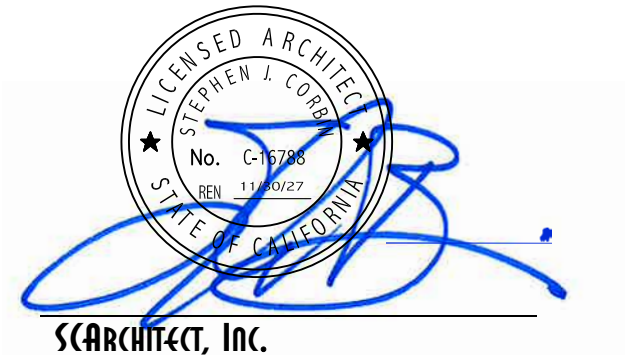
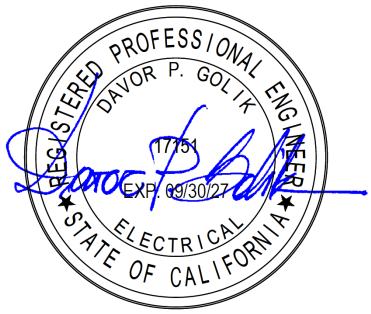


SCARCHITECT, INC.
1601 New Stine Rd., Suite 280
Bakersfield, CA 93309
(661) 397-4377, FAX 397-4378



DPG ENGINEERING, INC.
6702 N. Cedar, Suite-205
Fresno, CA 93710
(559) 275-5144, Fax (559) 900-4929

IDENTIFICATION STAMP
DIV. OF THE STATE ARCHITECT
APP: 03-125605 INC:
REVIEWED FOR
SS ☑ FLS ☑ ACS ☑
DATE: 05/13/2026

SITE IMPROVEMENTS FOR ONE (1) MODULAR BUILDING – M13 AT FRANKLIN ELEMENTARY SCHOOL FOR BAKERSFIELD CITY SCHOOL DISTRICT

BAKERSFIELD, KERN COUNTY, CA.

DSA A#03-125605 FILE# 15-6

APPROVED
BAKERSFIELD CITY SCHOOL DISTRICT

By_____
Board Resolution

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Not Used

DIVISION 22 – PLUMBING

Not Used

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Not Used

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SUBMITTALS

The following Supplemental Conditions apply to school projects and are in addition to the General Conditions, Section 00 72 13. Items in this Section modify the General Conditions and shall take precedence thereover. Unaltered portions of the General Conditions shall remain in effect.

PART 1 GENERAL

1.01 SECTION INCLUDES

a. Submittal procedures

b. Construction Progress Schedules

c. Proposed Products List

d. Shop Drawings

e. Product Data

f. Samples

g. Manufacturers' Instructions

h. Manufacturers' Certificates

1.02 RELATED SECTIONS

a. Section 01 45 00 - Quality Control: Manufacturers' field services and reports.

1.03 SUBMITTAL PROCEDURES

a. Transmit each submittal with AIA Form G810 or Architect-approved form.

b. Sequentially number the transmittal forms. Resubmittals to have original number with an alphabetic suffix.

c. Identify project, general contractor, construction manager, prime contractor or supplier; pertinent drawing sheet and detail number(s), and specification section number, as appropriate.

d. Apply general 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.

e. Deliver to Architect at business address. Coordinate submission of related items. Architect shall have a minimum of 21 calendar days for review of all submittals.

f. Identify variations from contract documents and product or system limitations, which may be detrimental to successful performance of the completed work.

g. Provide space 4" x 4" for contractor and architect review stamps.

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

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

j. All submittals, except shop drawings, required shall be submitted within 15 days unless noted otherwise or as shown on drawing from date of award of contract for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner.

1.04 PROPOSED PRODUCTS LIST

a. Within 15 days after date of award of contract, submit complete list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

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

1.05 SHOP DRAWINGS

a. Submit in the form of one reproducible transparency and seven opaque reproductions.

b. After review, distribute in accordance with Paragraph 1.03 above and for Record Documents described in Section 00 72 13.

c. All shop drawings shall be submitted within 30 days after the award of the contract.

1.06 PRODUCT DATA

a. Submit the number of copies, which the contractor requires, plus three copies, which will be retained by the Architect.

b. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this project.

c. After review, distribute in accordance with Paragraph 1.03 above and provide copies for Record Documents described in Section 00 72 13.

1.07 SAMPLES

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

b. Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect's selection.

c. Include identification on each sample, with full project information.

d. Submit the number or samples specified in individual specification sections; one of which will be retained by Architect.

e. Reviewed samples, which may be used in the work, are indicated in individual specification sections.

1.08 MANUFACTURER'S INSTRUCTIONS

a. When specified in individual specification sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, in quantities specified for Product Data.

b. Identify conflicts between manufacturers' instructions and contract documents.

1.09 MANUFACTURER'S CERTIFICATES

a. When specified in individual specification sections, submit manufacturers' certificate to Architect for review, in quantities specified for Product Data.

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

c. Certificates may be recent or previous test results on material or product, but must be acceptable to the Architect.

END OF SECTION
10/19/2023

REGULATORY REQUIREMENTS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

The following Supplemental Conditions apply to school projects and are in addition to the General Conditions, Section 00 72 13. Items in this Section modify the General Conditions and shall take precedence thereover. Unaltered portions of the General Conditions shall remain in effect.

PART 1 GOVERNING (REVIEWING AND APPROVING) AGENCY

The Governing (Reviewing and Approving) Agency for this project shall be:

DIVISION OF THE STATE ARCHITECT

PART 2 STATE LAWS AND REGULATIONS

2.01 The project shall be constructed under the complete jurisdiction of all laws of the State of California governing the construction of public buildings, to-wit:

2021 I.B.C., Volumes 1 & 2 with 2022 C.B.C. Amendments

a. Contractor shall comply with California Building Code C.B.C., Titles 19 and C.C.R. Title 24 (2022 C.B.C.), Parts 1, 2, 6, 9, 11 & 12 in addition to all other applicable regulations. Contractor shall keep a copy of the latest edition of Titles 19, and Title 24, Parts 1, 2, 6, 9 & 12 on the job site at all times, and keep it available for reference use. Nothing in these plans or specifications shall be construed to permit work not conforming to these codes. A copy of stamped plans and specifications shall be kept on the job site and made available to the Owner's Inspector. The provisions of all applicable building codes and ordinances shall be considered a minimum requirement. Where the requirements of these Contract Documents exceed those of such codes or ordinances, these Contract Documents shall govern.

b. All laws governing the employment of labor, qualifications for employment, posting of minimum wage rates, hours of work, employment of aliens, payment of employees, convict-made materials, domestic and foreign materials and accident prevention.

c. Title 19 of the California Code of Regulations entitled "Public Safety".

d. General Industrial Safety Orders: Each and every Contractor shall observe and conform to the provisions of Title 8, California Code of Regulations bearing upon safe and proper use, construction, disposal, etc., of materials, machinery and building appurtenances as therein set forth.

e. Code Rules and Safety Orders: All work and materials shall be in full accordance with the latest rules and regulations of the California State Fire Marshal; the safety orders of the Division of Industrial Safety, Department of Industrial Relations, and any State Laws or Ordinances. Nothing in these plans and specifications is to be construed to permit work not conforming to these Codes.

f. Title 24, CBC, Part 2, 2022 C.B.C. (2021 IBC)

g. Title 24, CBC, Part 3, 2022 C.E.C. (2020 NEC w/NFPA 70)

h. Title 24, CBC, Part 4, 2022 C.M.C. (2021 UMC)

i. Title 24, CBC, Part 5, 2022 C.P.C. (2021 UPC)

j. Title 24, CBC, Part 9, 2022 C.F.C. (2021 IFC)

k. Title 24, CBC, Part 6, 2022 C.E.C.

l. Title 24, CBC, Part 11, 2022 C.G.C.

m. Title 19, CCR, Public Safety, Div. 1, State Fire Marshal Regulations.

n. Occupational Health & Safety Act. (OSHA)

All of the above laws and regulations, through referral herein, are as much a part of the Contract as if they were incorporated in their entirety in this Section.

2.02 ALTERATION REHABILITIATION OR RECONSTRUCITON PROJECTS

Pursuant to Section 4-317 (c) Part 1, Title 24, CCR, requires the following notes to be **added** to the specifications:

"Should any existing conditions such as deterioration or non-complying construction be discovered which is not covered by the DSA approved documents wherein the finished work will not comply with Title 24, California Code of Regulations, a construction change document, or a separate set of plans and specifications , detailing and specifying the required repair work shall be submitted to and approved by DSA before proceeding with the repair work ."

PART 3 TESTS AND INSPECTIONS

a. Tests and Inspections shall be as specified in Section 01 45 00 00.
b. The Architect or Registered Engineer in general responsible charge shall designate the testing of materials consistent with the needs of the project and shall issue specific instructions to the testing agency.

END OF SECTION
10/19/2023

QUALITY CONTROL

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include the furnishing of all labor, materials and equipment required to complete all the tests and inspections of materials indicated on the drawings and as specified herein.

1.02 WORK INCLUDED

a. Earthwork: Inspection of subgrade improvement operations, compacted fill and field density tests.

b. Concrete Work: Testing and certification of concrete ingredients, compression cylinders, reinforcing steel and placement inspections.

1.03 OWNER'S INSPECTOR

a. A DSA Certified project inspector employed by the Owner in accordance with the requirements of State of California Code of Regulations, Title 24 will be assigned to the work. Their duties are specifically defined in Part 1, Title 24, C.C.R., Sec. 4-342.

b. The work of construction in all stages of progress shall be subject to the personal continuous observation of the inspector. He shall have free access to any or all parts of the work at any time. The General Contractor shall furnish the inspector reasonable facilities for obtaining such information as may be necessary to keep him fully informed respecting the progress and manner of the work and the character of the materials. Inspection of the work shall not relieve the General Contractor from any obligation to fulfill this Contract.

c. Defective, or to require their correction. Rejected workmanship shall be satisfactorily corrected and rejected materials shall be removed from the premises without charge to the Owner. If the General Contractor does not correct such rejected work within a reasonable time, fixed by written notice, the Owner may correct same and charge the expense to the General Contractor. Should it be considered necessary or advisable by the Owner at any time before final acceptance of the entire work to make an examination of the work already completed by removing or tearing out the same, the General Contractor shall on request promptly furnish all necessary facilities, labor and materials. If such work is found to be defective in any respect due to the fault of the General Contractor or his subcontractor, he shall defray all expenses of such examinations and of satisfactory reconstruction. If, however, such work is found to meet the requirements of the Contract, the additional cost of labor and material necessarily involved in the examination and replacement shall be allowed the General Contractor.

1.04 COOPERATION

a. Laboratory: Shall cooperate with all trades whose work affects or is affected by the tests and inspections.

b. Cooperation: The General Contractor to cooperate with and provide testing laboratory opportunity and assistance in taking samples, making field tests and making inspections.

1.05 SPECIAL PROVISIONS

a. Governing Agency: Shall be as specified in Section 01 41 00.

b. Laboratory: A DSA Accepted testing laboratory directly employed by the District (Owner) shall conduct all the required tests and inspection for the project and shall be approved by Owner, Architect, Structural Engineer and Governing Agency. (Laboratory of Record may not be selected or known at time of bid or award of contract).

c. Duties of Testing Laboratory: Inspect stock, mark identified stock, select and mark test specimens, perform required tests, inspections as specified, furnish required reports and certificates.

d. Reports: To be executed immediately upon conclusion of each procedure and forwarded to:

Architect	Structural Engineer	Contractor
Owner	Subcontractor	Job Inspector
Governing Agency		

(1) One copy of all tests reports shall be forwarded to The Division of the State Architect by the testing agency. Such reports shall include all tests made, regardless of whether such tests indicate that the material is satisfactory or unsatisfactory. Samples taken but not tested shall also be reported. Records of special sampling operations as required shall also be reported. The reports shall show that the material or materials were sampled and tested in accordance with the requirements of Title 24 and with the approved specifications. Test reports shall show the specified design strength. They shall also state definitely whether or not the material or materials tested comply with requirements.

(2) Verification of Test Reports: Each testing agency shall submit to the Division of the State Architect a verified report in duplicate covering all of the tests which are required to be made by that agency during the progress of the project. Such report shall be furnished each time that work on the project is suspended, covering the tests up to that time, and at the completion of the project, covering all tests.

e. Payment: The Owner shall pay for all tests. When in the opinion of the Architect or the Division of the State Architect, additional tests are required, then such tests and inspection shall be paid for by the Owner but the amount paid shall be deducted from the Contract Price. Examples of such additional tests are: Tests of material substituted for previously accepted materials, unidentified materials, retests made necessary by the failure of materials to comply with the requirements of the specifications and load tests necessary because certain portions of the structure have not fully met specification or plan requirements.

f. Selection of Samples: All samples and specimens for testing shall be selected by the inspector or by the testing laboratory, but not by the Contractor. The Contractor shall, at his own expense, furnish, package, mark and deliver all samples to be tested, when so directed by the inspector, testing laboratory, or as required by the specifications. Delivery of samples to the testing laboratory shall be made in ample time to allow tests

to be made without delaying construction. No extra time will be allowed for the completion of the work by reason of delay in testing samples. The General Contractor shall allow free access at all times to the representatives of the testing laboratory to the sources from which samples are taken.

g. Preparation of Specimens: Taken by and at expense of fabricator under direction of testing laboratory and machined or prepared to conform to appropriate ASTM specification. Cost of machining specimens is considered part of the testing.

h. Architect and Structural Engineer reserve the right to demand for test and special examination any materials or part thereof to insure compliance with specifications, and may reject for satisfactory replacement, any material or part judged defective as a result thereof. Applies also to materials or sources of same substituted for those previously approved. Such tests or examinations, even though not specified shall be performed as and when required. Costs paid for by Owner, but the amount paid shall be deducted from the Contract.

1.06 RELATED & APPLICABLE CODES

TITLE 24, PART 2 (2022 CBC) VOLUME 2
TESTS AND INSPECTION REQUIREMENTS

CONCRETE
CHAPTER 19A

MATERIALS:

1. Portland Cement	1705 A.3.2; 1910 A.1
3. Concrete Aggregates	1705 A.3.2; 1903 A.5
4. Reinforcing Bars	1705 A.3.2; 1910 A.2

QUALITY:

1. Proportions of Concrete	1910 A.1; Table 1705 A.3, Item 5
2. Strength Tests of Concrete	1905 A.1.15; Table1705 A.3, Item 5, ACI 318 Sec. 26.4, 26.12

INSPECTION:

1. Batch Plant	1705 A.3.3
2. Waiver of Batch Plant	1705 A.3.3.1
3. Preplacement and Placing	1705A.3.5; 1705A.3.
6. Reinforcing Bar Welding	1903 A.8; Table 1705 A.2.1
7. Post-Installed Anchors in Concrete	1910 A.5; Table 1705 A.3, Items 4a&4b
8. Reinforcing Bar Welding	1903A.8; 1705A.3.1; Table 1705 A.3 Item 2; Table 1705 A.2.1, Item 5b

PART 2 EXECUTION

2.01 EARTHWORK (Refer to Section 31 20 00)

a. Testing Agency: Any required foundation consultation, examination or testing shall be done by an approved Geotechnical Engineer, per T24, Section 3304.1.

b. Consultation or Procedures for this part of the work shall be only as requested by the Architect and Structural Engineer at the timework on the site is commenced and may consist of the following:
(1) Examination of exposed subgrades resulting from the cutting operation, including field density tests if considered necessary.

(2) Verify completed foundation excavations.
(3) Continuous inspection of any required filling and backfilling, including field density tests if considered necessary.
(4) Imported or Native Fill Material: Approved material, perform suitability tests for compaction, qualities and optimum moisture if required.
(5) Provide Continuous Inspection Supervision during removal and recompaction of existing soil and placement of fill.
(6) Inspect and approve completed footing excavations.
(7) Field Density Tests: Shall be made on samples from material in place as required to verify proper compaction densities of fills and backfills.

c. Densities and Method: Densities specified relate to ASTM Designation D-1557 Method A.

2.02 CONCRETE WORK (Refer to Section 03 10 00)

a. Inspections:
(1) Notification: The General Contractor shall notify the following people, giving advance notice prior to commencing the designated work:

Person Notified	Advance Notice	Prior to Commencing	For Inspection
Architect	24 hours	Form Work	Excav.
Architect & Inspector	24 hours	Pouring Conc.	Form & Steel
Governing Agency	48 hours	Pouring Conc.	Form & Steel

(2) No concrete shall be poured except in the presence of the Owner's Inspector and only after the forms and reinforcing steel have been approved by the Structural Engineer or his representative.
(3) Batch Plant Inspections: When transit mixed concrete is used, continuous inspection shall be maintained at the plant by a qualified concrete technician who shall issue tickets certifying that quantities and quality of all materials used in the concrete are in accordance with these specifications and the approved design mix. The Owner will pay the costs of this inspection. This inspection will not be required for non-structural concrete (as defined in Paragraph (4) following).
(4) Bonded Weightmaster Certificates: Non-structural concrete such as floor slabs on grade, walks, curb & gutter, etc., shall not require continuous batch plant inspection, but instead, a bonded weightmaster shall furnish notarized affidavits certifying that quantities and quality of all materials used in the concrete are in accordance with these specifications and the approved mix design. Waiver of batch plant inspection shall comply with Title 24, 2022 C.B.C., 2021 IBC, Vol 2, Sec. 1705A3.3.1.

b. Tests: All concrete materials to be tested and reported prior to any use of same.

(1) Portland Cement: Shall be tested in accordance with T24, Section 1901A.2 and ACI 318. One sample shall be taken for each 100 tons of cement except that when used in bulk loading ready mix plants where separate bins for pretested cement are not available, grab samples shall be taken for each shipment of cement placed in the bin with not less than one sample being taken for each day's pour and such samples shall be subsequently tested if required by the Architect, structural engineer or the Division of the State Architect.
(2) Aggregate: Shall be in conformance with T24, Sec. 1903A.5

(3) Reinforcing Steel: To be tested prior to use for compliance with T24, Sections 1910A.2 and 1903A.8 and ASTM A-615 requirements, and comply with quality standards of T-24, Section 2103A.4. Welded rebar shall be inspected and certified per T24, Section 1704A.3.1and 1705.2.2

(a) Samples: To be selected by representative of testing laboratory from material at the building site or place of distribution, to consist of two (2) pieces, each 18 inches (18") long of each size, furnished, cut and prepared for testing by Contractor, marked and delivered by representative of testing laboratory.

(b) Tests: One (1) tension and one (1) bend tests shall be made of each size of reinforcing steel including wire fabric. One (1) series of tests shall be made for each ten (10) tons or fraction thereof of each size of reinforcing steel if the bundles as delivered can be identified as to heat number and the mill analysis accompany the report. If they cannot be identified as to heat number, then one (1) series of tests shall be made from each two and one-half (2-1/2) tons or fraction thereof.

(4) Cylinder Tests: Shall comply with T24, 1905A.1.17

(a) Three (3) cylinders of concrete shall be made for each fifty- (50) cubic yards of each grade of concrete or fraction thereof being placed each day. Each cylinder shall be dated, given a number, the point in the structure from which the sample was taken noted thereon and the slump noted thereon.

(b) Test cylinders shall be made at the job and stored in the testing laboratory in accordance with ASTM C-31. At the end of twenty-four (24) hours after making, the cylinders shall be stored under moist curing conditions at approximately 70 degrees F. and maintained therein until tested. The cylinders shall be tested in accordance with ASTM C-31. The cylinders shall develop the following minimum ultimate compressive strengths:

Design Strength	7 Day Test	28 Day Test	Location Used
2500 p.s.i.	1500 p.s.i.	2500 p.s.i.	Flatwork
3000 p.s.i.	1800 p.s.i.	3000 p.s.i.	Foundations

(c) If the strengths of the first two-cylinder tests are satisfactory, the third cylinder shall not be tested, but destroyed. The third cylinder shall be tested to see if the strengths of the first two cylinders are not satisfactory.

