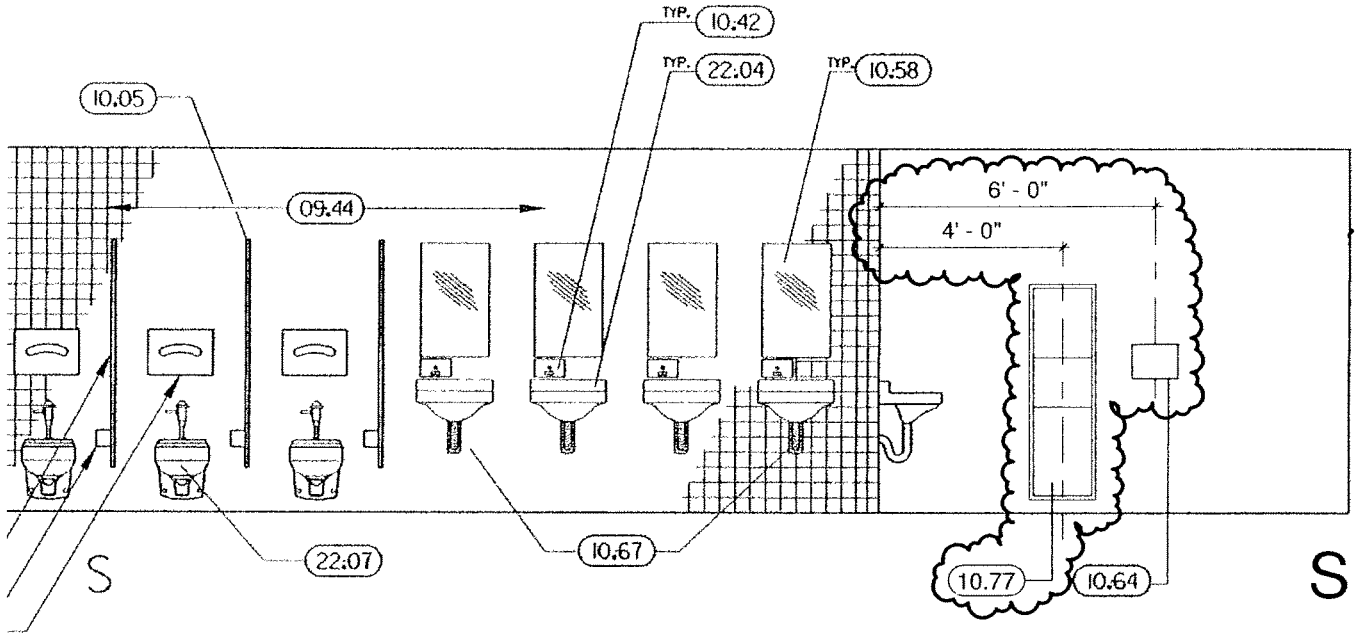
BLDG "R" TOILET ROOMS RENOVATION

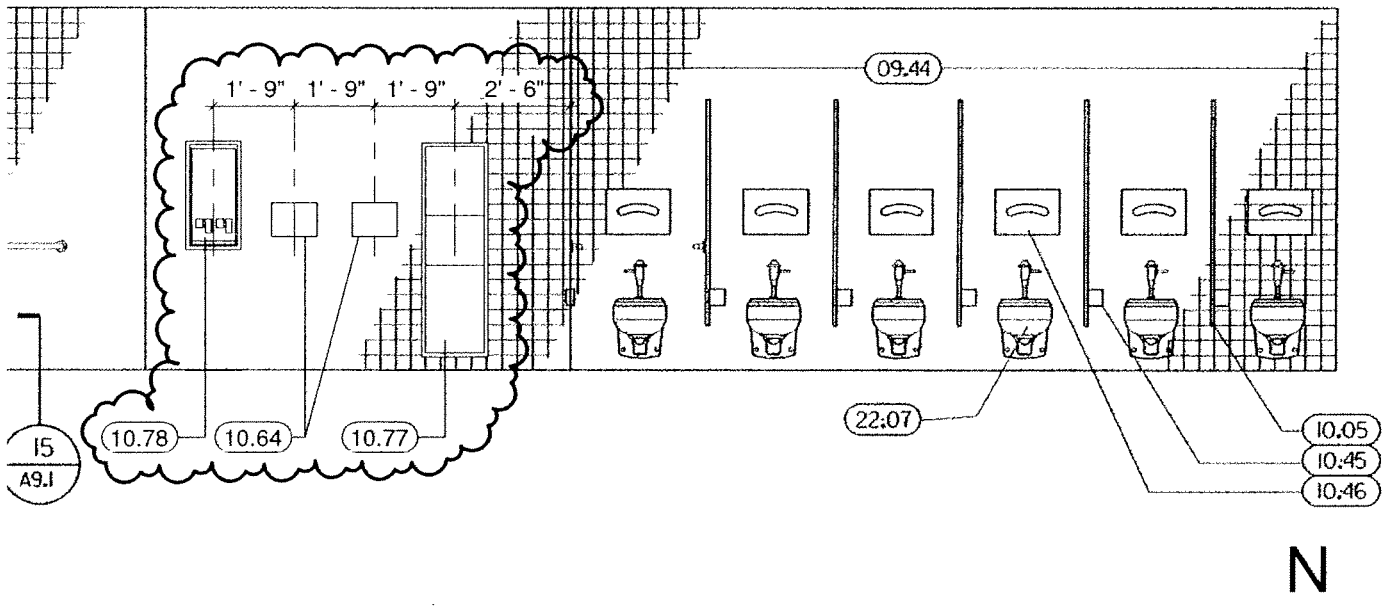
PASADENA CITY COLLEGE

APPL. NO: 03-113596 FILE NO: 19-C5

NTD ARCHITECTURE
955 Overland Court, Suite 100, San Dimas, California 91773
San Diego • Los Angeles • Auburn • Visalia • Salinas • Phoenix • Tucson

SHEET REF:	A3.1
DOC. REF:	
CONTR. REF:	
DATE:	11/09/11
JOB NO:	2007-SH29-01
DRAWING:	AD1-A02





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LICENSED ARCHITECT
JAY R TITTLE
NO.C12955
EXP 11-30-11
STATE OF CALIFORNIA

TITLE: INTERIOR ELEVATIONS - WOMENS 103

BLDG "R" TOILET ROOMS RENOVATION

PASADENA CITY COLLEGE

APPL. NO: 03-113596 | FILE NO: 19-C5

NTD ARCHITECTURE
955 Overland Court, Suite 100, San Dimas, California 91773
San Diego • Los Angeles • Auburn • Visalia • Salinas • Phoenix • Tucson

SHEET REF:	4/A7.1
DOC. REF:	
CONTR. REF:	
DATE:	11/02/11
JOB NO:	2007-SH29-01
DRAWING:	AD1-A03

CONSTRUCTION KEYNOTES

8. OPENINGS

(08.03) STEEL DOOR FRAME - 08 11 00
(08.04) STEEL DOOR - 08 14 00
(08.16) WALL ACCESS PANEL - 08 31 13
(08.38) METAL THRESHOLD - 08 71 00

9. FINISHES

(09.11) PORTLAND CEMENT PLASTER - 09 20 00
(09.44) CERAMIC TILE - 09 30 13
(09.74) RESILIENT BASE - 09 65 00
(09.90) PAINT FINISH - INTERIOR - 09 91 00

10. SPECIALTIES

(10.05) METAL TOILET COMPARTMENTS - 10 21 13
(10.23) ROOM IDENTIFICATION SIGNAGE - RS - 10 14 00
~~(10.42) SOAP DISPENSER - 10 28 00~~
(10.45) TOILET PAPER HOLDER - 10 28 00
(10.46) SEAT COVER DISPENSER - 10 28 00
(10.48) SANITARY PRODUCTS WASTE RECEPTACLE - 10 28 00
(10.50) GRAB BARS - 10 28 00
(10.57) CLOTHES/TOWEL HOOK - 10 28 00
~~(10.58) MIRROR - 10 28 00~~
(10.60) MOP RACK - 10 28 00
(10.64) ELECTRIC HAND DRYER - 10 28 00
(10.67) TRAP, PIPE WRAP
(10.77) PAPER TOWEL DISPENSER AND WASTE RECEPTACLE, RECESSED - 10 28 00
(10.78) SANITARY NAPKIN/TAMPON VENDOR, RECESSED - 10 28 00

22. PLUMBING

(22.04) LAVATORY
(22.06) URINAL
(22.07) TOILET
(22.09) MOP SINK

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LICENSED ARCHITECT
JAY R TITTLE
NO.C12955
EXP 11-30-11
STATE OF CALIFORNIA

TITLE: KEYNOTES			SHEET REF: A3.1 & A7.1
BLDG "R" TOILET ROOMS RENOVATION PASADENA CITY COLLEGE			DOC. REF:
			CONTR. REF:
			DATE: 11/02/11
APPL. NO: 03-113596	FILE NO: 19-C5		JOB NO: 2007-SH29-01
NTD ARCHITECTURE 955 Overland Court, Suite 100, San Dimas, California 91773 San Diego • Los Angeles • Auburn • Visalia • Salinas • Phoenix • Tucson			DRAWING: AD1-A04

FIRE ALARM SYSTEM MANUFACTURER'S CUT SHEET FOR PASADENA CITY COLLEGE

LEGEND

NEW FIRE ALARM SYSTEM CONTROL PANEL – SILENT KNIGHT FARENHYT IFP–50 CSFM#7165–0559:0144

(SD)

SMOKE DETECTOR–SILENT KNIGHT SD505–APS
CSFM# 7272–0559:0129

(AV) 30

CEILING MOUNTED AUDIO/VISUAL – SYSTEM SENSOR PC2RH
CSFM# 7125–1653:0188 (30cd @ 0.209A)

F H 15

VISUAL DEVICE – GENTEX GES3–2415WR
CSFM# 7125–0569:0123 (15cd @ 0.106A)

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11/9/2011 9:03:20 AM

LICENSED ARCHITECT
JAY R TITTLE
NO.C12955
EXP 11-30-11
STATE OF CALIFORNIA

TITLE: REVISED FIRE ALARM LEGEND	SHEET REF:
BLDG "R" TOILET ROOMS RENOVATION PASADENA CITY COLLEGE	DOC. REF:
	CONTR. REF:
APPL. NO: 03-113596 FILE NO: 19-C5	DATE: 11/09/11
	JOB NO: 2007-SH29-01
NTD ARCHITECTURE 955 Overland Court, Suite 100, San Dimas, California 91773 San Diego • Los Angeles • Auburn • Visalia • Salinas • Phoenix • Tucson	DRAWING: AD1- E01

Farenhyt

SILENT KNIGHT
by Honeywell

Intelligent Fire Alarm Control Panel

IFP-50

IFP-50 is an intelligent analog/addressable fire control panel (FACP). IFP-50 has a single line circuit (SLC) loop for connecting addressable detectors and modules and has two notification appliance circuits that can be programmed for notification outputs or auxiliary power. IFP-50 also has a built-in dual line digital fire communicator, Form C trouble relay, and two programmable Form C relays. The firmware has powerful features such as detector sensitivity, day/night thresholds, drift compensation and pre-trouble maintenance alert.

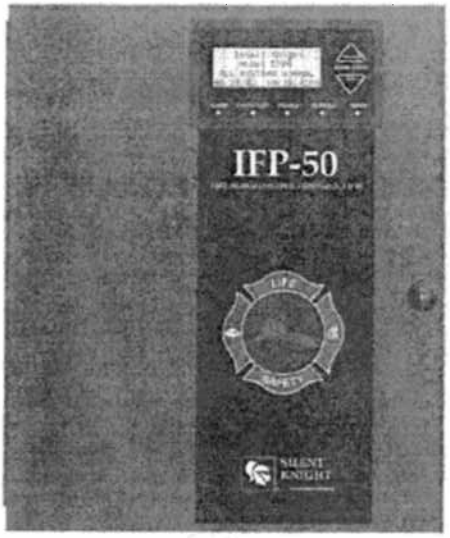
IFP-50 supports a variety of other devices that can be added to the system such as RA-100 remote annunciator, 5824 serial/parallel printer interface module (for printing system reports), and 5496 intelligent power module, and Hochiki or Intelligent Device Protocol (IDP) devices.

Features

- Built-in support for up to 50 Hochiki devices or 50 IDP detectors and 50 IDP modules
- Uses standard wire—no shielded or twisted pair required
- Built-in digital communicator for remote reporting of system activity and system programming
- Central station reporting by point or by zone
- Jumpstart® auto-programming
- Supports Class B (Style 4) and Class A (Style 6 or Style 7) configuration for SLC
- Distributed, intelligent power
- Built-in synchronization for appliances from AMSECO, Gentex®, Faraday, System Sensor®, and Wheelock®
- Sensor sensitivity settings and day/night sensitivity setting and automatic drift compensation
- Notification circuits can be configured as 1 Class A (Style Z), 2 Class B (Style Y), or auxiliary power for resettable, constant, or door holder power
- Built-in annunciator with a backlit 80-character LCD display
- RS-485 bus provides communication to system accessories
- Built-in RS-232 interface for programming via PC
- Built-in Form C trouble relay rated at 2.5 amps at 24 VDC
- Two built-in Form C programmable relays rated at 2.5 amps at 24 VDC
- SLC device locator can be used to locate a single or multiple devices on a SLC loop
- System automatically performs detector sensitivity test
- 13 preset notification cadence patterns (including ANSI 3.41) and four user programmable patterns
- Upload or download programming, event history, or detector status onsite or from a remote location using a PC and 5650/5651 Silent Knight Software Suite (SKSS)
- Improvements in SKSS deliver five times faster upload/downloads
- Non volatile event history stores up to 1000 events
- 125 software zones and 125 output groups

Agency Listings

MEA 429-92-E Vol. XVI



IFP-50

- 2.5 amp power supply and maximum charging capacity of 35 amp hours (An additional cabinet enclosure is required for batteries in excess of 7 amp hours).
- Programmable date setting for Daylight Saving Time

Installation

The IFP-50 is a surface mount FACP.

Compatibility

The IFP-50 SLC supports multiple device types of the *same* protocol:

- Hochiki
- IDP

You cannot mix Hochiki and IDP devices on a FACP. However, any combination of addressable devices of the same protocol can be used on the IFP-50.

Specifications

Physical

Dimensions: 12.75"W x 15.2"H x 3.4"D
(36.8 W x 62.9 H x 9.8 D cm)

Weight: 11.5 lbs. (5.2 kg)

Color: Red

P/N 350328 Rev F

Environmental
Operating Temperature: 32°F – 120°F (0°C – 49°C)

Humidity: 10% – 93% non-condensing

Electrical
Primary AC: 120 VRMS @ 50/60 Hz, 2.7A

Total Accessory Load: 2.5A @ 27.4 VDC power-limited

Standby Current: 200 mA

Alarm Current: 325 mA

Battery Charging Capacity: 7 to 35 AH

Battery Size: 7 AH max. allowed in control panel cabinet. Larger capacity batteries can be housed in RBB accessory cabinet.