(d) If the strength of the cylinders does not meet the minimum as mentioned above, core tests of the hardened concrete shall be made in accordance with T24, Section 1905A.1.17, and ACI 318. If the core tests show the concrete strength to be deficient, the concrete shall be deemed defective and removed. The General Contractor shall pay all costs of these core tests.

c. Laboratory Designed Mixes: See Paragraph 3.01, Proportioning of Concrete Mixes, Section 03 10 00, Concrete Work.

d. Mix Design.

(1) Mix design to be stamped and signed by a California registered Civil Engineer.

(2) Maximum w/c shall be 0.50.

END OF SECTION
10/19/2023

CONSTRUCTION WASTE MANAGEMENT

DIVISION 00 AND 01 ARE A PART OF THIS SECTION.

PART 1 GENERAL

1.01 Waste Management Goals:

1. This project will recycle or salvage for reuse a minimum of **50%** by weight of the non-hazardous waste generated on-site.
2. This project shall reuse or recycle **100%** of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing.
3. Waste reduction will be achieved through building design, and reuse and recycling efforts will be maintained throughout the construction process.
4. The General Contractor shall be responsible for monitoring the documentation of all waste generated during the project. Sub-contractors and the General Contractor will be required to provide designated dumpsters/bins for particular categories of waste. All contractors hauling waste or responsible for hauling waste shall be required to provide documentation of the amount of waste removed from the site, location to which waste was hauled, and the amount of waste that was recycled. The General Contractor will coordinate locations of such bins so as to not impact access to work on the project while maintaining proximity to the work.

1.02 Waste Prevention Planning:

1. Compliance with CCR, Title 24, Part 11 2022 Green Building Standards Code, City of Bakersfield Solid Waste Division and the Kern County Waste Management Department mandatory recycling requirements for businesses. C.O.B.S.W.D. and K.C.W.M.D. recyclables include:
   a. newspaper
   b. corrugated cardboard
   c. white and colored office paper
   d. glass bottles and jars
   e. metal cans

2. Compliance with C.O.B.S.W.D., K.C.W.M.D. and Kern County Bena Road Landfill bans, i.e. no disposal of tires, appliances, yard waste, mandatory recyclables, hazardous waste, batteries, fluorescent tubes, and large metal items.
3. Project Construction Documents – Requirements for waste management which will be included in all work. The General Contractor will contractually require all subcontractors to comply with the CCR, Title 24, Part 11 2022 Green Building Standards Code and the C.O.B.S.W.D., K.C.W.M.D. recycling requirements. A copy of this Construction Waste Management Plan will accompany all Subcontractor Agreements and require subcontractor participation.
4. The Construction Waste Reduction Plan shall be implemented and executed as follows and as on the chart:
   a. Salvageable materials will be diverted from disposal where feasible.
   b. There will be a designated area on the construction site reserved for a row of dumpsters each specifically labeled for respective materials to be received.
   c. Before proceeding with any removal of construction materials from the construction site, Recycling Coordinators will inspect containers for compliance with CCR, Title 24, Part 11 2022 Green Building Standards Code and C.O.B.S.W.D.. K.C.W.M.D. requirements.
   d. Wood cutting will occur in centralized locations to maximize reuse and make collection easier.
   e. Hazardous waste will be managed by a licensed hazardous waste vendor.

1.03 Communication & Education Plan:

1. The General Contractor will conduct an on-site pre-construction meeting with subcontractors. Attendance will be required for the subcontractor's key field personnel. The purpose of the meeting is to reinforce to subcontractor's key field employees the commitments made by their companies with regard to the project goals and requirements.
2. Waste prevention and recycling activities will be discussed at the beginning of each weekly subcontractor coordination meeting to reinforce project goals and communicate progress to date.
3. As each new subcontractor comes on site, the recycling coordinators will present him/her with a copy of the Waste Management Plan and provide a tour of the recycling areas.
4. The subcontractor will be expected to make sure all their crews comply with the Waste Management Plan.
5. All recycling containers will be clearly labeled. Containers shall be located in close proximity to the building(s) under construction in which recyclables/salvageable materials will be placed.
6. Lists of acceptable/unacceptable materials will be posted throughout the site.
7. All subcontractors will be informed in writing of the importance of non-contamination with other materials or trash.
8. Recycling coordinators shall inspect the containers on a weekly basis to insure that no contamination is occurring and precautions shall also be taken to deter any contamination by the public.

1.04 Motivation Plan:

1. The project team will develop and publish a project mission statement that can be distributed to the subcontractors, attached to subcontracts, and posted at the jobsite.

2. The General Contractor will conduct a pre-award meeting for subcontractors. Subcontractors under consideration will be required to attend the meeting to review project goals and requirements with the project team. Attendance will be a prerequisite for award of subcontracts. A sign-off will be required by subcontractors attending the meeting that the project goals are understood. This document will be an attachment to every subcontract. Copies of the attachment will be posted prominently at the jobsite.

1.05 Evaluation Plan:

1. The General Contractor will develop, update, and post at the jobsite a graph indicating the progress to date for achieving the project's waste recycling goal of 50% by weight of the total project waste stream.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 Expected Project Waste, Disposal, and Handling:

The following charts identify waste materials expected on this project, their disposal method, and handling procedures:

Material	Quantity	Disposal Method	Handling Procedure
Land clearing debris		Keep separate for reuse and or wood sale	Keep separated in designated areas on site.
Clean dimensional wood and palette wood		Keep separate for reuse by on-site construction or recycle at designated recycle location.	Keep separated in designated areas on site. Place in "Clean Wood" container.

Material	Quantity	Disposal Method	Handling Procedure
Plywood, OSB, particle boar		Reuse, landfill	Keep separated in designated areas on site. Place in "Trash" container.
Asphalt		Grind, reuse, recycle	Store on site until reuse on project or recycle by hauling to designated location.
Painted or treated wood		Reuse, landfill	Keep separated in designated areas on site. Place in "Trash" container.
Concrete		Recycle	
Concrete Masonry Units		Keep separate for re-use by on-site construction or by site employees	Keep separated in designated areas on site
Metals		Recycle	Keep separated in designated areas on site. Place in "Metals" container.
Gypsum drywall (unpainted)		Recycle	Keep scraps separate for recycling – stack on pallets in provided on site. All scrap drywall will be taken back by contractor to drywall supplier
Paint		Reuse or recycle	Keep separated in designated areas on site
Insulation		Reuse, landfill	
Flooring		Reuse, landfill	
Carpet and pad		Reuse or recycle with carpet manufacturer	
Glass		Glass Bottles	Keep separated in designated areas on site. Place in "Glass/Plastic bottles/Metal Cans/Mixed Paper/Cardboard" container
Plastics		Plastic Bottles Plastic bags/scraps Reuse, Recycle	Keep separated in designated areas on site. Place in "Glass/Plastic bottles/Metal Cans/Mixed Paper/Cardboard" container
Beverage		Recycle	Keep separated in designated areas on site. Place in "Glass/Plastic bottles/Metal Cans/Mixed Paper/Cardboard" container
Cardboard		Recycle	Keep separated in designated areas on site. Place in "Glass/Plastic bottles/Metal Cans/Mixed Paper/Cardboard" container

Material	Quantity	Disposal Method	Handling Procedure
Paper and newsprint		Recycle	Keep separated in designated areas on site. Place in "Glass/Plastic bottles/Metal Cans/Mixed Paper/Cardboard" container
TOTAL			

3.02 Responsible Party for Waste Disposal:

1. General Contractor shall monitor all waste management activities and collect all documentation of recycling and disposal.

2. Earthwork Contractor shall regrind existing paving and haul to location designated by Owner including documentation of amounts hauled. Reuse as required or permitted on this project.

3. Concrete Contractor shall provide separate bins for concrete waste, including hauling to recycling facility and documentation of all amounts.

4. Concrete Masonry Contractor shall provide separate bins for CMU was including hauling to recycling facility and documentation.

5. Metal Stud/Drywall Contractor shall provide separate bins for metal stud waste and drywall waste including hauling to recycling facility and documentation.

6. Demolition Contractor shall provide hauling and recycling or disposal of materials generated from demolition of existing building/s including documentation of material recycled and disposed of in landfill.

7. The General Contractor shall provide separate bins for metal (other than metal studs), cardboard, plastic, glass and aluminum containers and general trash and debris including documentation and hauling to recycling facility.

8. Name of landfill for disposal of non-recyclable waste: Contractor shall determine
   a. Transfer Stations: Contractor shall determine
   b. Landfills (ultimate disposal location): Contractor shall determine
9. Landfill tipping fee: $_____ / ton Contractor shall verify
10. Estimate of waste for landfill disposal: Contractor shall verify

3.03 Recycling Calculation example:

1. If all construction waste was disposed in landfill:
   _____tons=_____ lbs/2000 lbs/ton , _____ tons x $___/ton = $_____
2. With recycling: TOTAL = $_____

3.04 Recycling locations:

1. Asphalt

   a. A/C Materials, 4717 Mendian Ave., Bakersfield, CA 93308 – 322-3424

b. A&M Disposal & Recycling, 4233 Quinn Rd., Bakersfield, CA 93308 – 399-5575

c. Asphalt & Concrete Recycling, 4801 Wible Rd., Bakersfield – 396-8695
d. Griffith Company, 3950 Shell St., Bakersfield, CA – 831-7331

e. Granite Company, 21541 Bear Mountain Blvd., Arvin, CA 93203 – 854-3051

f. Valley Tree Construction, 4233 Quinn Rd., Bakersfield, CA 399-1783 or 872-5145

2. Building Materials

a. California Material Exchange (CalMax) – 877-520-9703

3. Cardboard & Corrugated

a. BARC – 397-3622

b. Golden State Metal, 2000 E Brundage Ln, 327-3559

c. JC Pallet Co., 5800 State Rd., 393-2229

d. Sierra Metals, 1620 E Brundage Ln, 327-7073

4. Commercial Recycling

a. Revive Recycling, 3624 Buck Owens Blvd., Ste 7, 322-7374

5. Concrete

a. See Asphalt – above

6. Drywall

a. Hondo Inc., 20807 Stockdale Hwy, 589-1042

b. Quality Soil Amendments, 20807 Stockdale Hwy, 587-4457

7. Glass/Plastic Containers

a. Golden State Metals, 1620 E Brundage Ln, 327-3559

b. Sierra Metals, 1620 E Brundage Ln, 327-7073

c. Smurfit-Stone Recycling, 2710 O St, 327-3841

8. Pallets

a. JC Pallet Co., 5800 State Rd., 393-2229
b. Kern County Bena Road Landfill, 17 miles east of Bakersfield, off Tower Line Rd on Bena Rd, open Sunday-Saturday 8 am to 4 pm.

9. Paper – Office/Mixed

a. BARC – 2240 S Union Ave, 834-2272

b. Sierra Metals, 1620 E Brundage Ln, 327-7073

c. Smurfit-Stone Recycling, 2710 O St, 327-3841

10. Scrap Metals

a. Golden State Metals, 1620 E Brundage Ln, 327-3559

b. Sierra Metals, 1620 Brundage Ln, 327-7073

c. Midway Recycle/Western Scrap, 7200 Downing Ave., 589-9712

d. Nix Scrap Metals, 1100 James Rd., 387-1216

e. Rick's Recycling, 2200 S. Union Ave, 832-3248

11. Mixed Waste

a. Metro Recycling Corp, 58 Mt Vernon Ave., 1 mi south of 58, 661-201-3535

12. Landfill

a. General Trash

i. Kern County Bena Road Landfill, 17 miles east of Bakersfield, off Tower Line Rd on Bena Rd, open Sunday-Saturday 8 am to 4 pm. Also accepts for recycling: large appliances, asphalt, concrete, pallets, and green waste.

RECYCLING OPERATIONS

Action ***	**Who**	**When**
☐ Choose bins/collection methods		
☐ Order bins - oversee deliver		
☐ Site bins/collection sites for optimum convenience		
☐ Sort or process wood		
☐ Sort or process metal		
☐ Sort or process cardboard		
☐ Sort or process drywall		
☐ Sort or process CSWD mandatory items (material)		
☐ Sort or process _____ (material)		
☐ Schedule material pickups/dropoffs		
☐ Protect Materials from Contamination		
☐ Document material pickups/dropoffs		

*** Depending on the service option chosen, these may be the responsibility of either the field personnel, the hauler, a full-service recycling contractor, or the subcontractors.

COMMUNICATION PLAN - Except for mandatory items (*), check other items intended to be used.

Action	**Who**	**When**	**Completed**
☐ Complete Construction Waste Mgmt. Plan*			☐
☐ Hold Orientation/Kick-off Meeting*			☐
☐ Update & Progress in Weekly Job-Site Meetings*			☐
☐ Encourage Just-In-Time Deliveries			☐
☐ Post Targeted Materials (Signage)			☐
☐ Distribute Tip Sheets for Job-Site Personnel			☐
☐ Post Goals/Progress (Signage)			☐
☐ _____			☐

MOTIVATION PLAN - Except for mandatory items (*), check other items intended to be used.

Action	**Who**	**When**	**Completed**
☐ Use formal agreements committing Subs to program			☐
☐ Require Mis-Sorters to Re-Sort Bin			☐
☐ Provide Stickers, T-Shirts, or Hats			☐
☐ Public Recognition of Participating Subs			☐
☐ Letters of Recognition			☐
☐ Awards Luncheon			☐
☐ _____			☐

EVALUATION PLAN - Except for mandatory items (*), check other items intended to be used.

Action	**Who**	**When**	**Completed**
☐ Perform Short Form Waste Audit			☐
☐ Perform Full Waste Audit			☐
☐ Perform Mid-Course Assessment			☐
☐ Perform Monthly Cost and Materials Tracking*			☐
☐ Perform Final Evaluation*			☐
☐ _____			☐

SECTION 01 74 19A

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

(Submit After Award of Contract and Prior to Start of Work)

Project Title:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Project Period:	From:	TO:

Reuse, Recycling or Disposal Processes To Be Used

Describe the types of recycling processes or disposal activities that will be used for material generated in the project. Indicate the type of process or activity by number, types of materials, and estimated quantities that will be recycled or disposed in the sections below:

01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
05 - Recycling commingled loads of C&D matls at an off site mixed debris recycling center or transfer station
06 - Recycling material as Alternative Daily Cover at landfills
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
08 - Disposal at a landfill or transfer station.
09 - Other (please describe) _____

Types of Material To Be Generated

Use these codes to indicate the types of material that will be generated on the project

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Matls
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris		R = Reuse/Salvage	W = Wood	O = Other (describe)

Facilities Used: Provide Name of Facility and Location (City)

Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling will occur.

Type of Material	Type of Activity	Facility to be Used/Location	Total Truck Loads	Total Quantities Tons	Cubic YD	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles	24	355		
a. Total Diversion			0	0	0	0

SECTION 01 74 19A

CONTRACTOR'S CONSTRUCTION WASTE AND RECYCLING PLAN

Continued

SECTION II - DISPOSED MATERIALS								
Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling will occur.								
Type of Material	Type of Activity	Facility to be Used/Location			Total Truck Loads	Total Quantities Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles			2	35		
b. Total Disposal						0	0	0

SECTION III - TOTAL MATERIALS GENERATED						
This section calculates the total materials to be generated during the project period (Reuse/Recycle + Disposal = Generation						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled				0	0	0
b. Total Disposed				0	0	0
c. Total Generated				0	0	0

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION					
Add totals from Section I + Section II					
	Tons	Cubic Yards	Other Wt.		
a. Materials Re-Used and Recycled	0				
b. Materials Disposed	0				
c. Total Materials Generated (a. + b. = c.)	0	0	0		
d. Landfill Diversion Rate (Tons Only)*	#DIV/0!				

** Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled*

Contractor's Comments (Provide any additional information pertinent to planned reuse, recycling, or disposal activities):

Notes:

1. Section 01151A is a Division 01 General Requirement under CSI MasterFormat 1998 Edition.
   For CSI MasterFormat 2004 Edition, this Section may be renumbered as follows:
   Under Division 00, Procurement and Contracting Requirements, Project Forms 00 60 00
   Use: Section 00 62 22 Construction Waste Diversion Plan

2. Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)
   Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)
   Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)
   Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)
   Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)
   Drywall Scrap: .20
   Wood Scrap: .16

SECTION 01 74 19B

CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

(Submit With Each Progress Payment)

Project Title:		
Contract or Work Order No.:		
Contractor's Name:		
Street Address:		
City:	State:	Zip:
Phone: ( )	Fax: ( )	
E-Mail Address:		
Prepared by: (Print Name)		

Date Submitted:		
Period Covered:	From:	To:

Reuse, Recycling or Disposal Processes Used

Describe the types of recycling processes or disposal activities used for material generated in the project. Indicate the type of process or activity by number, types of materials, and quantities that were recycled or disposed in the sections below:

01 - Reuse of building materials or salvage items on site (i.e. crushed base or red clay brick)
02 - Salvaging building materials or salvage items at an off site salvage or re-use center (i.e. lighting, fixtures)
03 - Recycling source separated materials on site (i.e. crushing asphalt/concrete for reuse or grinding for mulch)
04 - Recycling source separated materials at an off site recycling center (i.e. scrap metal or green matls)
05 - Recycling commingled loads of C&D matls at an off site mixed debris recycling center or transfer station
06 - Recycling material as Alternative Daily Cover at landfills
07 - Delivery of soils or mixed inerts to an inert landfill for disposal (inert fill).
08 - Disposal at a landfill or transfer station.
09 - Other (please describe) _____

Types of Material Generated

Use these codes to indicate the types of material that were generated on the project

A = Asphalt	C = Concrete	M = Metals	I = Mixed Inert	G = Green Matls
D = Drywall	P/C=Paper/Cardboard	W/C = Wire/Cable	S= Soils (Non Hazardous)	
M/C = Miscellaneous Construction Debris		R = Reuse/Salvage	W = Wood	O = Other (describe)

Facilities Used: Provide Name of Facility and Location (City)

Total Truck Loads: Provide Number of Trucks Hauled from Site During Reporting Period

Total Quantities: If scales are available at sites, report in tons. If not, quantify by cubic yards. For salvage/reuse items, quantify by estimated weight (or units).

SECTION I - RE-USED/RECYCLED MATERIALS

Include all recycling activities for source separated or mixed material recycling centers where recycling occurred.

Type of Material	Type of Activity	Facilities Used/Location			Total Truck Loads	Total Quantities Tons	Cubic YD	Other Wt.
(ex.) M	04	ABC Metals, Los Angeles			24	355		
a. Total Diversion					0	0	0	0

SECTION 01 74 19B

CONTRACTOR'S REUSE, RECYCLING, AND DISPOSAL REPORT

Continued

SECTION II - DISPOSED MATERIALS								
Include all disposal activities for landfills, transfer stations, or inert landfills where no recycling occurred.								
Type of Material	Type of Activity	Facilities Used/Location			Total Truck Loads	Total Quantities Tons	Cubic YD	Other Wt.
(ex.) D	08	DEF Landfill, Los Angeles			2	35		
b. Total Disposal						0	0	0

SECTION III - TOTAL MATERIALS GENERATED						
This section calculates the total materials generated during the project period (Reuse/Recycle + Disposal = Generation						
				Tons	Cubic YD	Other Wt.
a. Total Reused/Recycled				0	0	0
b. Total Disposed				0	0	0
c. Total Generated				0	0	0

SECTION IV - CONTRACTOR'S LANDFILL DIVERSION RATE CALCULATION					
Add totals from Section I + Section II					
	Tons	Cubic Yards	Other Wt.		
a. Materials Re-Used and Recycled	0				
b. Materials Disposed	0				
c. Total Materials Generated (a. + b. = c.)	0	0	0		
d. Landfill Diversion Rate (Tons Only)*	#DIV/0!				