Notification Appliance Circuits
Two circuits that can be programmed individually as:
Notification Circuits: 2.5A per circuit @ 27.4 VDC, power-limited
Auxiliary Power Circuits: 2.5A per circuit @ 27.4 VDC, power-limited

Indicator Lights
Alarm (Red): Flashes when in alarm; solid when alarm silenced

Supervisory (Yellow): Flashes when a supervisory condition exists; solid when supervisory silenced

Trouble (Yellow): Flashes when a trouble condition exists; solid when trouble silenced

Silenced (Yellow): On when an alarm, trouble or supervisory condition has been silenced but not yet cleared

Power (Green): Flashes for AC failure; solid when power systems are normal

Telephone
Requirements: FCC Part 15 & Part 68 approved

Jack: RJ31X (two required)

Approvals
NFPA 13, NFPA 15, NFPA 16, NFPA 70, & NFPA 72: Central Station; Remote Signalling; Local Protective Signalling Systems; Auxiliary Protected Premises Unit; & Water Deluge Releasing Service. Suitable for automatic, manual, waterflow, sprinkler supervisory (DACT non-coded) signalling services.

Other Approvals: UL Listing; CSFM 170-0559: 144; MEA 429-92-E Vol XVI

Approved Releasing Solenoid

Manufacturer	Part Number	Rating
Asco	T8210A107	24 VDC, 2.5A
Asco	8210G207	24 VDC, 2.5A

Ordering Information

IFP-50	Intelligent Fire Alarm Control Panel.

SBUS Accessories

RA-100	Remote Annunciator. Similar in operation and appearance to FACP annunciator.
RA-1000	Remote Annunciator. Four line LCD annunciator with 20 characters per line. Gray.
RA-1000R	Remote Annunciator. Four line LCD annunciator with 20 characters per line. Red.
5496	Intelligent Power Module. 6 amp power module that provides four additional power limited notification appliance circuits.
5824	Serial/Parallel Printer Interface Module. Provides one parallel and one RS-232 serial port for connecting a printer to IFP-50.
5880	LED I/O Module. Provides 40 LED outputs, eight normally open dry contacts inputs and one piezo output.
5865-3 & 5865-4	LED Fire Annunciators. Provides 30 programmable LED outputs and a piezo sounder.
5883	Relay Interface Board. Provides 10 general purpose Form C relays. Used with 5880.

Hochiki and IDP Devices

See the specification sheets listed below for a complete listing of the Hochiki and IDP devices.

350360	Hochiki Devices (SD) data sheet
350361	Intelligent Device Protocol (IDP) Devices data sheet

Miscellaneous Accessories

5650/5651	Silent Knight Software Suite. Provides programming, upload/download, and event reporting. Order 5650 for PC parallel port compatibility or 5651 for PC USB port compatibility.
5670	Silent Knight Software Suite. Provides facility monitoring.
RBB	Remote Battery Box Accessory Cabinet. Use if backup batteries are too large to fit into FACP cabinet. Dimensions: 16" W x 10" H x 6" D (406 mm W x 254 mm H x 152 mm D)

SILENT KNIGHT
by Honeywell

For more information, contact Silent Knight 12 Clintonville Road, Northford, CT 06472-1610 Phone: (800) 328-0103, Fax: (203) 484-7118. www.farenhyt.com

Made in the U.S.A.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING - BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No. 7165-0559:0144

CATEGORY: 7165 -- FIRE ALARM CONTROL UNIT (COMMERCIAL)

LISTEE: SILENT KNIGHT SECURITY7550 Meridian Circle, Maple Grove, MN 55369-4927
Contact: Michael McIsaac (763) 493-6400 Fax (763) 391-5464
Email: mike.mcisaac@honeywell.com

DESIGN: Models *IFP-50 and *5700 Fire Alarm Control Units. Power limited, automatic, manual, local, remote station, central station, waterflow, water releasing and sprinkler supervisory service. Refer to listee's data sheet for additional detailed product description and operational considerations. System components:

IFP-50, 5700	Control Units
7628 EOL	Resistor
5860/5860R/RA-1000	Annunciator
5897	Power Supply
5496	*Notification Power Expander
5824	Serial/Parallel Interface
5865-3/5965-4	LED Annunciator
5880	LED IO Module
5883	Relay Interface Board
SD500-LIM	Line Isolation Module
SD505-61B	Isolation Base
RA-100	Remote Annunciator
3158	Reverse Polarity Module
5220	Direct Connect Module

RATING: 120 VAC Primary, 24 VDC Secondary

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical rating, and UL label.

APPROVAL: Listed as control units for use in high-rise structures when used in conjunction with Model SKE-360 Voice-Tone Evacuation Unit (CSFM Listing No. 6912-0559:122); EVAX Audio Adjunct System Models EVAX-25 (CSFM Listing No. 06911-1446:100), EVAX-50 or EVAX-50E (CSFM Listing No. 06911-1446:102); EVX-2ZA or EVX-4Z Zone Splitters (CSFM Listing No. 06912-1446:101); HMX-MP or HMX-DP Voice Evacuation System (CSFM Listing No. 06911-1446:103), two-way firefighter telephone and separately listed electrically and functionally compatible initiating and indicating devices. Also suitable for non-high rise applications where the voice evacuation and two-way firefighter telephone are not required. Refer to listee's Installation Instruction Manual for details.

Rev 10-3-08MA

Date Issued: **July 01, 2011** *Listing Expires* **June 30, 2012**

Authorized By: ***FRANCIS MATEO**, Program Coordinator*

Fire Engineering Division

NOTE: For Fire Alarm Verification Feature (delay of fire alarm signal), the maximum Retard/Reset/Restart period shall not exceed 30 seconds.

Rev 10-3-08MA

Date Issued: **July 01, 2011** *Listing Expires* **June 30, 2012**

Authorized By: ***FRANCIS MATEO**, Program Coordinator*

Fire Engineering Division

Addressable Photoelectric Type Smoke Detector

Detect smoldering fires quickly and get help fast with IntelliKnight® photoelectric smoke detectors.

IntelliKnight addressable photoelectric smoke detectors are the clear choice for commercial settings where smoldering fires are a threat. In addition to accurately detecting a smoldering fire, each SD505-APS photoelectric detector has a unique address, which is recognized by the IntelliKnight panel. No precious seconds are wasted in determining location of an alarm.

The SD505-APS compensates automatically for contamination in the environment. And detector testing is simple—even from a remote site. Like other IntelliKnight detector models, the SD505-APS offers a low profile for pleasing aesthetics. The IntelliKnight family of detectors has been designed to use a common base, Model SD505-6AB, allowing complete application and placement flexibility. Combine all this with the features you've come to expect from Silent Knight smoke detectors—easy installation, stable operation, RF/transient protection, and vandal-resistant locking—and it adds up to a flexible solution for all your fire protection needs.

Model SD505-APS
Analog / Addressable
Photoelectric Type
Smoke Detector

The SD505-APS is particularly suited to detecting dense smoke typical of fires involving materials such as soft furnishings, plastic, foam or other similar materials which tend to smolder and produce large visible particles.

The detector features automatic compensation for contamination and a simple detector calibration test procedure that can be run from the panel or remotely (using the Windows™ based downloading software).

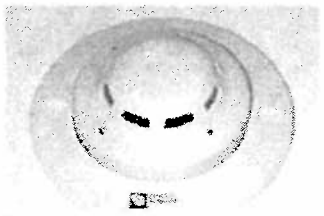
Operation

The SD505-APS units made up of an LED light source and a silicon photo diode receiving element. In a normal standby condition, the receiving element receives no light from the pulsing light source. In the event or fire, smoke enters the detector and light is reflected from the smoke particles to the receiving element.

The light received is converted into an electronic signal. Under normal conditions, the status LED blinks approximately every 15 seconds, indicating that the head is communicating with the loop. The LED lights continuously during the alarm period.

Features

- Low profile, 2 inches, including base
- Simple and reliable addressing without mechanical switches
- Automatic compensation for sensor contamination
- Built-in fire test feature
- Simple detector calibration testing through the control panel or remotely through a Windows™ based computer software.
- Vandal-resistance locking features
- Field cleanable
- UL listed, meets NFPA 72 Ch 7 requirements
- CSFM approved
- MEA approved
- FM Approved



SD505-APS Smoke Detector

Specifications

Operating Voltage:	17-41 VDC
Current Consumption:	
Standby:	.55 mA
Alarm:	.55 mA
Ambient Temperature:	32°F to 120°F (0°C to 49°C)
Mounting:	4" Square, 4" OCT, Single gang mud ring
Relative Humidity:	85% noncondensing
Air Velocity:	0 - 300 FPM
Compatible Bases: (Sold Separately)	SD505-6AB (6" Base) SD505-4AB (4" Base)

SILENT KNIGHT
by Honeywell

Model SD505-APS
Addressable Photoelectric Type Smoke Detector

Engineering Specifications

The contractor shall furnish and install where indicated on the plans, addressable photoelectric smoke detector Silent Knight SD505-APS. The combination detector head, and twist-lock base, shall be UL® listed compatible with Silent Knight's IntelliKnight fire control panels.

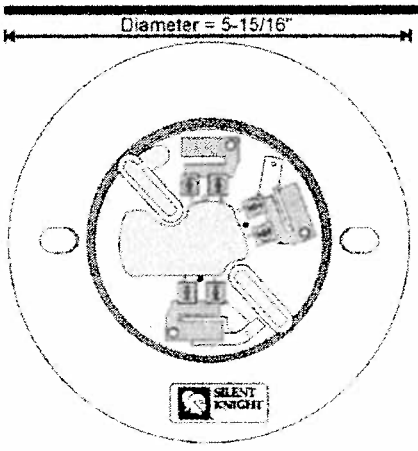
The base shall permit direct interchange with Silent Knight SD505-AIS Ionization Smoke Detector, or SD505-AHS Heat Detector. Base shall be the appropriate twist-lock base SD505-6AB.

The smoke detector shall have a flashing status LED for visual supervision. When the detector is actuated, the flashing LED will latch on steady. The detector may be reset by actuating the control panel reset switch.

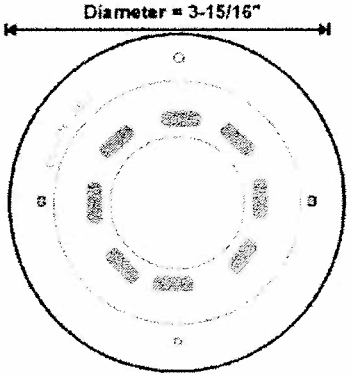
The calibration of the detector shall be capable of being selected and measured by the control panel without the need for external test apparatus.

The vandal-resistant, security locking feature shall be used in those areas as indicated on the drawing. The locking feature shall be field selectable as required.

The SD505-APS shall automatically perform a functional test of the detector. The test method shall simulate effects of products of combustion in the chamber to ensure testing of detector circuits.



Model SD505-6AB Detector Base (front view)



Model SD505-APS Detector Head (front view)

SILENT KNIGHT
by Honeywell

MADE IN AMERICA

FORM# 350225 Rev C,. 05/05

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING - BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No. 7272-0559:0129

CATEGORY: 7272 -- SMOKE DETECTOR-SYSTEM TYPE-PHOTOELECTRIC

LISTEE: SILENT KNIGHT SECURITY7550 Meridian Circle, Maple Grove, MN 55369-4927
Contact: Michael McIsaac (763) 493-6400 Fax (763) 391-5464
Email: mike.mcisaac@honeywell.com

DESIGN: Model SD505-APS analog addressable photoelectric type smoke detector with model SD505-4AB and SD505-6AB bases. Unit consists of resistors, capacitors, diodes, transistors, LED, photo diode, mounted on a printed wiring board inside an enclosure. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING: 39.5 VDC

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes & ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model designation, electrical rating and UL label.

APPROVAL: Listed as photoelectric smoke detector for use with listee's separately listed compatible fire alarm control units. Refer to listee's Installation Instruction Manual for details.

XLF: 7272-0410:0149

*Rev. 06-13-06

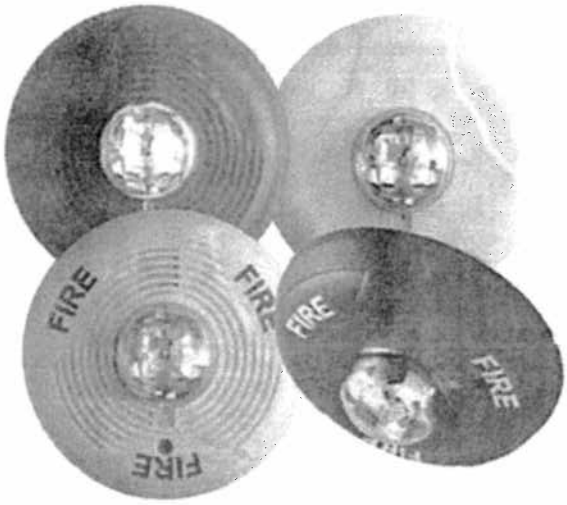
Date Issued: **July 01, 2011** *Listing Expires* **June 30, 2012**

Authorized By: ***FRANCIS MATEO**, Program Coordinator*
Fire Engineering Division

SYSTEM SENSOR

Indoor Selectable-Output Strobes and Horn Strobes for Ceiling Applications

SpectrAlert® Advance audible visible notification products are rich with features guaranteed to cut installation times and maximize profits.



SPECTRAlert ADVANCE

Features

- Plug-in design with minimal intrusion into the back box
- Tamper-resistant construction
- Automatic selection of 12- or 24-volt operation at 15 and 15/75 candela
- Field-selectable candela settings on ceiling units: 15, 15/75, 30, 75, 95, 110, 115, 135, 150, 177, and 185
- Horn rated at 88+ dBA at 16 volts
- Rotary switch for horn tone and three volume selections
- Universal mounting plate for ceiling units
- Mounting plate shorting spring checks wiring continuity before device installation
- Electrically Compatible with legacy SpectrAlert devices
- Compatible with MDL sync module

The SpectrAlert Advance series offers the most versatile and easy-to-use line of horns, strobes, and horn strobes in the industry. With white and red plastic housings, wall and ceiling mounting options, and plain and FIRE-printed devices, SpectrAlert Advance can meet virtually any application requirement.

Like the entire SpectrAlert Advance product line, ceiling-mount strobes and horn strobes include a variety of features that increase their application versatility while simplifying installation. All devices feature plug-in designs with minimal intrusion into the back box, making installations fast and foolproof while virtually eliminating costly and time-consuming ground faults.

To further simplify installation and protect devices from construction damage, SpectrAlert Advance utilizes a universal mounting plate with an onboard shorting spring, so installers can test wiring continuity before the device is installed.

Installers can also easily adapt devices to a suit a wide range of application requirements using field-selectable candela settings, automatic selection of 12- or 24-volt operation, and a rotary switch for horn tones with three volume selections.