** Use tons only to calculate recycling percentages: Tons Reused/Recycled/Tons Generated = % Recycled*

Contractor's Comments (*Provide any additional information pertinent to planned reuse, recycling, or disposal activities*):

Notes:

1. Section 01151A is a Division 01 General Requirement under CSI MasterFormat 1998 Edition.
   For CSI MasterFormat 2004 Edition, this Section may be renumbered as follows:
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2. Suggested Conversion Factors: From Cubic Yards to Tons (Use when scales are not available)
   Asphalt: .61 (ex. 1000 CY Asphalt = 610 tons. Applies to broken chunks of asphalt)
   Concrete: .93 (ex. 1000 CY Concrete = 930 tons. Applies to broken chunks of concrete)
   Ferrous Metals: .22 (ex. 1000 CY Ferrous Metal = 220 tons)
   Non-Ferrous Metals: .10 (ex. 1000 CY Non-Ferrous Metals = 100 tons)
   Drywall Scrap: .20
   Wood Scrap: .16

DEMOLITION

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 CODES AND ORDINANCES

All work is to be conducted in compete accordance with all applicable provisions of local and State safety and health ordinances.

1.02 DESCRIPTION AND CONDITION OF PREMISES

a. The building(s) affected by this Contract is set forth under Part 2, Paragraph 2.07, Schedule.

b. Plans for the structure(s) may be available at the office of the Architect (verify) for review by the contractor. It is the intent and purpose of this Contract that the Contractor demolish all of the work as specified herein, regardless of material of which constructed.

c. Contractor shall accept the premises in the condition as found on the first day of work under the Contract. He shall assume all risk regarding damage or loss, whether by reason of fire, theft or other casualty or happening to specified building(s). No such damage or loss shall relieve the Contractor from Contract obligation to complete this work.

1.03 SCOPE OF WORK

a. Scope of work shall include all labor, materials, equipment, transportation and appliances to complete the work of demolition and site restoration as specified under Part 2, Paragraph 2.07, Schedule, and as per drawings and as reasonably required to complete the contract.

b. Disposal legally and off the site of all debris, rubbish and salvage.

c. Construction and provision of proper barricades, signs and protective structures and devices, as required by City and/or County.

d. Responsibility of cleanliness and safety of work area and all other affected premises during the period of the Contract.

1.04 SURVEY OF EXISTING CONDITIONS

The bidders are required to examine the building(s) and site and determine for themselves the extent of the work included in this Contract.

1.05 RESPONSIBILITY AND COORDINATION

a. Responsibility accrues to the Contractor for the condition, good order, health and safety of all premises and individuals his work may affect.

b. It shall be the responsibility of the Contractor to notify any utility companies concerning the cutting off or restoring of service or of relocating or modifying any such service that the work of this contract may require. He shall protect and maintain in operation any utility or sewer line that is required to remain operative during the period of the contract that his work may affect.

c. The Contractor shall coordinate and require such cooperation of the various trades as will be necessary to complete each and every part of the work, even though not specifically indicated, noted or detailed on the drawings or specified.

1.06 PERMITS AND LICENSES

a. The Contractor shall secure, take out and/or maintain all required permits, approvals and licenses necessary to legally complete this work and shall be responsible for insuring that each and every one of his subcontractors is properly and duly licensed and have required permits to perform any of their work requiring same.

b. Prior to start of any demolition, the County of Kern Environmental Health Services Department and Basic Compliance Engineering shall be given 48 hour notice by the Contractor.

c. Comply with San Joaquin Valley Air Pollution Control District Regulations

1.07 SALVAGE MATERIALS

a. The Owner reserves the right to retain ownership of any equipment or fixtures removed from the building (if any) and/or any item determined to be of value including but not necessarily limited to: casework, stainless steel, toilet accessories, toilet partitions, copper piping, plumbing fixtures, mechanical equipment, copper wiring, light fixtures. All removed equipment and/or fixtures shall be removed, cleaned and stored neatly in an area designated by the Owner for a period of 72 hours after the Owner's representative has been notified. The district's facilities planning representative shall be notified in writing. All items that are not claimed by the Owner within the specified time period shall be removed from the site and the contractor shall legally dispose of them. The specified time period is exclusive of weekends or holidays and shall start upon the Facilities Planning's receipt of written notice.

b. The District shall be given the opportunity to examine and remove any of the items salvaged from the project. It is the Contactor's responsibility to protect the salvaged items during the 72 hour period. Should any of the salvaged items be

disposed before the District has examined them, the Contractor shall reimburse the District for these items. All salvage materials removed from the building shall be placed in neat piles and stacks in the working area and removed from the site at the earliest practicable date once it has been determined that the District does not wish to retain the item or items in question..

c. The Contractor shall not dispose of the improvements or materials removed from the building at the site by sale, gift or in any manner what so ever to the general public; provided however, that these provisions shall not be construed as limiting or prohibiting the sale or disposal of such salvage to duly licensed contractors or material men. The Contractor shall assume all responsibility arising out of such operation.

PART 2 EXECUTION

2.01 DEBRIS

All debris resulting from the demolition shall be removed and hauled away from the site immediately. Debris and rubbish shall not be allowed to accumulate on the site. Such material shall be sprinkled while being handled or loaded to relive annoyance to the balance of the premises and the neighborhood. No burning of rubbish shall be permitted at the site.

2.02 PROTECTION

a. The Contractor shall enclose the area with fence barricades as per City and/or County Code requirements. Barricades shall be substantially and neatly erected and braced and in areas near existing buildings where hazards may exist from falling materials, shall be constructed in a manner to intercept any materials that may fall as a result of demolition work.

b. Barricades and fences shall have substantial gates, equipped with good locks and the working area shall be kept securely locked at all times work is in progress.

c. The Contractor shall provide signs and post warnings in all necessary places to exclude all persons except those directly connected with the work from entering the working area or where vehicles are operating or materials are being stored. The Contractor shall be responsible for preventing unauthorized persons from entering the working area.

d. The Contractor shall execute demolition work to insure protection of adjacent buildings, shrubs, trees and lawns from damage, which might occur from any cause and shall not interfere with use of adjacent buildings or safe passage to and from same.

2.03 USE OF EXPLOSIVES will not be permitted.

2.04 UTILITIES

This Contractor shall keep a record as to location and size of all capped pipe and/or conduit during demolition on a blue line print furnished by the Architect.

2.05 SCAFFOLDING, LADDERS, ETC.

All temporary construction, scaffolding, ladders, runways, hoistways, etc., shall be furnished and maintained by the Contractor as required and shall comply with all laws, ordinances, rules and regulations governing the construction and use of same.

2.06 CLEANING

a. Upon completion of the work, this Contractor shall remove all protections, tools, materials, plant apparatus and rubbish or debris of any sort and leave the premises neat and orderly.

b. The Contractor shall also inspect any other areas or premises of public or private property that may have been damaged, made dirty or otherwise disorderly as a result of his work and restore to good order any such area or premises.

2.07 SCHEDULE OF WORK

a. See Demolition Plan(s).

b. Trees and shrubs as indicated on the plan and their roots, stumps, etc., within the working area are to be removed.

c. Filling, backfilling and grading of site as shown on Demolition plan.

END OF SECTION
06/03/2009

CONCRETE WORK

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this section shall include the furnishing of all labor; materials and equipment required to complete the concrete work as indicated on the drawings and as specified herein.

1.02 WORK INCLUDED (But not limited to the following items)

a. Provide and install concrete, plain and reinforced, in place.
b. Provide and install formwork and shoring.
c. Placing only of bolts, anchors, frames, inserts, stair nosings
d. Provide and install control and expansion joints.
e. Curing, protection and patching of concrete.
f. Finishing concrete surfaces.
g. Concrete pits and slabs for plumbing, electrical, heating and ventilation.
h. Cost of concrete mix designs.
i. Vapor barrier and sand fill under concrete floor slabs.
j. Clean up work related to this Section.

1.03 RELATED WORK

a. Reinforcing steel is specified in Section 03 21 00.
b. Filling, backfilling and compaction are specified under Section 31 20 00.
c. Furnishing of bolts, anchors, frames, inserts, etc. is specified in Sections 31 20 00.
d. The cost of testing all materials, *including cement and aggregate* shall be paid by the Owner. The Contractor shall cooperate in furnishing test materials so that tests may be completed prior to their installation.
e. Concrete encased electrical conduit is specified in Section 26 01 00.
f. Vegetation control is specified in Section 32 05 13.02.
g. Termite control is specified in Section 32 05 13.01.

1.04 TESTS AND INSPECTIONS

a. Refer to Section 01 45 00, Quality Control, for these requirements.
b. No work of this Section shall be covered until inspected by the Engineer or his authorized representative.
c. Tests and evaluation shall conform to T24, Sec. 1903A.
d. Vapor and Waterproofing Admixture representative shall verify all concrete batches prior to concrete mix leaving plant. Installing contractor shall be an approved SPG installer.

1.05 SPECIAL REQUIREMENTS

All concrete shall be mixed, formed, placed and cured, finished and protected in conformance with the recommendations of the Portland Cement Association and the American Concrete Institute unless otherwise shown or noted in these specifications.

1.06 DEFECTIVE CONCRETE

Concrete not meeting the minimum strength requirement, not formed as indicated, not true to intended alignment, which has large voids or rock pockets, which has wood or debris embedded in it, which has a surface deviation of greater than one-eighth inch (1/8") in ten feet (10'-0") or does not fully conform to the specifications shall be deemed defective and if so directed by the Architect, shall be removed and replaced with concrete complying with the drawings and specifications. Precast panels or other concrete damaged due to erection operations shall be deemed defective concrete.

PART 2 PRODUCTS

2.01 MATERIALS

a. Portland Cement: Shall conform to ACI 318-19, Type V, and T24, Sec. 1903A.2 with the following modifications:
   (1) The cement shall not contain more than 0.60% total alkali when calculated as Sodium Oxide.
   (2) The percentage of Tricalcium Silicate shall not be limited.
   (3) Cement shall be stored in such a manner as to protect it from inclusion of foreign material and damage by moisture. Only one (1) brand of cement shall be used for this work.

b. Aggregates: Shall conform to ASTM C-33-86 except as modified below.
   (1) Fine aggregate: Shall consist of a washed natural sand of hard, strong and durable particles, which do not contain more than two percent (2%) by weight of deleterious substances such as clay lumps, shale, schist, alkali, mica, coated grains, or soft and flaky particles. Fine aggregate shall be graded uniformly from fine to coarse and when combined with coarse aggregate shall meet the requirements of Table 1.

      a.) Crushed fine aggregate otherwise known as Crusher fines, or “rock dust” shall be 100% passing #4 sieve screen and shall be spread and compacted while damp to moist. At the time of concrete placement, the blotter layer should be dry to damp, compacted, and smooth. Concrete should not be placed if the blotter layer is wet as it will act as a water reservoir beneath the concrete and all apparent advantages of its use will be nullified. The blotter layer should not be sprayed with water prior to concrete placement.

   (2) Coarse Aggregate: Shall consist of a clean, hard, fine grained, sound crushed rock, or washed gravel. It shall contain not more than five percent (5%) by weight of flat, thin, elongated, or laminated material nor more than two percent (2%) by weight shale or cherty material. Coarse aggregate shall be graded uniformly from one fourth inch (1/4") in size to maximum size and when combined with fine aggregate shall meet the requirements of Table 1.

TABLE I

GRADING OF COMBINED AGGREGATES

Sieve Number or Size in Inches (Woven Wire Cloth)	Percent by Weight 1-1/2" Max.	1" Maximum	3/4" Maximum
Passing a 1-1/2"	95-100	---	---
Passing a 1"	70-90	90-100	---
Passing a 3/4"	50-80	70-95	90-100
Passing a 3/8"	40-60	45-70	55-75
Passing a #4	35-55	35-55	40-60
Passing a #8	25-40	27-45	30-46
Passing a #16	16-34	20-38	23-40
Passing a #30	12-25	12-27	13-28
Passing a #50	2-12	5-15	5-15
Passing a #100	0-3	0-5	0-5

c. Water: Shall be clean and free from deleterious acids, alkali, oil and organic matter and shall be potable.

d. Concrete Slab Control Joints: Shall be one of the following types as indicated and located on the drawings:

(1) Construction Joints: Shall be Burke #NC-203 "Keyed Kold Joint", or approved equal, 26 gauge galvanized steel continuous joint form with #54-505 removable kap at exterior slabs and #54-510 kap at interior slabs. Seal exterior joints with Sikaflex 2c, color as selected.

(2) Expansion Joints: Shall be formed with Burke 1/2" x 4" fiber expansion joint with Burke 1/2" x 1/2" removable plastic cap. Sealant shall be two-part polyurethane, Sikaflex 2c, color as selected.

(3) Control Joints: Shall be 1/8" w x 1-1/4" d tooled or saw-cut joints. Control joints may be plastic "Zip-Strips" by Burke or W.R. Meadows (1-1/2" dp. min.).

e. Crushed Fine Aggregate Fill Under Slabs: Shall conform to the crushed fine aggregate specification in 2.01b. above.

f. Sealer/Hardener/Curing Compound for exterior concrete: Shall conform to ASTM C-309, Type I, Class A. Provide and apply per manufacturers recommendations, W.R. Meadows “Med-Cure”; Nox-crete Inc. “Bro-Cure”; Curecrete Chemical Co. “Ashford Formula”, or approved equal. The compound shall *not* be of wax base and shall not impair in any way the application of floor coverings,

j. Admixture: Water-reducing admixture shall be Pozzolith 322N, T-24, Section 1903A6.6 Zeecon "H", Grace WRDA-79 or approved equal, conforming to ASTM 494. Vapor and Water proofing Admixture shall be as manufactured by SPG, Vapor Lock 20/20.

k. Manufactured Grout: Shall be non-shrink, non-metallic, non-corrosive and high strength, conforming to Corps. of Engineers CRD-621. Silkagrout 212, W.R. Meadows #588 grout or approved equal.

l. Form Release: Provide form-coating material, which conforms to the regulations of the local air quality management district in force at the time of application. Use a non-staining, non-residual, chemically active release agent. DEBOND FORM COATING, manufactured by L&M Construction Chemicals, Inc. or "Crete Lease 880 VOC", by Cresset Chemical Company.

m. Fly Ash: Shall comply with ASTM C618, class NORF (Class C is not permitted) Not more than 15% by weight of fly ash shall be substituted for ASTM C150 Portland Cement.

PART 3 EXECUTION

3.01 PROPORTIONING OF CONCRETE MIXES

a. Strength: The minimum ultimate (28 day) compressive strength of structural concrete shall be 3000 p.s.i.. Its strength shall be at least 1800 p.s.i. at the age of 7 days and at least 3000 p.s.i. at 28 days. Structural concrete shall contain at least 5 sacks (470 pounds) of cement per cubic yard of concrete. (Per Soils Report). Where non-structural `concrete paving' is required, its compressive strength shall be 2500 p.s.i. Its strength shall be at least 1500 p.s.i. at 7 days and at least 2500 p.s.i. at 28 days.

b. Proportions: The Contractor shall propose to the Architect an Engineered *Laboratory Designed Mix/es with Engineers Stamp/seal* based on the following limitations. The mix design shall be approved prior to use. The mix designer shall determine the relative amounts of cement, admixtures, fine and coarse aggregate and mixing water in accordance with T24 Method B or Method C, Section 1905A.2.3. The Contractor shall pay the costs of concrete mix designs, including the cost of aggregate, gradation analysis where required.

TABLE II
CONCRETE MIXES
Complies with table 19A-A3 of C.B.C. Title 24

Sacks of Cement Concrete Type	Maximum Size of Aggregate	Minimum 94 lbs. per Cubic yard. of Concrete	Maximum Gallons Water per 94 lbs. Sack of Cement
3000 psi	3/8”	6.75	5.8
	3/4”	5.75	7.3
	1”	5.50	7.3
	1-1/2”	5.25	7.3
2500 psi	3/4”	5.50	7.6
	1”	5.25	7.6
	1-1/2”	5.50	7.6
4000 psi	1"	6.00	5.66

c. Minimum Cement Content: The minimum cement contents indicated above may be reduced by a maximum of 0.25 sacks per cubic yard, subject to the approval of the Engineer, if the resulting mix design can be substantiated by:
   (1) The recent experience of the laboratory with the materials and facilities of the manufacturer, and
   (2) Documented test results of trial batching or of the use of the specific mix on prior work.

d. Admixture: The admixture shall not be used to replace cement. Vapor and Water proofing admixture shall be added in quantities as approved by admixture manufacturer and shall be inspected by manufacturer’s representative at the batch

plant. Contact SPG at 310-650-4263 for Vapor and Moisture admixture inspection.

e. Slump: The amount of mixing water used (including free moisture carried by the aggregate) shall not exceed the maximum allowed in Table III. In addition, the amount used shall be the minimum necessary to produce the following maximum allowable slumps but, in no case shall the water/cement ratio exceed .5:
Concrete foundations..... 4" maximum
All other concrete ..... 5" maximum

The slump test shall conform to ASTM C-143.

f. Aggregate Size:

Type of Work	Max.	Aggregate Size
Joists or walls	Less than 5" wide	3/4"
Beams or walls	5" to less than 8" wide,	
slabs above grade	Less than 6" thick,	
floor slabs on grade	1"	
All other concrete	1-1/2"	

g. Fly Ash may be added but not more than 15% by weight of Fly Ash shall be substituted for ASTM C150 Portland Cement.

3.02 PROPORTIONING OF GROUT AND DRYPACK (Handmixed)

a. Grout: Shall be composed of one (1) volume of portland cement and three (3) volumes of fine aggregate and only enough water to make the mixture flow under its own weight.
b. Drypack: Shall be composed as for grout except that only enough water shall be added to set the mixture (no free water and no slump). Drypack will be tamped into place.
c. Do not use grout or drypack that has been mixed longer than thirty (30) minutes.

3.03 GROUT (Manufactured)

Manufactured grout shall be used at all `blocked-out' and embedded steel or aluminum items and as shown on structural drawings.

3.04 FORMS

a. General Construction Requirements: Forms shall be constructed of wood built true to line and grade, mortar tight, and sufficiently rigid to prevent excessive deflection between supports. The arrangement and construction shall be subject to the approval of the Engineer, but responsibility for adequacy of the forms shall rest with The Contractor. Forms shall be arranged so as to properly receive and engage other construction and all anchorage sleeves, inserts, bolts, conduit, or other devices shall be installed prior to the placing of concrete.
b. Forms for Exposed Concrete: All exposed concrete shall be formed with 5/8" (minimum) Douglas Fir "Plyform" placed with the grain of the outer plys in the direction of their span. Form construction shall insure that the concrete surfaces will conform to the tolerances of "Recommended practices for Concrete Form Work" (A.C.I. 347). The supporting studs or joists shall be spaced not more than twelve inches (12") center to center. The surfaces of the forms shall be smooth and free

from irregularities. Wall form panels shall be placed with their long dimension horizontal and so as to form continuous horizontal joints. All exposed sharp corners shall be formed with 3/4" chamfers or fillets.

c. Form Ties or Bolts: Shall be used to fasten the forms. They shall be of sufficient strength and number to prevent spreading of the forms. They shall be of such type that they can be entirely removed or cut back one inch (1") or more from the finished concrete surface. Wire ties will not be permitted.

d. Form Coating: Forms shall be coated with form release applied shortly before the concrete is placed but prior to placing the reinforcement.

e. Cleaning: All dirt, chips, sawdust, nails and other foreign matter shall be completely removed from the forms before concrete is placed. Forms previously used shall be thoroughly cleaned of all dirt, mortar and other foreign matter before being reused.

f. Removal: The forms shall not be removed until the concrete has sufficiently hardened to permit their removal with safety, but in no case in less time than as follows:

Columns, Walls, Vertical Forms	24 hours
Slabs	7 days
Joists, Beams and Girders	14 days

All removal shall be accomplished in such a manner as to prevent injury to the concrete. Comply with T24, Sec. 1906A.2.

g. Foundation Concrete: Shall be placed directly into neat excavations provided the trench walls are stable as determined by the Architect or Structural Engineer subject to approval of the Division of the State Architect. In such cases, the minimum formwork shown on the structural drawings is mandatory to insure clean excavations immediately prior to an d during the placing of concrete.

3.05 CRUSHER FINE FILL

Fill Under Interior Floor Slabs: Place vapor barrier over crusher fines. Apply two inches (2") of crusher fines fill subgrade, grade smooth and level and roll to smooth, even surface. Crusher fines shall spread and compacted while damp. At the time of concrete placement, the crusher fines layer should be dry to damp, compacted and smooth. Do not spray crusher fines prior to placement of concrete. Exterior concrete slabs will not require this fill except where indicated on the drawings.

3.06 EMBEDDED ITEMS

a. The Contractor shall cooperate with all tradesmen to insure that all conduit, anchor bolts, sleeves, inserts, hangers, etc. are properly installed and secured in correct position. All embedded items shall be thoroughly clean and free from rust, scale, oil or other foreign matter. All embedded items, including bolts, shall be securely held in their final positions by means of wood templates *before* any concrete is poured.

b. Pipes, other than electrical conduit, shall not be embedded in structural concrete. Conduit shall be located within the middle half of the slab and its outside diameter shall not be greater than one third (1/3) of the slab thickness.

c. The Contractor shall properly form all reglets and rebates required in the concrete to receive flashings, frames and other equipment. Dimensions and details shall be obtained from the equipment to be provided for.

3.07 MIXING

Transit Mixed Concrete: Shall be mixed and delivered in accordance with the requirements of T24, Section 1905A. Transit mixed concrete shall not be delivered to the work with the total specified amount of water incorporated therein. Two and one-half (2-1/2) gallons of water per cubic yard shall be withheld but may be incorporated in the mix under the supervision of the project Inspector. Transit mixed concrete shall be mixed for a period of not less than ten (10) minutes at a peripheral drum speed of approximately two hundred (200) feet per minute and mixing shall be continued until discharge is complete. Concrete will be rejected if not discharged within one and one-half (1-1/2) hours during normal weather or forty-five (45) minutes during hot weather after the addition of cement to the aggregates. The manufacturer of the transit mixed concrete shall furnish with each mixer truck a certificate stating the quantity of cement water, fine aggregate, coarse aggregate and admixture (if used) in each batch delivered to the job.

3.08 PLACING

a. General: Concrete shall be used while fresh and before it has taken an initial set. Retempering partially hardened concrete with additional water will not be permitted. Concrete shall be placed in horizontal layers of such thickness that can be satisfactorily consolidated with vibrators. The concrete shall be placed as nearly as possible in its final position and the use of vibrators for extensive shifting of fresh concrete shall not be permitted. Fresh concrete shall not be permitted to fall more than six feet (6'-0") without the use of adjustable length pipes of "elephant trunks". The use of chutes in conveying concrete will not be permitted except with the Structural Engineer's approval and only if segregation does not occur and concrete of proper consistency flows freely. Once concreting is started, it shall be carried on as a continuous operation at such a rate that the concreting surface is at all times plastic and flows readily until the section is completed between predetermined construction joints.

b. Compacting: All concrete, including slabs, shall be thoroughly compacted by means of high frequency internal vibrators. The vibrators shall not be attached to or held against the forms or reinforcing.

c. Concrete Slab Construction Joints: Per T24, Sec. 1906A.4.
   (1) All vertical members, such as walls and columns, shall be poured at least two (2) hours before horizontal members are poured therein to permit the concrete in the vertical members to take its initial settlement.

   (2) After the pour has been completed to the construction joint and the concrete has hardened, the entire surface of the joint shall be thoroughly cleaned of surface laitance.

   (3) A modified mix of concrete as hereinbefore specified with fifty percent (50%) of the coarse aggregate omitted may be deposited on horizontal construction joints before proceeding with the regular specified mix. This same modified mix may be used where conditions make puddling difficult or where reinforcing is congested.
   (4) The location of construction joints shall be as shown on the plans or as approved by the Structural Engineer and the Architect. All construction joints shall be keyed.

(5) Maximum spacing shall be 20 feet on center for sidewalks, 20 feet on center for curbs and gutters, 10 feet on center for mow strips, 20 feet on center for retaining walls.

d. Concrete Slab Expansion Joints:

(1) Expansion joints shall be placed around all steel columns, buttresses, etc. to relieve restriction of movement.

(2) Expansion joints shall be placed at sidewalks/concrete paving spaced at 20' o.c. max.

(3) Expansion joints shall be placed at sidewalks used to separate buildings. Place parallel with walk on one side min.

(4) Expansion joints shall be placed at curbs/gutters and V-gutters spaced at 20' o.c. max.

(5) Expansion joints shall be placed at mow-strips, spaced at 10' o.c. max.

(6) Expansion joints shall be placed at all change of directions in concrete slabs, walls, sidewalks, curbs, etc., typical unless noted otherwise.

e. Concrete Slab Control Joints:

(1) Joints in concrete slabs on grade shall be spaced a maximum of 15'-0" o.c. for interior reinforced slabs and 4'-0" o.c. for exterior non-reinforced & reinforced concrete slabs. Joints shall be located where shown on plans.

(2) Saw-cut control joints shall be cut within three (3) hours of finishing slab as indicated on plans. All control joints shall be tooled to a round edge. No hard edges shall be permitted.

(3) Control joints 20' or shorter in length may be done with zip strips, only if strip can be installed in straight line.

f. Cold Weather Requirements: Concrete shall not be placed on frozen ground, nor shall it be mixed or placed when atmospheric temperature is below 35 degrees F., unless means are employed to heat the aggregates and water so the concrete shall have a minimum temperature of 50 degrees F. The concrete shall then be protected from freezing or frost for a period of five (5) days after placing by a means acceptable to the Structural Engineer and the Division of the State Architect. Calcium Chloride shall not be added to the mix.

g. Hot Weather Requirements: The maximum placing temperature of concrete, when deposited, shall be 90 degrees F. Concrete (excepting foundations) shall not be placed when the maximum air temperature is expected to exceed 100 degrees F. on the day of placement unless specifically approved by the Structural Engineer. Such approval may require any or all of the following precautions:

(1) Provide shade for slabs to be finished after 11:00 a.m.

(2) Store all materials and equipment in the shade.

(3) Take special care to obtain the coolest mixing water available. Note that the use of ice may be required in order that the maximum temperature of the mix at the time of depositing does not exceed 90 degrees F.

(4) Forms to receive concrete shall be kept cool by sprinkling until the pour has started.

(5) A fog spray of water shall be used to keep concrete surfaces moist during the finishing operation and until curing is commenced.

(6) The use of an approved water reducing retarder (admixture).

3.09 CONCRETE FINISH AND LOCATION

a. Abrasive Aggregate Finish: Shall be located on exposed finish concrete ramps, and landings.

b. Steel troweled Finish: Shall be located on areas to receive resilient flooring.

c. Hard, Trowel-Burnished Finish: Shall be located in exposed concrete maintenance rooms only.

d. Rock Salt Finish: Shall be located on exposed finish concrete steps and where indicated on drawings.

e. White Pigmented Curing Compound*: Shall be applied to all exterior concrete slabs/walks/curbs/gutters, etc., verify applications of clear or white with Architect.

f. Clear Curing Compound*: Shall be applied to all exterior concrete slabs/walks/curbs/gutters, etc., verify application of clear or white with Architect.

g. Broomed Concrete Finish: shall medium on all surfaces less than 6% slope and heavy broom finish or all surfaces greater than 6% slope.

3.10 FORMED SURFACES

a. After form removal, all fins and ridges shall be removed from the concrete surfaces. All exterior form bolts shall be removed to a depth of at least one-inch (1") below the surface of the concrete. Voids and holes left by removal of form ties shall be cleaned and filled with mortar. Mortar shall consist of one (1) part by volume of cement to two (2) parts of sand. Rock pockets shall be chipped out down to sound material and filled with mortar.

b. Architectural concrete or concrete surfaces to be left permanently exposed shall be patched as mentioned above and then honed smooth, rubbed and sacked. Coat areas completely with grout, wood float, let set and then rub with burlap.

3.11 TOOLING AND MARKINGS (EXTERIOR)

a. General: All exposed flat work shall be tooled as indicated on drawings, or as otherwise specified, with additional markings as required where structures and/or items penetrate through slab. Tooling to be uniform, straight, and minimum 1/8" wide x 1-1/4" deep.

b. Planter walls, curbs, etc. shall have chamfer joints, tool markings, etc., as directed, to control cracking. Markings, etc., shall be continuous across tops and down backs.

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*Clear or white curing compounds shall not be applied to curbs or slabs, which are to receive paint or striping.

3.12 CONCRETE FINISHING GENERAL REQUIREMENTS

a. Workmanship: Employ only skilled workmen, experienced in their respective trades and work. All work performed in a first class workmanlike manner, subject to approval of Architect, or project Inspector

b. Markings: Notify Architect in sufficient time prior to completion of setting forms for exterior flat work to permit on-site review of proposed control, construction and expansion joint locations.

c. Finishing Samples: Prepare three- (3) foot square flatwork samples of the following finishes (where indicated for use on this job) for Owner's approval:
Rock salt finish Broom finish (medium)
Abrasive aggregate finish
Samples of finished surfaces shall be made and submitted to the Architect for approval not less than (10) days prior to installing concrete work. Samples to remain intact for comparison until flat work completed.

d. Finishing: Concrete shall be allowed to stand long enough to evaporate excess surface water, but not until initial set takes place. Surfaces to receive ceramic tile to be broomed. Other surfaces wood floated to a true, level surface and then hand troweled to a smooth surface, free from imperfections. Finish surfaces shall not deviate more than one-eighth inch (1/8") from a ten-foot straight edge laid in any direction. Exposed concrete wearing surfaces troweled, additionally, to a hard polished finish. Unless otherwise directed, brooming, if selected, to be performed at right angles to slope. Follow slopes and lines as indicated.

e. Curing:
1. All newly placed concrete shall be kept moist until application of permanent curing.

2. Slabs poured in hot or dry weather shall have a fog spray applied to them commencing during the troweling and they shall be kept wet until the placement of permanent curing, which shall be done immediately after final troweling.
3. All concrete shall be permanently cured by one of the following methods:
   (a) Sealer/Hardener/Curing compound spray-applied per manufacturer's recommendations.
   (b) Pigmented curing compound spray-applied per manufacturer's recommendations.
   (c) Clear curing compound spray-applied per manufacturer's recommendations.

3.13 CLEAN UP

1. Upon completion of all other work in the building, all interior and exterior finished concrete surfaces shall be swept clean and all mortar, plaster, paint, oil and stains removed therefrom.
2. The Contractor shall remove from the premises all surplus material, equipment and debris which are the result of his operations.

END OF SECTION
10/19/2023

REINFORCING STEEL

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this section shall include the furnishing of all labor, materials and equipment required to complete the reinforcing steelwork as indicated on the drawings and as specified herein.

1.02 WORK INCLUDED (But not limited to the following items)

a. Furnish, bend and install reinforcing steel for all concrete work.

b. Accessories for all reinforcing work.

c. Clean up work related to this Section.

1.03 RELATED WORK

a. Placing concrete is specified in Section 03 10 00.

1.04 TESTS AND INSPECTIONS

a. Refer to Section 01 45 00, "Quality Control", requirements.

b. The Owner shall engage a testing laboratory to perform material evaluation tests.

c. No materials of this section shall be placed into the work until sampling, testing and certifications have been approved by the Architect or Structural Engineer.

d. No work of this section shall be covered or concealed until inspected by the Engineer, his authorized representative or the Owner's Inspector.

e. Where samples are taken from bundles as delivered from the mill, with the bundles identified as to heat number, and provided mill analyses accompany the report, then one tensile test and one bend test will be made from a specimen of each 10 tons or fraction thereof of each size of reinforcement steel.

f. Where positive identification of the heat number cannot be made, or where random samples are taken, then one series of tests will be made from each 2-1/2 tons or fraction thereof of each size of reinforcement steel.

PART 2 PRODUCTS

2.01 MATERIALS

a. Reinforcing Bars:

(1) #3 and smaller - ASTM A615, Grade 40.
(2) Larger than #3 - ASTM A615, Grade 60, unless noted otherwise.
(3) Welded Rebar: ASTM A706, Grade 60.
(4) Spiral Rebar: ASTM A-82, cold drawn bars. Reinforcement shall comply with C.B.C. Section 1910 A.2.

b. Smooth Dowels: Shall conform to ASTM A-615, Grade 60. 1/2" diameter and smaller bars shall be Grade 40.

c. Reinforcing Wire: Shall be cold drawn steel wire conforming to ASTM A-82.

d. All reinforcing shall be new, clean, free from oil, dirt, loose mill scale, excessive rust, mortar, or other coatings that would destroy or reduce the bond.

PART 3 EXECUTION

3.01 CLEANING

Before use, reinforcement shall be cleaned so as to be free of mortar, oil, dirt, loose mill scale and loose rust or other coatings that would destroy or reduce the bond.

3.02 BENDING

a. Minimum bend diameters shall conform to ACI 318-19.

b. Bars shall be bent cold.

c. Measure bend diameters on the inside of the bar.

MINIMUM DIAMETER OF BENDS

Bar size	Min. Diameter
Nos. 3 through 8	6 bar diameter
Nos. 9 through 11	8 bar diameter
Nos. 14 & 18	24 bar diameter
Stirrups or ties	
Nos. 5 or smaller	4 bar diameter

3.03 PLACING

Reinforcing shall be accurately placed in accordance with the drawings and meeting CRSI and shall be securely tied in position with at least No. 16 gage annealed wire at all bar intersections. Metal chairs and bolsters (at 32" o.c. each way max.) shall be used to hold all steel above the form bottoms at the proper distance. Metal spacers shall be used to secure the proper spacing of the steel. Precast concrete dobies (at 48" o.c. max.) shall be used to support reinforcing steel off the ground in footings and off the soffit of concrete exposed to weather. The

clear distance between parallel bars shall not be less than 1-1/2 times the bar diameter, but in no case less than 1-1/2" nor less than 1-1/3 times the maximum size of coarse aggregate.

3.04 SPLICING

Splicing shall not be permitted without the approval of the Structural Engineer unless detailed on Structural Drawings. Splices shall be made with a lap of at least Class "C" unless noted otherwise. The bars shall be placed in contact and wired together in such a manner as to maintain a clearance of not less than the minimum clear distance to the other bars and to the surface of the concrete. In general, stagger splices at least 4'-0". Splice wire mesh with a lap of at least the dimension of one mesh + 2". Welded splices shall be in accordance with CBC Title 24, 1903 A.8.

3.05 TOLERANCES

Reinforcement shall be placed in specified positions meeting CRSI requirements, but not less than the following tolerances:

a. Depth: + 1/4" for members 24" or less in depth.

b. Depth: ± 1/2" for members greater than 24" in depth.

c. Length: ± 1".

3.06 WELDED REINFORCING

a. All welding of rebar shall conform with American Welding Society specifications AWS D1.4-11, latest edition as modified by CBC Standard No.19-1.

b. If mill test reports are not available, chemical analysis shall be made of bars, representative of the bars to be welded. Bars conforming to ASTM A-706-89 may be assumed to have a C.E. = 0.55. Bars with a C.E. above 0.75 shall not be welded. Welding shall not be done on or within 2 bar diameters of any bent portion of a bar which has been bent cold. Welding of crossing bars shall not be permitted for assembly of reinforcement, unless authorized by the Structural Engineer and approved by the Division of the State Architect.

3.07 CLEAN UP

The contractor shall remove from the site all surplus material, equipment and debris which are the results of his operations.

END OF SECTION
10/19/2023

SHEET METAL

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this section shall include all fabrication, labor, material, appliances and transportation required to complete the work indicated on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

a. All galvanized sheet metal work, such as flashing

1.03 SUBSTITUTIONS

See Div.00.

1.04 WORKMANSHIP

a. Only skilled workmen experienced in their respective trades and work shall be employed. All work shall be performed in a first class workmanlike manner and shall be subject to the approval of the Architect or his representative. The contractor shall report to the Architect any improper or defective surfaces and shall not commence work until defective surfaces are corrected.

1.05 COOPERATION

Sheet metal men, and other trades, shall cooperate to obtain a completely watertight and perfect job. In the event of a dispute as to the responsibility of any defect, which might develop, the decision of the Architect shall be final and binding on all parties. The contractor shall consult the various tradesmen whose work adjoins his work, and he shall be responsible for the proper alignment and working of all the various details. The Sheet Metal Sub-contractor shall cooperate with contractor to ensure a watertight installation of all flashing and other sheet metal work furnished under this section to ensure issuance of manufacturer and contractor guarantees and warranties.

PART 2 PRODUCTS

2.01 GALVANIZED SHEET STEEL

Galvanized sheet steel shall be as manufactured by BMG Metals, Inc. Cal Strip Industries or approved equal, in quality and utility. All material shall be 24-gauge minimum or called for in the Specifications. All material shall be copper bearing and heavily galvanized. Sheet metal shall be 1.25 oz./sq. ft., hot dipped galvanized coating conforming to standards as set forth in ASTM A-653/653M Equals: Galvanized sheet steel conforming to ASTM A-653/653 M G90 or better hot dipped galvanized coating.

2.02 SOLDER

Solder shall be lead free.

2.03 NAILS

Nails shall be galvanized and selected for their intended use.

2.04 SCREWS

Screws shall be cadmium plated oval head sheet metal screws.

2.05 WASHERS

Washers shall be 4# lead washer 1" diameter.

2.06 RIVETS

Rivets shall be soft annealed non-corrosion metal.

2.07 MASTIC

No. 204 Henry's Plastic Roof Cement.

PART 3 EXECUTION

3.01 PRACTICE

Procedures and methods recommended by "National Association of Sheet Metal Contractors" shall be followed insofar as they do not conflict with the requirements of the Uniform Building Code Standards and Title 24, Part 2 C.B.C. 1997 edition. Work shall be accurately formed to sizes, shapes and dimensions indicated and detailed; with all angles and lines in true alignment, straight sharp, erected plumb, level and in proper plane without bulges or waves. Pipe or flange intersections to accurately fit and solder together.

3.02 MEASUREMENTS

The Contractor shall take measurements at the building site and verify the dimensions indicated on the drawings.

3.03 ACCURACY AND TOLERANCE

All sheet metal work shall be accurately worked to shape and sizes indicated on the drawings and/or as required by the Architect. The allowable tolerance on detailed sheet metal work shall not exceed 1/16" in ten feet (10'-0")

3.04 COMPLETENESS

The Contractor shall form, fabricate and erect all sheet metal work to perform satisfactorily and to be watertight and weather tight.

3.05 EXPOSED EDGES

All exposed edges shall be turned back and hemmed 1/2" wide.

3.06 EXPANSION AND CONTRACTION

Provisions shall be made in all cases for expansion and contraction.

3.07 NAILS

All nails in connection with galvanized sheet metal shall be galvanized.

3.08 FLASHING AND COUNTERFLASHING

24 gauge galvanized iron in lengths in general of ten feet (10'-0") with no longitudinal joints. The joints in flashing and counter flashing generally shall not be soldered but shall be set in mastic so that expansion and contraction may occur without buckling. Wall type counter flashing over mopped or composition roofing at walls shall be removable counter flashing except roof flashing specified under individual roofing section of the Specifications. Internal and external angle returns shall be one piece extending twelve inches (12") each way from the corner.

3.09 MISCELLANEOUS

The contractor is referred to plans and detail drawings for all miscellaneous sheet metal work not specifically called for in these specifications, but shown and detailed, and he shall furnish and install same. The contractor shall flash vent pipes and provide and install co-related vents and ductwork in cooperation with other trades as specified in other sections of these Specifications.

END OF SECTION
10/19/2023

CAULKINGS AND SEALANTS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

a. The work of this Section includes caulking and sealing all joints where shown on the drawings and elsewhere as required to provide a positive barrier against passage of moisture.

b. Related work described elsewhere: Adhere strictly to the caulking and sealant details shown on the drawings.

1.02 WORK INCLUDED (But not limited to the following):

a. Caulking as specified hereafter except for those items specifically mentioned under another section.

b. Caulking of all exterior cracks, and joints in, metal, flashing, to provide a watertight and weatherproof seal.

c. Polyurethane sealants in conjunction with expansion joints.

d. Joint filler material.

e. Backing rod materials.

f. Surface preparation and priming.

g. Mixing.

h. Application and curing.