Agency Listings

SIGNALING UL LISTED
S4021 (chimes, horn strobes, horns)
S5512 (strobes)

FM APPROVED
4029572

MEA approved
MEA452-09-E

7125-1653 : 88 (indoor strobes)
7125-1653 : 88 (horn strobes, chime strobes)
7135-1653 : 89 (horns, chimes)

SpectrAlert Advance Specifications

Architect/Engineer Specifications

General

SpectrAlert Advance strobes and horn strobes shall mount to a standard 4 × 4 × 1½-inch back box, 4-inch octagon back box, or double-gang back box. Two-wire products shall also mount to a single-gang 2 × 4 × 1⅞-inch back box. A universal mounting plate shall be used for mounting ceiling and wall products. The notification appliance circuit wiring shall terminate at the universal mounting plate. Also, SpectrAlert Advance products, when used with the Sync-Circuit™ Module accessory, shall be powered from a non-coded notification appliance circuit output and shall operate on a nominal 12 or 24 volts. When used with the Sync-Circuit Module, 12-volt-rated notification appliance circuit outputs shall operate between 9 and 17.5 volts; 24-volt-rated notification appliance circuit outputs shall operate between 17 and 33 volts. Indoor SpectrAlert Advance products shall operate between 32 and 120 degrees Fahrenheit from a regulated DC or full-wave rectified unfiltered power supply. Strobes and horn strobes shall have field-selectable candela settings including 15, 15/75, 30, 75, 95, 110, 115, 135, 150, 177, and 185.

Strobe

The strobe shall be a System Sensor SpectrAlert Advance Model _____ listed to UL 1971 and shall be approved for fire protective service. The strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system.

Horn Strobe Combination

The horn strobe shall be a System Sensor SpectrAlert Advance Model _____ listed to UL 1971 and UL 464 and shall be approved for fire protective service. The horn strobe shall be wired as a primary-signaling notification appliance and comply with the Americans with Disabilities Act requirements for visible signaling appliances, flashing at 1 Hz over the strobe's entire operating voltage range. The strobe light shall consist of a xenon flash tube and associated lens/reflector system. The horn shall have three audibility options and an option to switch between a temporal three pattern and a non-temporal (continuous) pattern. These options are set by a multiple position switch. On four-wire products, the strobe shall be powered independently of the sounder. The horn on horn strobe models shall operate on a coded or non-coded power supply.

Synchronization Module

The module shall be a System Sensor Sync-Circuit model MDL listed to UL 464 and shall be approved for fire protective service. The module shall synchronize SpectrAlert strobes at 1 Hz and horns at temporal three. Also, while operating the strobes, the module shall silence the horns on horn strobe models over a single pair of wires. The module shall mount to a 4⅛ × 4⅛ × 2⅛-inch back box. The module shall also control two Style Y (class B) circuits or one Style Z (class A) circuit. The module shall synchronize multiple zones. Daisy chaining two or more synchronization modules together will synchronize all the zones they control. The module shall not operate on a coded power supply.

Physical/Electrical Specifications

Standard Operating Temperature	32°F to 120°F (0°C to 49°C)
Humidity Range	10 to 93% non-condensing
Strobe Flash Rate	1 flash per second
Nominal Voltage	Regulated 12 DC/FWR or regulated 24 DC/FWR[1]
Operating Voltage Range[2]	8 to 17.5 V (12 V nominal) or 16 to 33 V (24 V nominal)
Input Terminal Wire Gauge	12 to 18 AWG
Ceiling-Mount Dimensions (including lens)	6.8" diameter x 2.5" high (173 mm diameter x 64 mm high)
Ceiling-Mount Back Box Skirt Dimensions (BBSC-2, BBSCW-2)	7.1" diameter x 2.2" high (180 mm diameter x 57 mm high)
Ceiling-Mount Trim Ring Dimensions (sold as a 5 pack) (TRC-HS, TRCW-HS)	6.9" diameter x 0.35" high (175 mm diameter x 9 mm high)

Notes:

1. Full Wave Rectified (FWR) voltage is a non-regulated, time-varying power source that is used on some power supply and panel outputs.
2. P, S, PC, and SC products will operate at 12 V nominal only for 15 and 15/75 cd.

UL Current Draw Data

UL Max. Strobe Current Draw (mA RMS)

		8–17.5 Volts		16–33 Volts	
	Candela	DC	FWR	DC	FWR
Standard Candela Range	15	123	128	66	71
	15/75	142	148	77	81
	30	NA	NA	94	96
	75	NA	NA	158	153
	95	NA	NA	181	176
	110	NA	NA	202	195
	115	NA	NA	210	205
High Candela Range	135	NA	NA	228	207
	150	NA	NA	246	220
	177	NA	NA	281	251
	185	NA	NA	286	258

UL Max. Current Draw (mA RMS), 2-Wire Horn Strobe, Standard Candela Range (15–115 cd)

	8–17.5 Volts		16–33 Volts						
DC Input	**15**	**15/75**	**15**	**15/75**	**30**	**75**	**95**	**110**	**115**
Temporal High	137	147	79	90	107	176	194	212	218
Temporal Medium	132	144	69	80	97	157	182	201	210
Temporal Low	132	143	66	77	93	154	179	198	207
Non-Temporal High	141	152	91	100	116	176	201	221	229
Non-Temporal Medium	133	145	75	85	102	163	187	207	216
Non-Temporal Low	131	144	68	79	96	156	182	201	210
FWR Input									
Temporal High	136	155	88	97	112	168	190	210	218
Temporal Medium	129	152	78	88	103	160	184	202	206
Temporal Low	129	151	76	86	101	160	184	194	201
Non-Temporal High	142	161	103	112	126	181	203	221	229
Non-Temporal Medium	134	155	85	95	110	166	189	208	216
Non-Temporal Low	132	154	80	90	105	161	184	202	211

UL Max. Current Draw (mA RMS), 2-Wire Horn Strobe, High Candela Range (135–185 cd)

	16–33 Volts					16–33 Volts			
DC Input	**135**	**150**	**177**	**185**	**FWR Input**	**135**	**150**	**177**	**185**
Temporal High	245	259	290	297	Temporal High	215	231	258	265
Temporal Medium	235	253	288	297	Temporal Medium	209	224	250	258
Temporal Low	232	251	282	292	Temporal Low	207	221	248	256
Non-Temporal High	255	270	303	309	Non-Temporal High	233	248	275	281
Non-Temporal Medium	242	259	293	299	Non-Temporal Medium	219	232	262	267
Non-Temporal Low	238	254	291	295	Non-Temporal Low	214	229	256	262

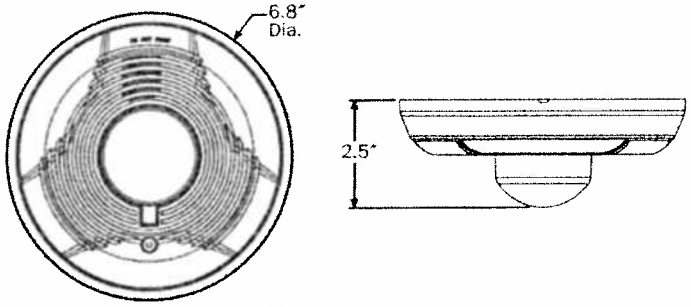
Horn Strobe Tones and Sound Output Data

Horn Strobe Output (dBA)

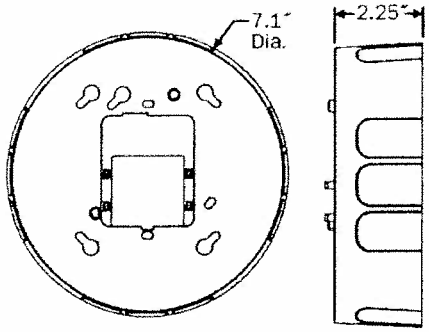
			8–17.5 Volts		16–33 Volts		24-Volt Nominal			
							Reverberant		Anechoic	
Switch Position	Sound Pattern	dB	DC	FWR	DC	FWR	DC	FWR	DC	FWR
1	Temporal	High	78	78	84	84	88	88	99	98
2	Temporal	Medium	74	74	80	80	86	86	96	96
3	Temporal	Low	71	73	76	76	83	80	94	89
4	Non-Temporal	High	82	82	88	88	93	92	100	100
5	Non-Temporal	Medium	78	78	85	85	90	90	98	98
6	Non-Temporal	Low	75	75	81	81	88	84	96	92
7†	Coded	High	82	82	88	88	93	92	101	101
8†	Coded	Medium	78	78	85	85	90	90	97	98
9†	Coded	Low	75	75	81	81	88	85	96	92

†Settings 7, 8, and 9 are not available on 2-wire horn strobes.