1.03 RELATED WORK

a. Flashing and Sheet Metal:

1.04 REFERENCES

a. ASTM C-920: Recommended Practices for Use of Elastomeric Joint Sealants.
b. ASTM C-804: Recommended Practice for Use of Solvent-Release Type Sealants.
c. ASTM D-1056: Flexible Cellular Materials - Sponge or Expanded Rubber.
d. ASTM D-1565: Flexible Cellular Materials - Vinyl Chloride Polymers and Copolymers (Open Cell Foam).
e. FS TT-S-227: Sealing Compounds, Polyurethane Base, Multi Component, Chemically Curing.
f. FS TT-S-230: Sealing compounds synthetic - rubber base, single component, chemically curing.

1.05 GUARANTEE

Contractor shall guarantee to maintain all caulking in a watertight condition for a period of two (2) years and remove and replace sealants, which fail due to a loss of adhesion or cohesion or incomplete cure, bubbling, etc.

1.06 SUBMITTALS

a. Manufacturer's Data: Submit the following for review by the Architect, per Section 01301:
   1. A complete materials list showing all items proposed to be furnished and installed under this Section.
   2. Sufficient data to demonstrate that all such materials meet or exceed the specified requirements.
   3. Specifications, installation instructions, and general recommendations from the materials manufacturers showing procedures under which it is proposed that the materials be installed.

1.07 PRODUCT HANDLING

a. Delivery and Storage: Deliver all materials of this Section to the job site in the original unopened containers with all labels intact and legible at time of use. Store only under conditions recommended by the manufacturers. Do not retain on the job site any material which has exceeded the shelf life recommended by its manufacturer.

b. Protection: Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of all other trades.

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

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

a. Sika Corporation
b. Tremco Commercial Sealants
c. BASF Corporation
d. Georgia Pacific Company
e. P.P.G. Industries
f. Approved Equals

2.02 SEALANTS

a. Provide the following materials manufactured by Products Research & Chemical Corporation, or equals approved by the Architect, where indicated and where otherwise required for a complete and proper installation:

	Material	Location of Use
1.	Sikaflex 150 Vulkem Dymonic 100 Masterseal NP 100	Throughout the Work, except where other sealant is specified, where anticipated joint movement will be 50% or less;
2.	Sikaflex 1a Vulkem 116 Masterseal NP 1	Throughout the Work, except where other sealant is specified, where anticipated joint movement will be 25% or less;
3.	Sikaflex 2cSL Sonneborne MP2 Vulkem 445 SSL Masterseal SL1/2	Horizontal joints exposed to pedestrian and vehicular traffic, and all joints subject to immersion

4. Sikaflex 150 — Vertical and horizontal joints subject to extreme movement.
   Masterseal NP100
   Spectrem 800
5. Polyethylene backer rod where required to prevent 3-point adhesion.
   a. For other services, provide products especially formulated for the proposed use and approved by the Architect.
   b. Colors:
      1. Colors for each sealant installation will be selected by the Architect from standard colors normally available from the specified manufacturer.
      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.
      3. In concealed installations, and in partially or fully exposed installations where so approved by the Architect, use standard gray or black sealant.

2.03 PRIMERS

Use only those primers, which have been tested for durability on the surfaces to be sealed and are specifically recommended for this installation by the manufacturer of the sealant used.

2.04 BACKUP MATERIALS

Use only those backup materials which are specifically recommended for this installation by the manufacturer of the sealant used, and which are nonabsorbent and nonstaining.

2.05 BOND PREVENTIVE MATERIALS

Use only one of the following as best suited for the application and as recommended by the manufacturer of the sealant used.

a. Polyethylene tape, pressure sensitive adhesive, with the adhesive required only to hold tape to the construction materials as indicated.
b. Aluminum foil conforming to MIL-SPEC-MIL-A-148E.
c. Wax paper conforming to Fed. Spec. UU-P-270.

2.06 MASKING TAPE

For masking around joints, provide masking tape conforming to Fed. Spec. UU-T-106c.

2.07 OTHER MATERIALS

All other materials, not specifically described, but required for complete and proper caulking and installation of sealants, shall be first quality of their respective kinds, new, and as selected by the Contractor subject to the review by the Architect.

PART 3 EXECUTION

3.01 INSPECTION

Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to the proper and timely completion of the work. Do not proceed until unsatisfactory conditions have been corrected.

3.02 QUALITY ASSURANCE

a. Qualifications of Manufacturers: Products used in the work of this section shall be produced by manufacturers regularly engaged in manufacture of similar items with a history of successful production acceptable to the Architect.

b. Qualifications of Installers:
   1. Proper caulking and proper installation of sealants require that installers be thoroughly trained and experienced in the necessary skills and thoroughly familiar with the specified requirements.
   2. For caulking and installation of sealants throughout the work, use only personnel who have been specifically trained in such procedures and who are completely familiar with the joint details shown on the drawings and the installation requirements called for in this section.

3.03 PRODUCT HANDLING

a. Delivery and Storage: Deliver all materials of this section to the job site in the original unopened containers with all labels intact and legible at time of use. Store only under conditions recommended by the manufacturers. Do not retain on the job site any material which has exceeded the shelf life recommended by its manufacturer.
b. Protection: Use all means necessary to protect the materials of this section before, during, and after installation and to protect the work and materials of all other trades.
c. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the satisfaction of the Architect and at no additional cost to the Owner.

3.04 PREPARATION

a. All surfaces in contact with sealant shall be dry, sound, and well brushed and wiped free from dust.
b. Use solvent to remove oil and grease, wiping the surfaces with clean rags.
c. Where surfaces have been treated, remove the surface treatment by sandblasting or wire brushing
d. Remove all laitance and mortar from joint cavities.
e. Where joint filler is required, insert the approved backup material in the joint cavity to the depth required to provide required width/depth ratio.

3.05 INSTALLATION OF BACKUP MATERIAL

Use only joint filler material recommended by the manufacturer of the sealant and reviewed by the Architect for the particular installation, compressing the backup material 25% to 50% to secure a positive and secure fit. When using backup of tube or rod stock, avoid lengthwise stretching of the material. Do not twist or braid hose or rod backup stock. Use semi rigid filler material with minimum shore harness of at least 80 for control joint filler, type.

3.06 PRIMING

Use only the primer recommended by the manufacturer of the sealant and reviewed by the Architect for the particular installation. Apply the primer in strict accordance with the manufacturer's recommendations as reviewed by the Architect.

3.07 BOND BREAKER INSTALLATION

Install a bond breaker where recommended by the manufacturer of the sealant and where directed by the Architect, adhering strictly to the installation recommendations as reviewed by the Architect.

3.08 INSTALLATION OF SEALANTS

a. Prior to start of installation in each joint, verify the joint type and verify that the required proportion of width of joint to depth of joint has been secured.
b. Equipment: Apply sealant under pressure with hand or power-actuated gun or other appropriate means. Guns shall have nozzle of proper size and shall provide sufficient pressure to completely fill joints as designed.
c. Masking: Thoroughly and completely mask all joints where the appearance of sealant on adjacent surfaces would be objectionable.
d. Installation of Sealant: Install the sealant in strict accordance with the manufacturer's recommendations as reviewed by the Architect, thoroughly filling all joints to the recommended depth, typically flush with surface.
e. Tooling: Tool all joints to the profile shown or as directed by Architect.
f. Cleaning Up:
    1. Remove masking tape immediately after joints have been tooled.
    2. Clean adjacent surfaces free from sealant as the installation progresses. Use solvent or cleaning agent as recommended by the sealant manufacturer.
g. Provide temporary protection/cover for caulking/sealant as required to prevent debris from becoming fouled in material.

END OF SECTION
06/27/2012

PAINTING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include all labor, material, scaffolding, equipment and appliances necessary to complete the work indicated on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

a. Preparation, sanding, scraping, putty work and cleaning of all woodwork and/or metal work to be painted.

b. Painting, staining, or natural finishing of all exterior woodwork, trim and millwork.

c. Painting of all exterior and interior exposed metal work (except aluminum).

d. Painting of all interior and exterior plaster (not integrally colored).

e. Backpriming of all wood casework, eave fascias, etc.

f. Field and touch up painting (except prime coat) of structural steel and miscellaneous iron.

g. Washing, priming and back priming of all sheet metal work.

h. Painting of all playcourt markings.

i. Remodel Work:
All New Work - Three (3) coats as specified.
Existing Work - Fill holes and cracks and apply two (2) coats (final two (2) coats as specified).

1.03 RELATED WORK

a. Washing of windows is specified in Section 06 20 00.

b. Adhesives, sealants, and caulking shall comply with 2019 California Green Building Standards, Code, Section 5.504.41 and Tables 5.504.4.1 Adhesive VOC limit, Coatings and SCAQMD Rule 1168 VOC Limits. Contractor shall submit literature to demonstrate compliance with these regulations prior to beginning installation.

1.04 REGULATION

a. Adhesives, sealants, and caulking shall comply with 2019 California Green Building Standards Code, Section 2.204.4.1 and Tables 5.504.4.1 Adhesive VOC Content Limits for Architectural Coatings and SCAQMD Rule 1168 VOC Limits. Contractor shall submit literature to demonstrate compliance with these regulations prior to beginning installation.

PART 2 PRODUCTS

2.01 MATERIALS

a. Inspection and Samples: Painters' materials are to be delivered at the building in their original labeled, unbroken packages and not opened until inspected and marked by the Architect or his representative. This Contractor shall furnish 12" x 12" sample plywood and masonite boards and shall experiment with colors for all surfaces on the job to the full satisfaction of the Architect or his representative. These sample boards shall not be destroyed until all painting is done and final approval is given.

b. Name, Brands, Makes and Numbers hereafter….

c. Paint:
   1. Akzonobel Mfg of (-Edwards Paints)
   2. Benjamin Moore and Co. (Moore)
   3. Devoe High Performance Coatings, Glidden Professional Dunn
   4. Sherwin-Williams
   5. Or approved equal

d. Semi-Transparent Stain:
   1. Akzonobel Mfg of (Devoe High Performance Coatings, Glidden Professional Paints, and Flood wood care products)
   2. BenjaminMoore and Co (Moore)
   3. Dunn-Edwards
   4. Sherwin-Williams
   5. Or approved equal

e. Sealer:
   1. Rainguard International Mfg of (Micro seal, Blox-Loc) emulsion/siloxane solution sealer.
   2. Thompson's: Sealing of masonry walls

f. Anti-graffiti coatings: Two component aliphatic urethane polyester based mixture.
   1. Dunn-Edwards Corporation.
   2. Rainguard International Mfg of Vandal Guard anti graffiti Coating.

2.02 SUBSTITUTIONS

See General Conditions, Section 33, Article 19

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

a. Workmanship: Only skilled workmen experienced in their respective trades and work shall be employed. All work shall be performed in a first class workmanlike manner and shall be subject to the approval of the Architect or his representative.

(1) All finishes shall meet the basic standards of practice, which are satisfactory to the Architect. Each coat shall be of the proper consistency and the mixing, thinning, preparation of surfaces and application in strict accordance with paint manufacturers specifications and/or instructions. Each coat of paint finish shall be well brushed out or flowed on, to obtain a uniform and even finish free of brush marks, runs, sags, crawls, dust, pimples, encrusted brush bristles, holidays and any variance in finish (color, shade, sheen or matt) or other blemishes to the finished surfaces.

(2) It is the responsibility of the Contractor for inspection of all surfaces, prior to application of any paint. If the manufacturer's representative or the Contractor consider any surface unsuitable for proper application and/or proper performance of the paint, the manufacturer's representative and the Contractor shall immediately notify the Architect in writing. Materials shall not be applied until such unsuitable surfaces or conditions have been made satisfactory. The manufacturer's representative or the Contractor shall furnish to the Architect a letter certifying that all surfaces were inspected and approved as above specified and that all materials furnished were as specified. The contractor shall furnish to the Architect a letter certifying that all materials used were as specified.

b. Approvals: An approval for all brands of materials not mentioned in the following list shall be obtained in writing from the Architect before incorporation into the work. Before any paint has been delivered to the site, the Contractor shall submit four (4) lists of materials, which the Contractor proposes to use to the Architect for his review and approval. No deviation from the approved list will be allowed without written permission. Approved List-Glidden Professional Paints, Fuller O'Brien, Benjamin Moore, Dunn-Edwards, Pittsburgh Paints or approved equal. Requests for substitutions shall be accompanied by test reports from a commercial testing laboratory showing equality in weathering, hardness, washability, gloss and color retention, flow, hiding, flexibility, non-yellowing and general original appearance. These tests shall be conducted according to procedures set forth in Federal Specification TTL-P-141 of American Society of Testing Materials Specification.

c. Storage: All materials shall be stored and mixed only in such rooms as will be designated for that purpose by the Architect or his representative and such space shall be kept clean. The floor shall be covered with "Sisal Kraft" paper with joints lapped at least six inches (6"). All necessary precautions shall be taken to prevent fire and all oily rags shall be hung out flat and singly in the open air.

d. Manufacturer's Recommendations: The specifications and instructions of the paint manufacturer shall be carefully followed, especially regarding mixing, thinning, application, and preparation of surface.

e. Preparation of Surfaces: The Painter, before proceeding with his work must see that the carpenter has set all nails in finish, removed all bruises, stains, etc., where same show through finish. Scrape and sandpaper entire woodwork and remove finish hardware and see that the entire woodwork is in good condition before painting. **THE PAINTING CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTING THE WORK OF OTHERS PRIOR TO THE APPLICATION OF ANY PAINT OR FINISHING MATERIAL. IF ANY SURFACE TO BE FINISHED CANNOT BE PUT IN PROPER CONDITION FOR FINISHING BY CUSTOMARY CLEANING, SANDING AND PUTTYING OPERATIONS, THE PAINTING CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR, ARCHITECT OR OWNER IN WRITING,**

OR ASSUME RESPONSIBILITY FOR RECTIFYING ANY UNSATISFACTORY FINISH RESULTING. All interior woodwork shall be thoroughly hand sandpapered and dusted thoroughly with air and dry brush. All nail holes, cracks and defects shall be carefully puttied and in stained work shall match the color of the stain. In natural finish, it shall match the color of the wood.

f. Knots and Pitch Pockets: Interior woodwork to receive shellac over all knots and sap pockets. Pitch pockets cut out by the carpenters and then spackled and shellacked.

g. Condition of Surfaces: Paint, enamel, stain, or varnish shall not be applied to wet, damp, dusty, greasy, fingermarked, rough, unfinished or defective surfaces. Application: Latex or vinyl paint shall only be applied when temperatures of surfaces to be painted and surrounding air temperatures are between 50 degrees F and 90 degrees F. Do not paint when the temperature varies widely, which might result in condensation on freshly coated surfaces. Apply solvent thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45 degrees F and 95 degrees F. All Plaster Walls shall have a maximum of 15% moisture content as measured on a standard moisture met. It is the painter's responsibility to verify the moisture content prior to applying paint.

h. Sanding: All woodwork shall be sandpapered smoother after each and every coat of material, except the last coat, and all surfaces shall be free from dust, dirt or other imperfections.

i. Priming of Millwork: All millwork must be primed and back-primed on **all** sides immediately on arrival at the job.

j. Removal and Storage of Hardware: Remove all finish hardware before starting work, carefully labeling same as to its proper location and store carefully during progress of painting work.

k. Protection: Floors and plumbing fixtures to be kept clean and protected. The dumping of paints, stains, or washes in plumbing fixtures will not be allowed. Great care shall be taken not to injure or spatter paint on adjacent work, which shall be covered and fully protected, but should any paint be spattered for found where not called for, the defective surface shall be cleaned off and the original surface restored.

l. Rough Plumbing: All exposed plumbing and plumbing fixtures where not enameled shall be painted as specified for metal work.

m. Inspection by Architect: After each and every coat of paint, sizing, enameling or other application, including sanding and rubbing, the work shall be inspected, passed on, approved and marked by the Architect, his representative or the job inspector before application of the following coats. Notice must be given after all coats and work done without approval of each coat will be rejected and an additional coat applied.

n. Sample Boards: Furnish sample boards and experiment with colors for the surface on the job to the full satisfaction of the Architect. These sample boards shall not be destroyed until the painting is done and until the final approval of the work.

o. Colors: The color of every coat of paint, enamel, stain, etc., shall be as selected by the Architect. Every coat of paint shall be a slightly different shade. Current color chip samples shall be furnished to the Architect for color selections.

p. Turpentine shall be used for thinner and drier only. Thinner shall only be used if approved by the Architect and only if recommended by the manufacturer.

q. Rejected Materials shall be removed form the site immediately upon notification from the Architect.

r. Cleaning: From time to time, remove all dirt, debris, waste, rubbish, etc., from the building site. All woodwork, hardware, floors or other adjacent work shall be cleaned. The painter shall protect and keep clean all portions of the work that are not to be painted, stained or varnished and upon completion shall have a neat, clean and workmanlike job. Cleaning includes the removal of all paint spots on glass and brush drags where cut in on sash.

s. Spraying will be permitted on certain types of work **when approved and directed by the Architect** subject to the following stipulations: "Spraying regulations covering work to be done on this project shall be permitted in areas and on surfaces as covered by the "Standard Agreement" recommended by the California State Contractors Association and agreed to by the International Brotherhood of Painters, Paper Hangers and Decorators of America. Copies of this Agreement are available to all contractors in all major cities of California. Any deviations or exceptions shall be referred to the Joint Committee and their ruling shall be final."

t. Back Priming: All plaster and wood surfaces that will not be exposed to view shall be painted the same as the first coat of finish specified, except gypsum board.

u. Multiple colors: Classrooms will have two colors selected for each room. Colors will be designated for the entire wall. There will be no accent strips.

v. Exterior Painting: Painter shall allow for three (3) color selections, plus the school colors for exterior painting and trim colors.

3.02 SPECIAL REQUIREMENTS

a. All products listed are those of Dunn-Edwards Paints and are specified solely for the purpose of establishing a quality standard.

b. EXTERIOR WORK:

(1) Play court and Traffic Marking: (Total of 1 coat)

1st coat: Zone Marking Paint (VSZM10) Traffic Marking Paint - 2" wide lines, 3" wide for all accessibility markings (or of width as noted on drawings) Use color equal to Federal Specification 595 B No. 15090 for all accessibility markings. Color as indicated on drawings. **DO NOT APPLY UNLESS ASPHALT IS PROPERLY CURED AND COMPLETELY CLEAN.**

c. Cleaning and Touch Up:

(1)Carefully remove all spattering and traces of paint materials from the work of others; from glass, plumbing fixtures and trim, hardware, tile surfaces, floor covering, etc., and make good all damages thereto that may be caused by such materials or cleaning. Likewise, make a detailed inspection of all painting work and touch up or refinish satisfactorily all abraded, stained or otherwise disfigured portions thereof, as required to produce a first-class job.

(2) Upon completion of the work herein before specified, remove all unused materials and implements of service, rubbish and debris resulting from the paint work and leave the entire building and premises, insofar as the work of this section is concerned, neat, clean and as approved by the Architect.

d. Guarantee: All work executed under this Section of the Specifications will be free from defects of materials and workmanship for a period of one (1) year from the date of final acceptance of this work.

e. Extra Stock - Upon completion of the work of this Section, deliver to the Owner additional stock equaling 1 percent, but not less than a full unopened container of each color, type and gloss of paint used.

END OF SECTION
08/01/2022

SIGNS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include all labor, materials, appliances, equipment, and transportation in connection with furnishing and installing of all plastic identifying devices, complete, as shown on the drawings and specified herein.

1.02 RELATED WORK

a. Installation of signs is specified under Finish Carpentry Section, 06 20 00.

b. Painted Signage is specified under Section 09 91 00.