SpectrAlert Advance Dimensions



Ceiling-mount horn strobes



Ceiling back box skirt

SpectrAlert Advance Ordering Information

Model	Description
Ceiling Horn Strobes	
PC2R*	2-Wire Horn Strobe, Standard cd, Red
PC2RH	2-Wire Horn Strobe, High cd, Red
PC2W*†	2-Wire Horn Strobe, Standard cd, White
PC2WH*	2-Wire Horn Strobe, High cd, White
PC4R	4-Wire Horn Strobe, Standard cd, Red
PC4RH	4-Wire Horn Strobe, High cd, Red
PC4W	4-Wire Horn Strobe, Standard cd, White

Model	Description
Ceiling Strobes	
SCR	Strobe, Standard cd, Red
SCRH	Strobe, High cd, Red
SCW*	Strobe, Standard cd, White
SCWH	Strobe, High cd, White
Accessories	
BBSC-2	Back Box Skirt, Ceiling, Red
BBSCW-2	Back Box Skirt, Ceiling, White
TRC-HS	Trim Ring, Ceiling, Red
TRCW-HS	Trim Ring, Ceiling, White

Notes:

* Add "-P" to model number for plain housing (no "FIRE" marking on cover), e.g., P2R-P.

† Add "-SP" to model number for "FUEGO" marking on cover, e.g., P2R-SP.

‡ "Standard cd" refers to strobes that include 15, 15/75, 30, 75, 95, 110, and 115 candela settings. "High cd" refers to strobes that include 135, 150, 177, and 185 candela settings.

SYSTEM SENSOR

3825 Ohio Avenue • St. Charles, IL 60174
Phone: 800-SENSOR2 • Fax: 630-377-6495

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING - BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No. 7125-1653:0188

CATEGORY: 7125 -- FIRE ALARM DEVICES FOR THE HEARING IMPAIRED

LISTEE: System Sensor, Unincorporated Div of Honeywell Int'l Inc.3825 Ohio Ave, St. Charles, IL 60174
Contact: Trish Linhart (630) 377-6580 Fax (630) 377-7245
Email: trish.linhart@systemsensor.com

DESIGN: Models CHSR and CHSW Chime/Strobes.
Models P2R, P2W, P2RH and P2WH Horn/Strobes two-wire type, rectangular enclosure.
Models PC2R, PC2W, PC2RH and PC2WH Horn/Strobes two-wire type, round enclosure
Models P4R, P4W, P4RH and P4WH Horn/Strobes four-wire type, rectangular enclosure.
Models PC4R, PC4W, PC4RH and PC4WH four-wire type, round enclosure.
All models are intended for indoor use only unless other wise indicated. Models may be followed by the suffix "K" indicating indoor or outdoor use, or may be followed by suffix "P" for plain housing with no lettering. "K" suffice models are suitable for outdoor applications at temperatures from -40°F to +151°F (-40°C to +66°C) and are rated NEMA 4X* when used with the System Sensor weather proof back boxes models SA-WBB (Wall), *SA-WBBW (Wall), SA-WBBC (Ceiling) and *SA-WBBCW (Ceiling). Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING: Standard Horn/Strobes and Chime/Strobes 8 - 17.5 or 16-33 VDC/FWR
Hi CD Horn/Strobes 16-33 VDC/FWR

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances, and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical rating, and UL label.

APPROVAL: Listed as strobe lights suitable for hearing impaired applications when used with separately listed compatible fire alarm control units. Suitable for indoor or outdoor use, ceiling or wall mount.
The audible units can generate the distinctive three-pulse Temporal Pattern Fire Alarm Evacuation Signal (for total evacuation) in accordance with NFPA 72, 2002 Edition. Refer to listee's Installation Instruction Manual for details.

*Rev. 12-01-08 bh

Date Issued: **July 01, 2011** *Listing Expires* **June 30, 2012**

Authorized By: ***FRANCIS MATEO**, Program Coordinator*
Fire Engineering Division

Lowest Current Draw Available!!

GENTEX CORPORATION

Commander^3 Series
Selectable Candela Evacuation Signals

GEC3/GES3
12 & 24 VDC
SERIES

Applications

The Commander^3 Series is a low profile strobe and horn/strobe combination that offers dependable audible and visual alarms and the absolute lowest current available.

The GE3 Series 24VDC offers tamperproof field selectable candela options of 15, 30, 60, 75, and 110 candela. The 12VDC offers tamperproof field selectable candela options of 15, 30, 60, and 75 candela.

The Commander^3 Series horn offers a continuous or synchable temporal three in 2400Hz and mechanical tone, a chime and whoop tone. All tones are easy for the professional to change in the field by using switches.

The GE3 Series has a minimal operating current and has a minimum flash rate of 1Hz regardless of input voltage.

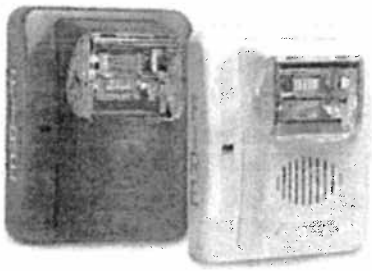
The Commander^3 Series is shipped with a standard 4" metal mounting plate which incorporates the popular Super-Slide® feature that allows the installer to easily test for supervision. The product also features a locking mechanism which secures the product to the bracket without any screws showing.

The Commander^3 also features the patented Checkmate® - Instant Voltage Verification feature which allows the installer to check the voltage drop draw and match it to the blueprint.

The GE3 Series appliances are ANSI/UL 464 and ANSI/UL 1971, listed for use with fire protective systems and are warranted for three years from date of purchase.

Standard Features

- Nominal voltage 12VDC and 24VDC
- 24VDC units have field selectable candela options of 15, 30, 60, 75 & 110
- 12VDC units have field selectable candela options of 15, 30, 60 & 75
- GEH horn is available in 12VDC or 24VDC
- Super-Slide® Bracket - Ease of Supervision Testing
- Checkmate® - Instant Voltage Verification
- Unit Dimensions: 5" (12.7 cm) high x 4.5" (11.43 cm) wide x 2.5" (6.35 cm) deep
- Synchronize strobe and/or horn with Gentex AVSM Control Module
- Prewire entire system, install mounting bracket, then install signals
- Documented lower installation and operating costs
- Input terminals accept 12 to 18 AWG
- Switch selection for high or low dBA
- Switch for chime, whoop, mechanical and 2400Hz tone
- Tamperproof re-entrant style grill
- Switch for continuous or temporal 3 tone (not available on whoop tone)
- Surface mount with the GSB (Gentex Surface Mount Box)
- Silence horn while strobes remain flashing
- Faceplate available in red or off-white