PART 2 PRODUCTS

2.01 APPROVED MANUFACTURERS

a. ADA Sign Depot, Inc.
b. Mohawk Sign Systems-Photo Graphic Image Series
c. Vomar Products, Inc.
d. ASI Sign Systems

2.02 PRODUCT REQUIREMENTS

a. All signs shall be single-faced and shall be unframed, for flush mounting. Type style shall be Helvetica Medium. All signs shall have photo-graphic or digital image. Except for Photo-Graphic/Digital Image Series and Exterior accessible site signage all other signs shall be of color selected by Architect from standard manufacturers color palette.

b. All signs shall meet the following requirements:
    1. Contain at least 60% renewable paper resources
    2. Contain 3 to 5% pre-consumer recycled content
    3. Suppliers must implement SFI standards
    4. Certified GREENGUARD® Indoor Air Quality
    5. Low emitting and non-toxic materials
    6. Contain No-urea-formaldehyde resins
    7’ No glues or chemical bonding agents

c. Signs shall be NEMA Class A fire rated “self-extinguishing”

d. Raised And Braille Characters And Pictorial Symbol Signage: Letters and numerals shall be raised 1/32 in., uppercase, Sans Serif or simple Serif type and shall be accompanied with Grade 2 Braille. Raised characters shall be at least 5/8 in. high but no higher than 2 in. Pictograms shall be accompanied by the equivalent verbal description placed directly below the pictogram. The border dimension of the pictogram shall be 6-in. minimum in height.

e. Finish and Contrast: characters and their background shall have a non-glare finish. Characters shall contrast with either light characters on dark background of dark characters on a light background. 11B-703.5.1

f. Character Proportions: characters shall be selected from fonts where the width of the uppercase letter 'O' is 60 percent minimum and 110 percent maximum of the height of the uppercase letter 'I'. 11B-703.2.4.

All letters measured must be uppercase. After choosing a typestyle to test, begin by printing the letters **I, X,** and **O** at 1 inch high. Place the template's 1:1 square over the **X** or **O**, whichever is narrower. If the character is not wider than 1 inch, nor narrower than the 3:5 rectangle, the proportions are correct. Use the 1:5 rectangle to determine if the stroke of the **I** is too broad, and the 1:10 rectangle to see if it is too narrow. If all the tests are passed, the typestyle is compliant with proportion code.

g. Braille shall be contracted (grade 2). Braille dots shall have a domed or rounded shape. Dot base diameter shall be 0.059 (1.5mm) to 0.063 (1.6mm). Distance between two dots in the same cell shall be 0.100 (2.5mm). Distance between corresponding dots in adjacent cells shall be 0.300 (7.6mm). Dot height of 0.025 (0.6mm) to 0.037 (0.9mm). Distance between corresponding dots from on cell directly below is 0.395 (10mm) to 0.400 (10.2mm). Table 11B-703.3.1 braille shall be positioned below the corresponding text in a horizontal format, flush left or centered. If text is multi-lined, braille shall be placed below. The entire text. Braille shall be separated 3/8 inch (9.5mm) minimum and 1/2 inch (12.7mm) maximum from any other tactile characters and 7/8 inch (9.5mm) minimum from raised borders and decorative elements. 11B-703.3.2.

Recommend Rounded or domed California Braille dots, each distinct and separate. Dots with straight sides and flat tops are not readable for many Braille users.

PART 3 EXECUTION

3.01 INSTALLATION

a. Identification devices herein specified shall be installed under the Carpentry Section, in accordance with the drawings and as directed by the Architect. Tactile sign mounting height shall be located 48 inches (1219mm) minimum above the finish floor measured from the baseline of the lowest braille cells and 60 inches (1524mm) maximum above the finish floor, measured from the baseline of the highest line of raised characters. 11B-703.4.1.

b. Mount all single faced signs on wall surfaces by applying a contact adhesive, as manufactured by Weldwood, or an approved equal, to both the sign back and mounting surface, in accordance with adhesive manufacturer's recommendations.

3.02 SCHEDULE Site Accessibility and Restroom Accessibility signage to be ADA Sign Depot or equal. **Provide additional raised lettered and Braille signs adjacent to all doors in accordance with the requirements of the American Disability Act (ADA).**

a. SITE:

Van Access Accessible 12"x24" (PAR-1006)
Accessible Parking-Non-Van 12"x24" (PAR-1005)
Parking Entrance 12"x24" (PAR-1027)
Directional Arrow w/HC Symbol 12"x12" (PAR-1007)

b. BUILDINGS:

Accessible Symbol Entrance Sign 6”x6” (ADA 1001)

Restrooms-

Girls/Women’s Door Sign 12” Dia. (T24-1004)

Girls/Women’s ADA Wall Sign 6”x8” (ADA-1024)

Boys/Men’s Door Sign 12” Triangle (T24-1005)

Boys/Men’s ADA Wall Sign 6”x8” (ADA-1025)

Unisex Door-mounted Sign 12” Dia/Tri (T24-1014)

Unisex Wall-mounted Sign 6”x8” (ADA-1022)

Classrooms

Room Exist sign 5”x3” (ADA-1002)

Room Identification Sign 8”x4” (ADA-1208)

Custodian

Room Identification Sign 8”x4” (ADA-1208)

Note: Contractor to verify exact Room Identification with District prior to fabrication.

END OF SECTION
10/19/2023

ELECTRICAL SCOPE & GENERAL REQUIREMENTS

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. All work under Section 26 01 00, Electrical Scope and General Requirements Specifications, are subject to the General, Supplementary, Special Conditions and other Division I Specification Sections preceding this section. This Contractor will be responsible for and govern by all requirements. Drawings indicate the general arrangement of the electrical layout and work included. The Contractor will follow Drawings in laying-out and checking of Drawings of other trades to verify locations and spaces in which work will be installed.

1.02 SCOPE

A. This portion of the work includes furnishing of all labor and materials necessary for a complete wiring system to outlets and all equipment shown on the Drawings or covered by this section of the Specifications. In general, the work includes the following:

1. Complete system of branch circuit wiring and equipment including all wiring devices and plates on all outlets.

2. A new lighting fixture system complete with lamps as shown on Plans including all appurtenances as required.

3. Raceways, wiring, fused disconnect switches, etc., for equipment covered by other sections of these Specifications.

4. All hangers, anchors, sleeves, chases and supports for fixtures, electrical equipment and materials including earthquake bracing.

5. All disconnection and removal of existing electrical facilities not to be reused.

6. Include payment of all required insurances, electrical permits, fees and taxes unless specifically shown "BY OTHERS".

1.03 SITE VISITATIONS

A. The Contractor will carefully examine the site and existing buildings, compare the Drawings with the existing electrical installations and thoroughly familiarize himself with all existing conditions within the scope of this work. By the act of submitting a bid, the Contractor will be deemed to have made such examination, accepted such conditions and to have made allowance in preparing his figure.

1.04 RULES AND REGULATIONS

A. All work and materials shall be in full accordance with the latest rules and regulations of the following:

1. California Electric Code, 2022 Edition
2. California Building, Mechanical and Plumbing Codes
3. California Code of Regulations
4. California State Fire Marshal Rules

B. Before the Final Certificate of Payment will be issued, the Contractor shall deliver to the Owner all Certificates, Permits, Record Drawings and Instructions/Parts Manuals.

C. Nothing in these Plans and Specifications is to be construed to permit work <u>not</u> conforming to these codes.

1.05 MATERIALS AND SUBSTITUTIONS

A. All equipment and materials shall be new and UL (Underwriters Laboratories) approved and of the best quality. When specific trade names are used in connection with materials they are mentioned as standards but, this implies no right upon the part of the Contractor to substitute other materials or methods without <u>prior</u> approval.

B. When approval is given for use of equipment differing from that shown on the Drawings regarding foundations, space of piping, duct work, wiring, insulation, etc., changes required to accommodate such differences shall be accomplished at <u>no cost to the Owner</u>.

C. This Contractor shall order equipment in a timely manner to prevent any delays in the construction schedule and he shall bear any penalty by vendors to meet schedules.

D. <u>Submittals:</u>

1. Shop Drawings and Product Data: Within ten days after an award of this contract, but prior to manufacture or installation of any equipment, prepare complete Shop Drawings and Brochures for materials/equipment as required by each section of the Specification. Submit eight complete sets for review.

2. Prior to submission of the Shop Drawings and Project Data review and certify that they meet the Contract Documents and conform to existing field conditions. Field verify installation methods, voltage requirements and coordinate with other trades.

3. Verify all dimensional information to ensure proper clearance installation of equipment. Check all materials and equipment after arrival on the jobsite and verify compliance with the Contract Documents. A minimum period of two weeks, exclusive of transmittal time, will be required each time Shop Drawings and/or Brochures are submitted or resubmitted for review. This time shall be considered by the Contractor when scheduling a submittal date.

4. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein or deviations from the Contract Documents requirements. It shall be clearly understood that noting of some errors, but overlooking others, does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.

5. Certifications shall be written or in the form of rubber stamp impressions as follows:

> I hereby certify that these Shop Drawings and/or Brochures have been checked prior to submittal, and that it complies in all respects with the requirements of the Contract Drawings, Specifications, and existing field conditions for this project.
>
> (Name of Contractor)
>
> _____
>
> Signed _____
>
> Title _____Date _____

6. Observe the following rules when submitting the Shop Drawings or Brochures:

   a) Each Shop Drawing shall indicate in the lower right-hand corner and each brochure shall indicate on the front cover the following:
      1) Title of the sheet or brochure
      2) Name and location of the building
      3) Names of the Architect
      4) Name of the Electrical Engineer
      5) Name of Contractor
      6) Subcontractor's Manufacturer, Supplier and Vendor
      7) Date of submittal
      8) Date of correction and revision.

7. Unless the above information is included, the submittal will be returned for resubmittal.

8. Shop Drawings shall be done in legible scale and shall contain sufficient plans, elevations, sections and isometrics clearly describing the equipment or apparatus and the Engineer/ Draftsmen skilled in this type of work. Shop Drawings shall be drawn to at least 1/4" = 1'-0" scale.

9. The manufacturers shall publish brochures to be submitted which contain complete and detailed engineering and dimensional information. Brochures submitted shall contain only information relevant to the particular equipment or materials to be furnished. The Contractor shall not submit catalogs that describe several different items in addition to those items to be used unless all irrelevant information is marked out or unless each manufacturer is identified and submitted separately.

1.06 GENERAL COORDINATION

A. The Drawings indicate diagrammatically the desired location or arrangement of conduit runs, outlets, equipment, etc., and are to be followed as closely as possible. It shall be the Contractor's responsibility to verify and coordinate the location of all outlets and raceways with other trades.

1.07 CUTTING, PATCHING AND MATCHING

A. This Contractor shall do all cutting required for the proper installation of his work and shall repair any damage done by himself or his workmen. The Contractor shall coordinate with that of other parties.

B. Wherever possible, work shall be done in a concealed and neat workmanlike manner requiring the least amount of cutting of studs, plates and woodwork. Such cutting or notching is allowed only after consultation with and by permission of the Engineer.

C. All patching shall be of the same materials, workmanship and finish as existing and shall accurately match all surrounding work. All work shall be done under the Architect's instructions and when required by the trade that did the original work.

1.08 INTERPRETATION OF Drawings AND Specification

A. The Engineer's decision will be final on interpretation of the Drawings and Specifications. Whenever the words "AS MAY BE DIRECTED", "SUITABLE" or "APPROVED EQUAL" or other words of similar intent and meaning are used inferring that judgment is to be exercised, it is understood that it is the judgment of the Engineer referred to.

1.09 CLEANING OF EQUIPMENT, MATERIALS AND PREMISES

A. All electrical equipment shall be thoroughly cleaned of dirt, rust, cement, plaster, etc., and all cracks and corners scraped out clean. Surfaces to be painted shall be carefully cleaned of grease and oil spots and left smooth and clean and in proper condition to receive paint finish.

1.10 RECORD Drawings

A. At the beginning of the project, one full-sized print of each applicable Drawing will be issued to the Contractor for use in preparing Record Drawings. "RECORD" conditions shall be recorded on the prints as the project progresses. Upon completion of the work, the Contractor shall forward it to the Architects' Office after first securing the Inspector's verification by signature.

1.11 EARTHQUAKE RESTRAINT

A. All electrical equipment shall have a means to prohibit excessive motion during an earthquake.

1.12 IDENTIFICATION

A. <u>Conductors:</u>

1. All power and signal conductors shall be identified in accordance with the following schedule:

a) 120/208 Volts, 3-phase, 4-wire Wye: Red-Black-Blue, Neutral White.

b) 277/480 Volts, 3-phase, 4-wire Wye: Brown-Orange-yellow, Neutral Grey.

c) Bond or grounding conductor (GWG): Green

d) Special system conductors shall be color coded and labeled

2. Brady Labels shall be used to identify terminals and destination of feeders, branch circuits, signal and control circuits, etc., at all terminations and junction boxes and shall be coordinated with the nameplates in all boxes and equipment.

3. All terminals in the switchboards, panels, relays, switches, devices, starter terminals, etc., shall have Brady Labels for identification to identify both ends

of all wiring. Wires #8 and smaller to be terminated on terminal strips squared-type 9080K with white marking strip and screw lugs for wire size.

B. Nameplates: The Contractor shall furnish and install 1" x 3" x 3/32" thick laminated black Bakelite nameplates with a white core, unless specifically shown as red with a white core, engraved to produce white letters on black background for all items of electrical equipment including 2-pole and 3-pole circuit breakers, panelboards, starters, relays, time switches and disconnect switches. They shall screw them in place.

C. Panels: Panels having single-pole circuit breakers shall be provided with typed schedules mounted in welded metal holders behind plastic.

D. Devices: All devices shall have their branch circuit identified on the back side of device plate with a permanent type black marker, i.e., CT A-21.

1.13 MECHANICAL AND OTHER SPECIAL EQUIPMENT

A. Mechanical Coordination: PRIOR to commencing construction, this Contractor shall arrange a conference with the Mechanical/Plumbing Contractors and equipment suppliers to verify type, sizes, locations, requirements, controls and diagrams of all equipment furnished by them. In writing, he shall inform the Electrical Engineer that all phases of coordination of this equipment have been covered. If any unusual conditions or problems, they are to be enumerated them at this time.

B. Mechanical Wiring: All electrical line voltage wiring, fused disconnects and conduits shall be furnished and installed by this Contractor unless otherwise shown.

C. Miscellaneous Equipment: Contractor shall be responsible for electrical hook-up and connection to all electrical equipment whether furnished by this Contractor or others. This includes all special mechanical equipment and equipment furnished by the Mechanical Contractor.

1.14 GUARANTEE

A. This Contractor agrees to replace or repair to the satisfaction of the Owner, any part of the installation that may fail due to defective material and/or workmanship, or failure to follow Plans and Specifications for one year after final acceptance. He shall further obtain from the manufacturers of special equipment (i.e., control systems) their respective guarantees and service manuals and deliver to Owner.

PART 2 PRODUCTS

2.01 RACEWAYS

A. Unless specifically shown otherwise, this Contractor shall furnish and install a complete steel conduit system for all wiring, including control and signal wiring.

B. All conduits shall be rigid threaded hot dipped galvanized type.

C. All conduits installed underground shall have a minimum coverage of 1'-6" below finished grade and shall have a 4" concrete envelope.

D. Steel conduit Joints shall be sealed with conductive pipe compound T & B Kopr-Shield before making up.

E. Steel conduits installed below grade shall be wrapped with Minnesota Mining Company Scotch Wrap #51 using half-lap for double thickness. Conduit surfaces shall be clean and dry before wrapping.

F. Minimum size for lighting, power and signal shall be a 3/4" conduit.

G. Steel EMT sizes 4" and smaller may be used within hollow dry spaces of the building, and shall not be run exposed below 8' above a finished floor.

H. All raceway fittings, locknuts, couplings, elbows, etc., shall be hot dipped galvanized steel finish with plastic throats or bushings. No cast-type fittings shall be used.

I. Seal-type flexible conduit shall be used in lengths not greater than 18" at motors and other machinery to prevent the transmission of vibration. All flexible conduits shall have a copper bond wire either integral or pulled in. Flexible conduit shall be supported at both ends and every 24".

J. All conduit fittings, locknuts, couplings, elbows, etc., shall be hot dipped galvanized finish with plastic bushings. No competitive type fittings shall be used.

K. Non-Metallic Conduit.

1. Rigid non-metallic PVC, UL Labeled conduit with factory ells and fittings approved for the purpose may be used under the following conditions:
   a) Where the voltage is 600 Volts or less.
   b) All conduits in earth under buildings or protected by permanent paving may be Schedule 40 PVC.
   c) Any conduit running through planters or unprotected in earth shall be encased in 3" of concrete. All raceways above grade shall be steel.

d) All non-metallic runs shall have a bond wire for the interconnection of all conducting portions per Table 250-94 of the California Electric Code (CEC).

e) Use factory elbows. PVC shall not be bent in the field.

2.02 CONDUCTORS

A. All conductors shall be delivered to the site in their original unbroken packages plainly marked or tagged as follows: UL Labels, size, kind and insulation of wire, name of the manufacturing company and trade name of the wire.

B. All conductors to be a minimum of 98% conductivity soft drawn copper, minimum #12 AWG unless shown otherwise. Conductors #8 and larger shall be stranded type "THHN/THWN" 600 Volt insulation. Conductors #10 and smaller shall be solid copper "THHN/THWN".

C. All branch circuits, fixture wiring joints, splices and taps for conductors #10 and smaller to be made with "SCOTCHLOCK" connectors.

D. Two bolt type solderless connectors or T & B "color keyed“ compression lugs shall be used on #8 and larger conductors.

2.03 WIRING DEVICES

A. Furnish and install wiring devices and plates as shown on the Drawings and described in these Specifications. Where more than one wiring device is mounted in the same location, such devices shall be mounted in a multi-gang plate. Single-gang combination interchangeable devices shall not be used. Wiring devices shall be Specification grade or better.

B. Convenience outlets shall consist of a Specification grade duplex receptacle mounted in an outlet box in the wall flush with the finished plaster or surface rated 20 AMPS, 125 Volts, 3-wire, back and side wired.

C. Local switches shall be quiet toggle-type, totally enclosed, AC rated ,20 AMPS, 120/277 Volt.

D. Device plates shall be provided for all devices with the number of gangs and openings necessary. They shall be satin brushed stainless steel in toilets and kitchens with plastic to match devices in other finished areas.

2.04 OUTLET BOXES

A. Outlet boxes for concealed work shall be one piece pressed steel knock out type with zinc or cadmium coating. Boxes shall not be smaller than 4" square nominal size unless otherwise indicated. Provide extension rings, plaster rings and covers necessary for flush finish.

B. Bar hangers shall be used to support outlet boxes in stud or furred partitions and ceilings. Attachment screws, devices, etc., shall be of the proper type to secure boxes to metal studs. Use expansion shields to concrete and masonry.

C. Provide approved knock-out seals on all unused open knock-out holes. Where used for lighting fixtures outlet boxes shall be equipped with fixture studs.

2.05 DISCONNECTING DEVICES

A. Disconnecting devices shall be provided as shown or as required by NEC. Switches shall be motor rated and in proper NEMA enclosure.

1. Motors 1/3 HP and less: Switches shall be of the toggle-type quick make and break rated 2 HP, 250 Volts AC with the number of poles required provided with flush mounting wall plates or in suitable surface mounting NEMA enclosures.

2. Motors ½ HP and larger: Disconnecting switches shall be Type HD fused 3-pole, 600 Volts in proper NEMA enclosures with proper size FRN fuses. Provide three spare fuses of each type to the Owner.

B. Circuit breakers utilized as disconnecting devices shall comply with the requirements stated in other articles of this section and NEC.

2.06 PULL BOXES AND WIREWAYS

A. Pull and junction boxes shall be installed as shown to ease the pulling of wire and to comply with NEC requirements.

B. Wireways to be constructed in accordance with UL 870 for wireways, auxiliary gutters and associated fittings. Every component including lengths, connectors and fittings shall be UL listed.

2.07 TERMINAL CABINETS AND CLOSETS

A. Cabinets and fronts shall be in accordance with NEMA Standard Publication No. PB1-1971 and UL Standards No. 67. Fronts shall include doors and have flush brushed stainless steel cylinder tumbler-type locks with catches and spring loaded door pulls. The flush lock shall not protrude beyond the front of the door. All locks shall be keyed like the panelboard locks. Fronts shall have adjustable indicating trim clamps completely concealed when the doors are closed. Doors shall be mounted by completely concealed steel hinges. Fronts shall not be removable with the door in the locked position. A frame and card with a clear plastic covering shall be provided on the inside of the door. Fronts shall be of code gauge full finished steel with rust inhibiting primer and bake enamel finish.

2.08 PANELBOARDS

A. Furnish panelboards shown on Plans and described herein. All cans shall be a minimum of 20" wide and 5.75" deep unless otherwise shown. They shall be totally flat or equal with flush keyed locks.

B. Panelboards shall be UL listed.

C. Breakers for switching lights shall be rated for switching duty.

D. Fronts shall be sheet steel painted standard gray over a rust inhibitor. They shall be equipped with a door, flush hinges, flush proper cylinder tumbler lock; metal circuit card holder and quarter turn adjustable trim clamps.

E. The panel shall consist of reinforced galvanized sheet steel frame with copper bus bars and circuit breakers properly supported to prevent vibration breakage in handling. All terminals shall be solderless type suitable for specified conductors of size indication. Bus bars shall be sequence phased.

F. Branch circuit breakers shall be "bolt-on" and fully interchangeable without disturbing adjacent units. All 2 and 3-pole breakers shall have common trips with a minimum IC of 10,000 AIC.

G. All breakers applying fluorescent or HID fixtures shall have padlock handle lock-off devices.

H. All spaces shall have hardware.

I. Provide separate blocks for neutrals and grounds as required.

PART 3 EXECUTION

3.01 INSTALLATION

A. The layout and installation of electrical work shall be coordinated with the overall construction schedule to prevent delay in completion of the project.

B. Dimensions and information regarding accurate locations of equipment and structural limitations and finish shall be verified with other sections.

C. The Drawings do not show all the offsets, bends, special fittings or junction pull boxes necessary to meet job conditions and shall be provided as required.

D. Electrical equipment, outlets, junction and pull boxes shall be installed in accessible locations, avoiding obstructions, preserving headroom and keeping openings and passageways clear.

E. Minor adjustments in the locations of equipment shall be made where necessary providing such adjustments do not adversely affect function of the equipment. Major adjustments for the location of equipment shall be previously approved and detailed on the Record Drawings.

3.02 STRUCTURAL FITTINGS

A. Furnish and install the necessary sleeves, inserts, hangers, anchor bolts and related structural items. Install at the proper time.

3.03 NOISE CONTROL

A. Outlet boxes at opposite sides of partitions shall not be placed back-to-back, nor shall through boxes be employed except where specifically permitted on the Drawings by note to minimize transmission of noise between occupied spaces.

B. Ballasts, contactors, starters and like equipment that are noticeably noisier than other similar equipment on the project will be deemed defective and shall be replaced at Engineer's request.

3.04 RACEWAYS AND FITTINGS

A. Surface raceways shall be coordinated with cabinet work. It shall be installed plumb and square with adjacent surfaces.

B. Minimum size of any conduit for lighting, power and signal shall be 3/4" conduit unless shown otherwise.

C. Furnish and install "seal-offs" in all conduit runs through areas of different temperature.

D. Where applicable, wiring methods shall be in accordance with requirements for installation in damp and/or hazardous areas.

E. All concealed conduits shall be installed in as direct a line as possible between outlets. EMT shall be approved for dry locations with steel plastic bushed set screw fittings. No more than four quarter bends or their equivalent will be allowed between outlets. Feeder conduits shall follow arrangements shown on plans unless a change is authorized. Branch circuit conduits shall in general follow arrangement as shown as far as structural conditions permit. All exposed runs shall parallel buildings, walls or partitions and be supported on Kindorf Hangers to meet Title 24, Part 6, CAC.

F. In general, all conduits shall be sloping to drain. Bends that place a trap in a conduit shall be avoided. Provide drip fitting as required. Dux-Seal high ends of all underground raceways.

G. All conduit runs shall be mechanically and electrically continuous from outlet to outlet. Conduit size or type shall not be changed between outlets.

H. Chrome escutcheon plates shall be used on all conduit penetrating walls, floors or ceilings.

I. Expansion joints shall be provided at building expansion joints or as required due to length of run or difference in temperatures.

J. Flexible steel conduits shall be used for short runs not over 24" from motors or other vibrating equipment to junction boxes. Where specifically approved by the Engineer, flexible steel conduit may be used when conditions make the use of other conduit impracticable. Fittings shall be of the screwed wedge type. All flex shall have green copper bond wire. Flex conduits shall be independently suspended.

K. All fittings that are exposed or in damp areas shall have sealing glands and proper gaskets. Fittings in hazardous areas shall be of the type approved for the particular hazard.

L. Roof Penetrations: Where raceways penetrate roofing or similar structural area, provide 26 galvanized iron roof jacks sized to fit tightly to a raceway for a weather-tight seal and with flange extending a minimum of 9" under roofing on all sides. Completely seal openings between inside diameters of roof flashing and outside diameters if penetrating raceways. Coordinate with work required under Roofing Section of the Specifications.

M. Fire Penetration Seals: Seal all penetrations for work of this section through fire rated floors, walls and ceilings to prevent the spread of smoke, fire, toxic gas or water through the penetration either before, during or after the fire. The fire rating of the penetration seal shall be at least that of the floor, wall or ceiling into which it is installed so that the original fire rating of the floor or wall is maintained as required by Article 300-21 of the California Electrical Code (CEC).

N. Where applicable, provide OZ Type CFSF/I and CAFSF/I fire seal fittings for conduit and cable penetrations through concrete and masonry walls, floors, slabs and similar structures. Where applicable, provide 3M fire barrier sealing penetration system and/or Thomas & Bett Flame Safe Fire Stop System and/or ChaseFoam fire stop system including wall wrap, partitions, caps and other accessories as required. All manufacturers' instructions and recommendations for installation of sealing fittings and barrier sealing systems.

3.05 CONDUCTORS AND CONNECTORS

A. All branch circuits and fixture wiring joints, splices and taps for conductors #10 and smaller shall be made with 3M "Scotchlocks" or approved equal.

B. Circuit and signal terminations to single-screw or push-on terminals shall be done with insulated "Sta-Kons" or approved equal terminals.

C. Bolt-type solderless connectors shall be torqued with a torque wrench according to the manufacturer's recommendations then retightened after 24-48 hours before taping. Owners' inspector shall be informed of this procedure during the waiting period and shall witness the act of retightening.

D. All splices shall be taped with Scotch #88 plastic electrical tape with “Scotch Fill” where necessary for a smooth joint. For other than normal temperatures or conditions

Scotch #27 or #2520 shall be used. All connections and splices shall be electrically perfect and in strict accordance with all code requirements.

E. Wire in panels, cabinets, pull boxes and wiring gutters shall be squared, labeled and neatly grouped with "Ty-Raps" and fanned out to the terminals.

F. Wiring Devices: Wiring devices shall be securely fastened to the outlet box. Where the outlet box covers are back from the finished walls, device shall be built out with washers so that it is rigidly held in place to the box. Provide metal extenders in flammable construction per CEC. All device screw slots shall be left in a vertical orientation.

3.06 OUTLET BOXES

A. Outlet boxes for concealed work shall be one steel knock-out type with zinc coating. Boxes shall not be smaller than 4" square nominal size unless otherwise indicated. Provide extension rings, plaster rings and covers necessary for flush finish.

B. Bar hangers shall be used to support outlet boxes in stud or furred partitions and ceilings. Attachment screws, devices, etc., shall be of the proper type to secure boxes to metal studs complemented by expansion shields to concrete and masonry.

C. Provide approved knock-out seals on all unused open knock out holes. Where used for lighting fixtures, outlet boxes shall be equipped with fixture studs.

3.07 JUNCTION AND PULL BOXES AND WIREWAYS

A. Boxes shall be installed square and plumb. An engraved nameplate shall be installed indicating the function of each box on the exterior in unfinished areas and on the interior in finished areas.

B. Install wireways with strip-type connectors with self-retained mounting screws. Use hangers with two-piece hook-together features to permit preassembling of wireway and hanger bottom plate before hanging on a preinstalled upper bracket.

3.08 TERMINAL CABINETS AND CLOSETS

A. Install level and identify per schedule.

B. All conductors shall be squared, labeled and "Ty-Rapped".

C. Location:

1. Unless otherwise indicated on the Drawings, install all panels with the top of the trip 6'-0" above the finished floor.

2. Space permitting, surface mount panels where they are not visible to the public.

3. Panels to have protective cover over any electrical panel with overhead water piping. Cover to be 18" by width of a panel.

D. Directory: Mount a typewritten directory behind glass or plastic in a metal holder welded to the inside of each panel door showing circuit numbers and complete description of all outlets (one each circuit).

3.09 PRECAST CONCRETE PULL BOXES AND MANHOLES

A. Contractor shall provide a minimum of 3-6" of sand base material suitable to receive the manhole. The base material shall be impacted and graded level at proper elevation to receive the manhole in relation to the conduit grade or ground cover requirements as designated in the Plans. Sealants used between the joints of the manhole are at the Contractor's discretion unless otherwise specified. If grout is used it should consist of two-parts plaster sand to one-part cement with sufficient water added to make the grout flow under its own weight.

B. The grout should be poured into a water soaked groove and filled to the top of the groove unless a double amount is to be used as a further precaution against leakage. In this case the mastic sealant should be placed on the two shoulders of the groove. The next section of manhole should be placed while the foaming action is in process. Contractor shall verify grades with the Architect and shall set holes and boxes level at proper grades.

C. All conduits penetrating the pull box shall have seals to prevent water from entering the raceway.

3.10 DISCONNECT DEVICES

A. Disconnect devices shall be identified as to location of the device controlled.

3.11 SUPPORTS AND ANCHORS

A. Provide inserts, anchors, supports, rods, brackets and miscellaneous items to adequately support and secure the electrical systems and equipment.

B. Secure hangers, brackets, conduit straps, supports and electrical equipment to surfaces by means of toggle bolts on hollow masonry; expansion shields and machine screws or standard preset inserts on concrete or masonry; machine screws or bolts on metal surfaces; wood screws on wood construction.

C. Power driven or velocity driven inserts may be not used unless specifically approved by the engineer, and where their use does not affect finished appearance of work.

They may not be used in prestressed slabs, beams, purlins, precast members or in tension.

D. Seismic Requirements: Provide vertical and lateral supporting equipment to resist application of seismic forces per CAC, Title 24.

END OF SECTION 26 01 00

FIRE ALARM SYSTEM

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. The general provisions of the Contract, including General and Supplementary, Special Conditions and General Requirements, apply to the work specified in this Section.

1.02 FIRE ALARM SYSTEM IN GENERAL

A. Contractor shall install and furnish a complete and operational fire evacuation and fully automatic detection system, as well as a signal conductor and raceway system as required in accordance with Title 24, Part 2, Section 907.2.3 and conform to Title 24, Part 3, Article 760. The system shall be monitored by an approved supervising station. The system shall include the following:

1. All equipment, conduit, wire and labor necessary to provide for a complete and operational system as specified herein and shown on the drawings.

2. Contractor shall submit fire alarm system shop drawings to the Engineer for approval **PRIOR** to installation.

B. All materials, wiring and equipment shall be furnished and installed in strict compliance with the preceding sections and all applicable requirements of:

1. Local fire authority having jurisdiction

2. California Electrical Code (CEC), 2022 Edition

3. National Fire Protection Association Standard 72

4. Manufacturer of the fire alarm system

5. Underwriters' Laboratories, Inc.

6. California State Fire Marshal

7. California Fire Code, 2022 Edition

1.03 FIRE ALARM SYSTEM MANUFACTURER REQUIREMENTS

A. The manufacturer of the fire control system shall submit as part of his construction submittals:

1. Factory component technical detail showing full compliance with function as specified.

2. Factory calculations for all power requirements for specified system, including standby power, all certified in writing by the manufacturer's engineer in charge of the project.

3. Manufacturer's certification that it maintains an office within 50 miles of the project, and that it maintains sufficient spare parts and personnel at that location to ensure the Owner of a continually maintained and serviced system.

4. List of factory personnel responsible for jobsite installation and supervision of the system who shall be available as required by the Contractor, Engineer, Architect or Owner.

5. **WRITTEN CERTIFICATION** that all component parts to be used in this system are of his manufacturer, or are California State Fire Marshal listed and to be used for the purposes intended.

6. At the completion of the manufacturer's installation of the system to the contractor's wire backbox and appurtenances, he shall:

a) Provide the Engineer with five (5) copies of his final system report which shall be on the manufacturer's standard forms provided by him and contain the following information:

1) Serial numbers and location of all major components.

2) Testing information verifying all annunciation devices and signaling function are as specified and required.

3) Provide the Engineer their copies of his factory logo's Record Drawings of the system, including final labeling, color coding and locations for all devices in the system.

4) Manufacturer's final tests shall be in the presence of the Engineer and Owner, or his representatives, as well as the authorities having jurisdiction.

1.04 OPERATING INSTRUCTION, WARRANTY AND SERVICE

A. The manufacturer shall provide a qualified representative to instruct the Owner, or his representative, in the operation of the system.

B. This contractor and the manufacturer shall warranty the systems for a period of one (1) year from the date of acceptance by the Owner. Emergency repair and/or replacement of manufacturer provided equipment for the system shall be accomplished by this contractor, at **NO** additional cost to the Owner as long as such repair and/or replacement occurs during the warranty period, and is directly or indirectly caused by faulty workmanship or defect of material installed. Upon completion of the installation of the Fire Protective Signaling equipment, a satisfactory test of the entire system shall be made in the presence of the enforcing agency.

1.05 FIRE ALARM SYSTEM OPERATION

A. Activation of any alarm initiating device shall:

1. Activate fire alarm audible and visible devices.

2. Transmit the alarm condition to an approved remote receiving station.

3. Report alarm condition and zone on LCD displays of the main fire alarm control panel and remote annunciators.

END OF SECTION 28 31 11

DPG

Engineering Inc.

FIRE ALARM SUBMITTAL

FRANKLIN ELEMENTARY SCHOOL
FOUR (4) MODULAR CLASSROOMS
2400 TRUXTUN AVENUE
FOR
BAKERSFIELD CITY SCHOOL DISTRICT
BAKERSFIELD, KERN COUNTY, CALIFORNIA 93301

6702 N. Cedar Ave. Suite 205 Fresno, Ca. 93710 ♦ tel 559.276.5144 fax 559.900.4929 ♦ davor@dpgengineering.com

FIRE ALARM SYMBOL SCHEDULE

SYMBOL	NAME	DESCRIPTION	CSFM #
(E) ———	EXISTING ITEM		
U.O.N. ———	UNLESS OTHERWISE NOTED		
— — — ——	WIRING UNDERGROUND OR IN WALL	3/4"C MIN U.O.N.	
— · · — ——	EXISTING CONDUIT TO REMAIN		
FACP ——	(E) FIRE ALARM CONTROL PANEL	HOCHIKI # LATITUDE LA203K2-10	7165-0410:0506
FATC ——	FIRE ALARM TERMINAL CABINET	-	-
EVAC ——	(E) FIRE ALARM VOICE EVACUATION	HOCHIKI # EVAX-50	6911-0410::0176
A ———	ATTIC HEAT DETECTOR WITH BASE	HOCHIKI #ATJ-EA BASE #YBN-NSA-47	7270-0410:0203 7300-0410:0132
———	PHOTOELECTRIC SMOKE DETECTOR WITH BASE	HOCHIKI #ALO-V BASE #YBA-NSA-47	7272-0410:0510 7300-0410:0132
xW C(MC)cd ——	F.A. SPEAKER / STROBE. (CEILING MTD.) xW = WATTAGE C = CEILING MOUNTED, (MC)cd= MULTI-CANDELA SETTINGS	HOCHIKI #HSSPKCLPW (SEE PLANS FOR SETTINGS)	7320-0410:0194
S xW ——	FIRE ALARM EXTERIOR SPEAKER. (WALL MTD.) xW = WATTAGE	GENTEX #WSSPKR (SEE PLANS FOR SETTINGS)	7320-0569:0141
———	END-OF-LINE RESISTOR	PER MANUFACTURER SPECIFICATION	

FireNET L@TITUDE - ANALOG ADDRESSABLE FIRE ALARM CONTROL PANEL



DESCRIPTION

The all new L@titude product range of fire alarm control equipment combines the very latest hardware and software to produce a control and indication system, which is powerful and sophisticated, yet simple to use and understand. The flexibility of the L@titude platform is such that it can be re-configured to realize many other control and indication applications, with direct integration into intelligent buildings.

Moving away from the simple, price driven competitive model used by most manufacturers today, the L@titude concept is designed to add value to System Designers, Integrators, Service Providers, and end users. Developed from the “ground up” and using some of the most advanced technology available, L@titude is designed as one of the most powerful, intelligent, and technically robust fire alarm products available.

Not only do the products and services offered under the L@titude brand provide solutions to the most technically challenging applications in life safety, L@titude will deliver added value, market advantage, and a competitive edge to your business.

PRODUCT LISTINGS

FM APPROVED
Manufactured by Kentec Electronics Ltd. Dartford, DA11JQ, United Kingdom

California State Fire Marshal
7165-0410:0506

STANDARD FEATURES

- UL Listed (10th Edition), FM and CSFM Approved
- 2 to 8 loop or 2 to 16 loop versions
- 400mA loop current
- Programmable NACs; 4 Class B or 2 Class A, all with internal synchronization
- 5.25 A or 10.25 A power supply options
- 3 programmable inputs and 5 programmable relay outputs
- 7 inch, full-color resistive touch screen with intuitive user interface
- Up to 24 programmable soft “function keys”
- Up to 64 user login accounts
- Hard-wired fire and trouble routing inputs and outputs
- Modular and expandable electronics
- 400 subaddress points per loop (800 per loop module)
- Option to “invert” inputs and outputs
- 5,000 programmable cause and effects; over 50,000 inputs and outputs
- Can be networked with programmable functionality
- Programming via USB port to PC or memory stick
- L@ti-View Graphical PC User Interface - coming soon!

Specifications subject to change without notice.

Hochiki America Corporation
7051 Village Drive, Suite 100, Buena Park, CA 90621-2268
Phone: 714-522-2246 Fax: 714-522-2268
Technical Support: 800-845-6692 or technicalsupport@hochiki.com

ISO 9001:2015 CERTIFIED

FireNET L@TITUDE - ANALOG ADDRESSABLE FIRE ALARM CONTROL PANEL

Single Aperture

Double Aperture
Includes Zone LED Module and Printer

Optional Panel Peripherals

• Dual Loop Panel Module (S758)
The Dual Loop Panel Module monitors loop device status and provides status to the panel processor. It holds device configurations and operates in a standalone manner when catastrophic failures occur.

• 16 Channel I/O Interface Card (K6006)
The 16 Channel I/O Interface enhances the versatility of the alarm system by providing additional input and output capabilities to the L@titude Fire Alarm Control Panel. Inputs or outputs can be selected for up to 16 individual channels, and are configured in the same way as devices connected to addressable loops of the panel. The 16 Channel I/O Interface can be configured to contribute or act upon cause and effect logic.

• Media Gateway™ Panel Module (S788)
The Media Gateway™ Panel Module provides connectivity to monitoring centers using IP (Sur-Gard), or dialup connectivity. The Media Gateway™ may also be used to meet integration application requirements.

• 8 Channel Relay Panel Module (S791)
The 8 Channel Relay Panel Module has 8 voltage-free changeover relay contacts, each of which can be individually programmed. All outputs are configurable in the same way as devices connected to the loops and all may be acted upon by cause and effect logic. These boards are typically used in applications which require more than the five standard relay outputs, such as signaling to other systems or plant control.

• Network Module (S723)
The L@titude Network Module provides enhanced high-speed communication for networking fire control panels. The network provided by this module can support combinations of L@titude Fire Alarm Control Panels and L@titude Vision units. L@titude Fire Alarm Control Panels can receive events from other panels in the network. The Class X networking used in conjunction with the Network Module provides tolerance against open and short circuit trouble conditions.

• Printer (S768)
The L@titude Printer is an optional feature for printing fire system events as they occur. The printer is located on the fascia, below the Zone LEDs (if present). It is a thermal printer and never requires replacement ink. Printing is performed on heat-sensitive paper rolls. A trouble message is reported when the paper runs out. The printer includes a front-loading feature for replacing paper rolls.

• Zone LED Module (S771)
The Zone LED module contains 48 LEDs and is connected to the LCD Main Processor Board of the L@titude Fire Alarm Control Panel. A maximum of three Zone LED modules can be connected to provide the fascia with 144 Zone LED indicators.