Product Listings

SIGNALING UL LISTED FM APPROVED

- ANSI/UL 464 & ANSI/UL 1971 Listed
- FM Approved
- CSFM: 7135-0569:122 (GEC3-24 & GEH-24)
  7125-0569:123 (GES3-24)
  7125-0569:129 (GES3-12)
  7135-0569:130 (GEC3-12 & GEH-12)
- MEA: 285-91-E (GEC3-24 & GES3-24)
  580-06-E (GEC3-12 & GES3-12)

Patents

- 7,375,617 May 20, 2008

Product Compliance

- NFPA 72
- Americans with Disabilities Act (ADA)
- Quality Management System is certified to: ISO 9001:2008

NEMA MEMBER

ASSEMBLED IN THE USA

GEH 12VDC or 24VDC Low Profile Evacuation Horn

Model Number	Part Number	Nominal Voltage	Reverberant dBA @ 10ft., per ANSI/UL 464	In Anechoic Room dBA @10ft.
GEH12-R	904-1239-002	12VDC	62-82	100
GEH12-W	904-1241-002	12VDC	62-82	100
GEH24-R	904-1205-002	24VDC	62-82	100
GEH24-W	904-1207-002	24VDC	62-82	100

GES3 12VDC or 24VDC Selectable Candela, Low Profile Evacuation Strobe

Model Number	Part Number	Nominal Voltage	Candela (ANSI/UL 1971)
GES3-12WR	904-1235-002	12 VDC	15, 30, 60, 75
GES3-12WW	904-1237-002	12 VDC	15, 30, 60, 75
GES3-24WR	904-1321-002	24 VDC	15, 30, 60, 75, 110
GES3-24WW	904-1319-002	24 VDC	15, 30, 60, 75, 110

Model Designations:
W = Wall mount
R = Red Faceplate W = White Faceplate
All units are available in plain (no lettering).
Plain units are non-returnable.
ALERT bezel available AGENT bezel available

GEC3 12VDC or 24VDC Selectable Candela, Low Profile Evacuation Horn/Strobe

Model Number	Part Number	Nominal Voltage	Candela (ANSI/UL 1971)	Reverberant dBA @ 10ft., per ANSI/UL 464	In Anechoic Room dBA @ 10ft.
GEC3-12WR	904-1231-002	12 VDC	15, 30, 60, 75	62-82	100
GEC3-12WW	904-1233-002	12 VDC	15, 30, 60, 75	62-82	100
GEC3-24WR	904-1317-002	24 VDC	15, 30, 60, 75, 110	62-82	100
GEC3-24WW	904-1315-002	24 VDC	15, 30, 60, 75, 110	62-82	100

GE3 Product Strobe Current Ratings (mA)

	12VDC (8-17.5 Volts)		24VDC (16-33 Volts)	
Candela	12VDC	UL Max[1]	24VDC	UL Max[1]
15cd	106mA	92mA	30mA	42mA
30cd	131mA	141mA	35mA	58mA
60cd	186mA	260mA	66mA	97mA
75cd	237mA	312mA	80mA	116mA
110cd			103mA	161mA

GE3-12 Product Horn Current Ratings

Horn Mode	Minimum dBA @ 10ft., per UL 464 (HIGH)	Minimum dBA @ 10ft., per UL 464 (LOW)	Regulated 12VDC Max. Operating @ High Setting (mA)
Temp 3 2400Hz	76	69*	29
Temp 3 Mechanical	75	68*	26
Temp 3 Chime	62*	60*	13
Continuous 2400Hz	79	74*	29
Continuous Mechanical	78	72*	26
Continuous Chime	63*	61*	13
Whoop	78	71*	55

GE3-24 Product Horn Current Ratings

Horn Mode	Minimum dBA @ 10ft., per UL 464 (HIGH)	Minimum dBA @ 10ft., per UL 464 (LOW)	Regulated 24VDC Max. Operating @ High Setting (mA)
Temp 3 2400Hz	78	71*	28
Temp 3 Mechanical	76	70*	25
Temp 3 Chime	70*	66*	15
Continuous 2400Hz	81	74*	28
Continuous Mechanical	80	72*	25
Continuous Chime	70*	66*	15
Whoop	82	69*	56

NOTES:

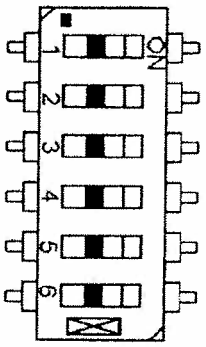
- Operating temperature: 32°to 120°F (0° to 49°C). The GEC3 and GES3 Series is not listed for outdoor use.
  The sound output for the temporal 3 tone is rated lower since the time the horn is off is averaged into the sound output rating. While the horn is producing a tone in the temporal 3 mode its sound pressure is the same as the continuous mode.
- For nominal and peak current across UL regulated voltage range for filtered DC power and unfiltered (FWR [Full Wave Rectified]) power, see installation manual. 12VDC models are DC only.

* Operating the horn in this mode at this voltage will result in not meeting the minimum ANSI/UL 464 reverberant sound level required for public mode fire protection service. These settings are acceptable only for private mode fire alarm use. Use the high dBA setting for public mode application (not applicable when using the chime tone. The chime tone is always private mode).

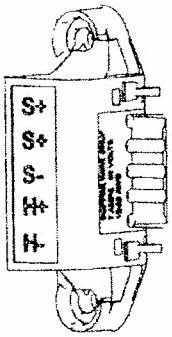
[1] RMS current ratings are per UL average RMS method. UL max current rating is the maximum RMS current within the listed voltage range (16-33VDC for 24VDC units) (8-17VDC for 12VDC units). For strobes the UL max current is usually at the minimum listed voltage (16VDC for 24VDC units) (8VDC for 12VDC units). For audibles the max current is usually at the maximum listed voltage. For unfiltered FWR ratings, see installation manual.

Tone Switch Locations

TONE	SWITCH POSITION		
	3	4	5
Mechanical Temporal 3	ON	ON	ON
Mechanical - Continuous	OFF	ON	ON
2400Hz - Temporal 3	ON	OFF	ON
2400Hz - Continuous	OFF	OFF	ON
Chime - Temporal 3	ON	ON	OFF
Chime - Continuous	OFF	ON	OFF
Whoop	ON	OFF	OFF
Whoop	OFF	OFF	OFF

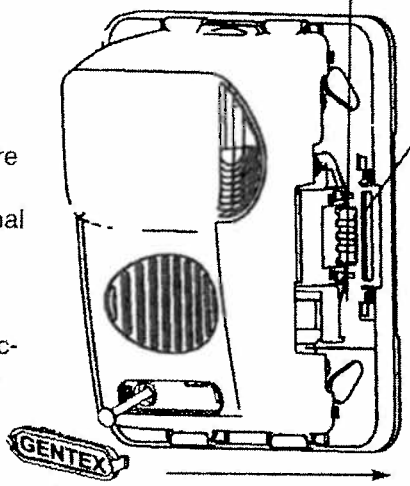


NOTE:
- **Switch Positions 1 and 2 in the OFF position to select isolated horn and strobe power inputs**
- **Switch Position 6 ON = HIGH dBA**
- **Switch Position 6 OFF = LOW dBA**



Gentex Super-Slide® Mounting Bracket

Allows the installer to pre-wire the system, test for system supervision, remove the signal head until occupancy, switch out Gentex signals without changing mounting brackets and has locking edge connector for snap-in-place installation.



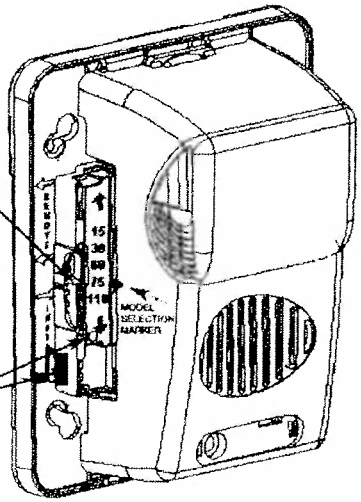
Gentex Checkmate® Instant Voltage Verification

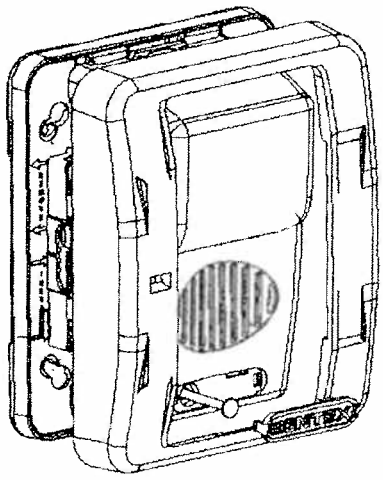
It is often necessary to confirm the voltage drop along a line of devices. The access holes are provided in the back of the terminal block to allow the voltage to be measured directly without removing the device. Typically this would be done at the end of the line to confirm design criteria. Most measurements will be taken using the S+ and S- locations although access is provided to other locations.

NOTE: Care should be taken to not short the test probes.

Candela selection slider switch. Depress center and slide switch to desire brightness level.

Break off pin and insert into hole at the bottom of the selector to lock candela setting. Signal must be removed from bracket and pin pushed forward from backside out of hole to change candela.

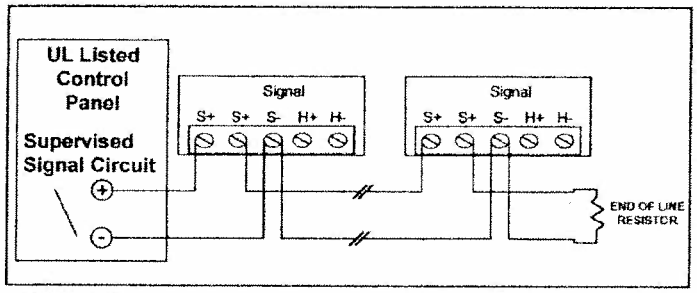


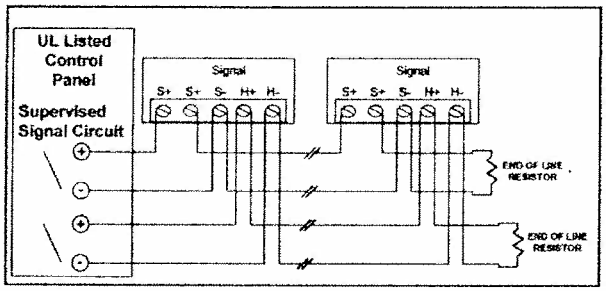


To remove bezel, grip both sides of bezel and pull in a downward and outward motion.

GEC3/GES3 12 & 24 VDC SERIES

Conventional Wiring Diagrams for Emergency Notification Evacuation Series





NOTES:

- All strobes are designed to flash as specified with continuous applied voltage. Strobes should not be used on coded or pulsing signaling circuits. However, use of the Gentex AVSM control module or Gentex synchronization protocal is permitted to synchronize the strobe, horn and/or mute the horn. See Technical Bulletin 014 for additional information.
- FOR SYNCHRONIZATION WIRING INFORMATION, REFERENCE AVSM CONTROL MODULE DATA SHEET (551-0031) AND/OR AVSM CONTROL MODULE MANUAL (550-0284) FOR SYNCHRONIZATION MODULE WIRING DIAGRAMS. AVSM CONTROL MODULE DATA SHEET AND MANUAL CAN BE OBTAINED AT http://www.gentex.com OR CALL GENTEX CORPORATION AT 1-800-436-8391.
- When synchronizing the GE3 12VDC Series, the Gentex AVSM control module or Gentex synchronization protocal MUST be used.

Architect & Engineering Specifications

The audible and/or visible signal shall be Gentex GEH, GES3, GEC3 Series or approved equal and shall be listed by Underwriters Laboratories, Inc. per ANSI/UL 1971 and/or ANSI/UL 464. The notification appliance shall also be listed with Factory Mutual Listing Service (FM), the California State Fire Marshal (CSFM) and the Bureau of Standards and Appeals (NYC).

The notification appliance (combination audible/visible) shall produce a peak sound output of 100dBA or greater at 12VDC or 24VDC as measured in an anechoic chamber. The signaling appliance shall also have the capability to silence the audible signal while leaving the visible signal energized with the use of a single pair of power wires. Additionally, the user shall be able to select either continuous or temporal tone output with the temporal signal having the ability to be synchronized.

Unit shall be capable of being installed so that any unauthorized attempt to change the candela setting will result in a trouble signal at the fire alarm control panel.

The audible/visible and visible signaling appliance shall also maintain a minimum flash rate of 1Hz or up to 2Hz regardless of power input voltage. The strobe appliance shall have an operating current of 42mA or less at 24VDC for the 15Cd strobe circuit and 92mA or less at 12VDC for the 15Cd strobe circuit.

The appliance shall be polarized to allow for electrical supervision of the system wiring. The unit shall be provided with a mounting bracket with terminals and barriers for input/output wiring and be able to mount to a single gang or double gang box or double workbox without the use of an adapter plate. The unit shall have an input voltage range of 16-33 volts with either direct current or full wave rectified power for 24VDC models or a voltage range of 8-17.5 volts for 12VDC models.

The appliance shall be capable of testing supervision without disconnecting wires, verify voltage without removing unit and be capable of mounting to a surface back box.

24 units per carton
28 pounds per carton

GENTEX CORPORATION
Fire Protection Products Group • www.gentex.com
10985 Chicago Drive • Zeeland, Michigan 49464
616.392.7195 • 1.800.436.8391 • 616.392.4219 Fax

551-0050-05

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING - BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No. 7125-0569:0123

CATEGORY: 7125 -- FIRE ALARM DEVICES FOR THE HEARING IMPAIRED

LISTEE: Gentex Corporation10985 Chicago Drive, Zeeland, MI 49464
Contact: Keiffer Sestric (616) 392-7195 Fax (616) 392-4219
Email: keiffer.sestric@gentex.com

DESIGN: Models ST24-15, ST24-15/75, ST24-30, ST24-60, ST24-75, ST24-110, GES24-15, GES24-15/75, GES24-30, GES24-60, GES24-75, GES24-110, GES24-177, and GES3-24 strobe lights; followed by suffix -W (wall mount), followed by -W or -R (white or red). Intended for indoor use and wall mount only. Model GCS-24 strobe light; followed by W or R (white or red color) and P (plain). For indoor use on wall or ceiling mount. *Model AVSM Sync Module intended for indoor use with Gentex synchronizable strobe lights. Refer to listee's data sheet for additional detailed product description and operational considerations.

RATING:
Candela: 15cd, 15cd & 75cd at 00 angle axis
30cd, 60cd, 75cd, 110cd, 177cd.
Model GCS24: Selectable 15cd, 30cd, 75cd, 95cd and 115cd
Model GES3-24: Selectable 15cd, 30cd, 60cd, 75cd and 110cd
Electrical: 21-30 VDC
*Model AVSM: 8-33 VDC/VFWR
Flash Rate: 60 flashes per minute

INSTALLATION: In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.

MARKING: Listee's name, model number, electrical and candela ratings and UL label.

APPROVAL: Listed as strobe lights suitable for the hearing impaired for use with separately listed compatible fire alarm control units.

NOTE:

*Rev. 02-03-04

Date Issued: **July 01, 2011** *Listing Expires* **June 30, 2012**

Authorized By: ***MIKE TANAKA**, Program Coordinator*
Fire Engineering Division