• 4 Channel NAC Panel Module (S793)
Additional NAC output capability can be added to by using 4 Channel NAC Modules. These boards have 4 supervised NAC outputs, each of which can be individually programmed. The circuits can be configured for class A or B operation. These circuits can be configured to act upon cause and effect logic.

• 8 Channel Conventional Zone Panel Module (S792)
The 8 Channel Conventional Zone Panel Module has 8 supervised detection circuits (Class B). Each circuit can support up to 20 conventional detectors and approved devices. Individual circuits may be configured for trigger resistor or short circuit activation. These circuits may be used for any of the standard input actions and can be configured to contribute to cause and effect logic. Each pair of circuits (e.g., 1 and 2, 3 and 4, etc.) can be joined to form a single Class A configuration.

• 16 Channel I/O Interface Panel Module (S772)
The 16 Channel I/O Interface Panel Module will provide the same functionality as the 16 Channel I/O Interface Card, with the convenience of a plug-in-module.

FireNET L@TITUDE - ANALOG ADDRESSABLE FIRE ALARM CONTROL PANEL

TECHNICAL SPECIFICATIONS

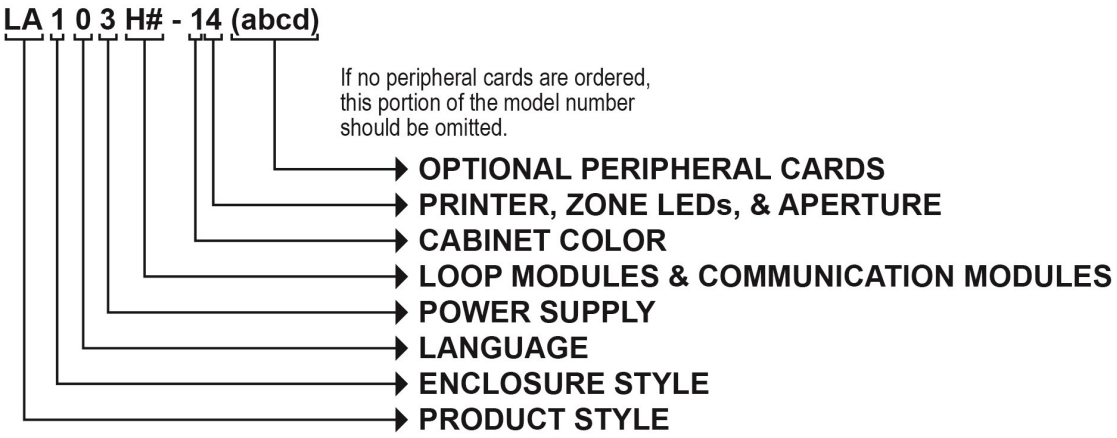
2 to 8 LOOP (4 SLOT) ENCLOSURE	
Size	**Standard Cabinet -** 420mm (W) x 590mm (H) x 153mm (D), or 16.5in (W) x 23.2in (H) x 6in (D) **Deep Cabinet -** 420mm (W) x 590mm (H) x 203mm (D), or 16.5in (W) x 23.2in (H) x 8in (D)
Construction	Mild sheet steel enclosure, 1.5mm, 16 gauge
Cable Entry	**Standard Cabinet -** 28 knockouts top, 19 knockout back, 1 knockout each side, 2 knockout bottom **Deep Cabinet -** 38 knockouts top, 19 knockout back, 1 knockout each side, 2 knockout bottom
Optional Semi-Flush Mounting Kit	Semi-Flush Mounting Collar Kit KM5FCRD - Red KM5FCGY - Gray KM5FCBS - Black
Battery Capacity	**Standard Cabinet** - Up to 28 Ah (Power Sonic PS-12280) **Deep Cabinet** - Up to 40 Ah (Power Sonic PS-12400)
2 to 16 LOOP (8 SLOT) ENCLOSURE	
SIZE	**8 Slot Standard Cabinet -** 540mm (W) x 720mm (H) x 160mm (D), or 21.3in (W) x 28.3in (H) x 6.3in (D) **8 Slot Deep Cabinet -** 540mm (W) x 720mm (H) x 212mm (D), or 21.3in (W) x 28.3in (H) x 8.3in (D)
Construction	Mild sheet steel enclosure, 1.5mm, 16 gauge
Cable Entry	**Standard Cabinet -** 38 knockouts top, 25 knockout back, 2 knockout each side, 2 knockout bottom **Deep Cabinet -** 50 knockouts top, 25 knockout back, 2 knockout each side, 2 knockout bottom
Battery Capacity	**Standard Cabinet** - Up to 28 Ah (Power Sonic PS-12280) **Deep Cabinet** - Up to 40 Ah (Power Sonic PS-12400)
ALL MODELS	
Finish	Epoxy powder coated
Color	Lid & Box - Red, Gray or Black Control Plate - RAL7016
Power supply voltage	120 V AC or 240 V AC
Power supply rating at 24V DC	5.25 A (charges up to 60 Ah) 10.25 A (charges up to 100Ah)
Display	Full color 800 x 480 LCD with resistive touch screen and automatic backlight dimming
Software zones	2,000
Software groups	5,000
Cause and Effects	5,000
Event log	10,000 events, 1 second resolution. Filterable and printable
Detection loops	2 to 16 added 2 at a time (S758 dual loop cards)
Detection loop current	400 milliamps each
AUX 24V Output	2; each rated at 900 mA
NACs	4; each rated at 2.5A (1.3A for System Sensor devices). 4 Class B or 2 Class A
Programmable Relay Outputs	5; 30 V DC 1 Amp
Programmable Inputs	3; designed to be activated by voltage-free contacts
Network Connections	Optional network card provides communication for networking 64 fire control panels
NAC Synchronization	Internal Support of System Sensor, Wheelock, Gentex and Amseco protocols
Printer (OPTIONAL)	40 column, front-loading thermal
Zone LED Indicators (OPTIONAL)	Up to 3 banks of 48 (144) as standard
Maximum Number of Nodes on a Network	64 UL Listed for 64 nodes

ELECTRICAL SPECIFICATIONS

PART NUMBER	MODEL	NAME	STANDBY CURRENT	ALARM CURRENT	NOTES
	See Below	*L@titude Control Panel	.350A	.450A	
	See Below	Vision Annunciator	.341A	.341A	
0101-02710	S408	10.25A Power Supply	.080A	.080A	
0101-02690	S406	5.25A Power Supply	.078A	.078A	
0101-01220	S723	Network Module	.080A	.080A	
0101-01230	S758	Dual Loop Module	.115A	.115A	Figures exclude SLC devices
0101-01280	S788	Media Gateway Module	.114A	.114A	
0101-01250	S791	8-Channel Relay Module	.010A	.160A	Alarm all 8 relays active
0101-01330	S771	Zone LED Module	.005A	.005A	+.003A per active LED
0101-01290	S768	Thermal Printer	.000A	1.500A	

Current draw includes LCD main processor board, main back board, System A board, and System B boards only

FireNET L@TITUDE - ANALOG ADDRESSABLE FIRE ALARM CONTROL PANEL



Panel Options	Valid Entries	Description
Product Style	LA	FireNET L@titude
	LF	FireNET L@titude Vision Repeater
Enclosure Style	1	4 Slot Standard Enclosure
	2	4 Slot Standard Plex-Door Enclosure
	3	4 Slot Deep Enclosure
	4	4 Slot Deep Plex-Door Enclosure
	5	4 Slot Extra Deep Guard Station Enclosure - FUTURE ENHANCEMENT
	6	4 Slot 19" Rack Mount Enclosure - FUTURE ENHANCEMENT
	7	8 Slot Standard Enclosure - 16 Loop
	8	8 Slot Standard Plex-Door Enclosure - 16 Loop
	9	8 Slot Deep Enclosure - 16 Loop
	A	8 Slot Deep Plex-Door Enclosure - 16 Loop
	C	Annunciator
Language	0	English
	1	Portuguese
	2	Spanish
	3	Taiwanese
Power Supply	0	None
	1	5.25 A 120V
	2	5.25 A 240V
	3	10.25 A (auto-voltage sensing)
Loop Modules & Communication Modules	00	Not Fitted
	NC	Network Module only (Network Vision Annunciator)
	H#	2-Loop Panel Module, Hochiki Protocol
	I#	2-Loop Panel Module, Hochiki Protocol, and Media Gateway™
	J#	2-Loop Panel Module, Hochiki Protocol, and Network Module
	K#	2-Loop Panel Module, Hochiki Protocol, Network Module, and Media Gateway™
Cabinet Color	1	■ Red (RAL3002)
	4	■ Gray (BS 00 A 05)
	6	■ Black (RAL9005)
Printer, Zone LEDs & Aperture	0	No Printer / No Zone LEDs
	1	No Printer / No Zone LEDs, Blank 2nd Aperture
	3	Printer / No Zone LEDs
	4	Printer / 48 Zone LEDs
	5	No Printer / 48 Zone LEDs
	6	No Printer / 96 Zone LEDs
	7	No Printer / 144 Zone LEDs
Optional Peripheral Cards	a	16 Channel I/O Panel Module (S772) - FUTURE ENHANCEMENT
	b	8 Channel Relay Panel Module (S791)
	c	8 Channel Conventional Zone Module (S792) - FUTURE ENHANCEMENT
	d	4 Channel NAC Module (S793) - FUTURE ENHANCEMENT

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7165-0410:0506
PARENT LISTING No.:	7165-2298:0500
CATEGORY:	7165 - FIRE ALARM CONTROL UNIT (COMMERCIAL)
LISTEE:	Hochiki America Corporation 7051 Village Drive, Ste. 100, Buena Park, CA, 90621 Contact: Hem, Ravi (800) 403-7029 Email: rhem@hochiki.com
DESIGN:	Model “L@titude” control unit, Model(s) LA followed by 1, 2, 3, 4, 7, 8, 9 or A, followed by 0, 1, 2 or 3, followed by 0, 1, 2 or 3, followed by 00 or H, I, J, or K, followed by 1 through 8, followed by 1, 4 or 6, followed by 0, 1, 3, 4, 5, 6 or 7, and may be optionally followed by 0 and 1 through 8. Analog addressable fire alarm control unit. Local, automatic, manual, auxiliary, remote station, central station, proprietary, waterflow and sprinkler supervisory service. Refer to listee's data sheet for additional detailed product description and operational considerations. System components: S406; Power Supply S408; Power Supply S560; 16 Channel I/O Module S723; Network Module S758; Dual Loop Panel Module S769; System A Panel Module S770; System B Panel Module S771; Zone LED Module S787; Vision Network Annunciator S788; Media Gateway Panel Module
RATING:	120/240 VAC
INSTALLATION:	In accordance with listee's printed installation instructions, NFPA 72, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model/catalog number, electrical rating, and UL label.

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LISTING SERVICE

APPROVAL:	Listed as fire alarm control units suitable for use with separately listed compatible initiating and indicating devices. These control units can generate a distinctive three-pulse Temporal Pattern Fire Alarm Evacuation Signal (for total evacuation) in accordance with NFPA 72, 2016 Edition. This control unit meets the requirements of UL-864, 10th Edition Standard. Refer to manufacturer's Installation Manual for details.
NOTES:	For Fire Alarm Verification Feature (delay of fire alarm signal), the maximum Retard/Reset/Restart period shall not exceed 30 seconds.

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test resultsand/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria.Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 07/21/2025

Listing Expires: 06/30/2026

Authorized By: **Michael Huang** , Program Coordinator
Fire Engineering & Investigations Division

EVAX - 50 Voice Evacuation System

DESCRIPTION

The EVAX 50 operates with any Fire Alarm Control Panel (FACP), and provides 50 Watts of speaker power.

The EVAX 50 includes all necessary features to provide an effective voice evacuation system. With the addition of zone splitters, remote microphone panels, and expander modules, the EVAX 50 can be custom configured to satisfy the needs of most applications.

The EVAX 50 has its own power supply and battery charger. Panel must be wired with 120 VAC and standby batteries connected.

A digital message repeater (DMR) is built into the EVAX 50. The selection of alarm tone and automatic message repeats, as well as the 6 Hour delay of the AC power failure reporting feature are all field configurable.

The paging microphone is an integral component. Removal of the microphone from the panel will cause a "Trouble" condition which will be reported locally, as well as through the FACP.

The EVAX 50 is housed in an attractive surface or semi-flush mounted backbox, with a hinged and key locked door.

STANDARD FEATURES

- Clean dead-front construction
- Digitally recorded automatic voice evacuation (up to 4 minutes of message capacity)
- 50 Watt high efficiency digital amplifier
- 25 or 70 VRMS field selectable
- 120 VAC power supply and battery charger
- Live microphone override of message and tone
- Analog addressable compatible
- High reliability, no maintenance, fully supervised
- Easy installation and operation
- Natural voice sound recordings
- Built-in alarm and alert signals
- Up to 4 minute message capacity
- Works with 12VDC or 24VDC fire alarm panels
- Works with analog/addressable and microprocessor based fire alarm panels
- 3 minute message restart on microphone key
- 24 hour backup with two 12V 7 AHr batteries
- Made in the USA

SPECIFICATIONS	
Primary Power	120VAC @ 0.6A
24 VDC Battery Power;	
Standby	0.130A
Alarm	1.0A
Output	50 Watts @ 25/70 VRMS tone and voice
Backbox Dimensions	14.5"W x 18"H x 4"D
Color	Red/Charcoal Grey

PRODUCT LISTINGS

SIGNALING UL LISTED S5694

California State Fire Marshal 6911-0410:176

Continued on back.

Specifications subject to change without notice

Hochiki America Corporation
7051 Village Drive, Suite 100 Buena Park, CA 90621-2268
Phone: 714/522-2246 Fax: 714/522-2268
Technical Support: 800/845-6692 or technicalsupport@hochiki.com

ENGINEERING SPECIFICATIONS

The voice evacuation system shall be EVAX Systems Series EVAX 50 or approved equal.

The voice evacuation system shall provide 50 watts signal power and 50 watts voice power, and shall be UL listed.

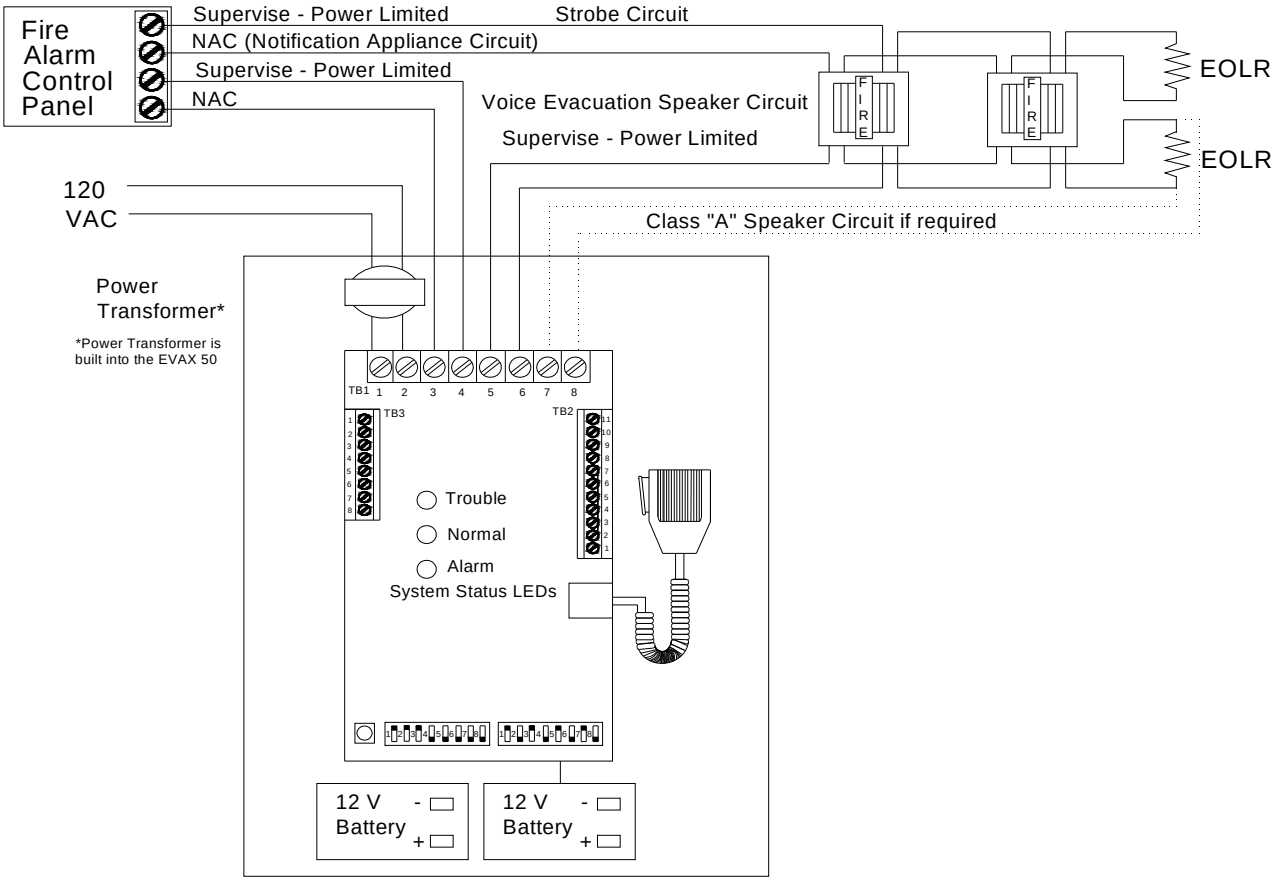
The voice evacuation system shall be micro-processor based, and shall contain an integral microphone, 50 Watt audio amplifier, tone generator, digital message repeater, 120VAC power supply and battery charger.

The voice evacuation message/signal shall be broadcast until the Fire Alarm Control Panel (FACP) is reset, or until fire emergency personnel interrupt the broadcast with a manual page. On reset system shall automatically return to standby (normal operating) condition.

A secondary message shall be provided which can be triggered by the closure of a contact from either the FACP or from any normally open contact device.

Remote paging microphone (s) will be supported by the system through a supervised circuit. Remote microphone (s) can be mounted up to 5000 feet away from the voice evacuation panel.

WIRING DIAGRAMS



ORDERING INFORMATION

Model Number	Description
EVAX 50	50W Voice Evacuation System, with power supply/battery charger, paging microhpne and digital message repeater
EVAX 50/4Z	50W Voice Evacuation System, with 4 speaker zones
EVAX 50/8Z	50W Voice Evacuation System, with 8 speaker zones

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
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FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	6911-0410:0176
PARENT LISTING No.:	6912-1446:0100
CATEGORY:	6912 - VOICE COMMUNICATION ACCESSORIES
LISTEE:	Hochiki America Corporation 7051 Village Drive, Ste. 100, Buena Park, CA, 90621 Contact: Hem, Ravi (800) 403-7029 Email: rhem@hochiki.com
DESIGN:	Models EVAX 25, -25E, -50, -50E, -100, -100E, -150, -150E, -200, -200E audio adjunct system. These units are intended to be used in conjunction with a listed electrically compatible fire alarm control unit to provide voice communication, paging, evacuation tone signals, and voice alarm signals with voice override. Refer to listee's data sheet for detailed product description and operational considerations.
RATING:	Input: 24-32 VAC/DC, Standby: 24 VDC, 7 Ah Battery
INSTALLATION:	In accordance with listee's printed installation instructions, wiring diagram, applicable codes and ordinances and in a manner which is acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, electrical rating, and UL label.
APPROVAL:	Listed as a voice/tone communication/evacuation/relocation/audio adjunct system for use with separately listed electrically compatible fire alarm speakers and control units. Supervision is dependent upon the fire alarm control panel. Refer to the control panel's listing and installation instructions for proper configurations. Suitable for high rise applications when used in conjunction with separately listed fire alarm control units. Refer to listee's Installation Instruction Manual for details.
NOTES:	

8-28-2008 bh

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FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

Date Issued: 07/21/2025

Listing Expires: 06/30/2026

Authorized By: **Michael Huang** , Program Coordinator
Fire Engineering & Investigations Division

ATJ-EA FIXED TEMP/RATE OF RISE HEAT SENSOR

STANDARD FEATURES

- Low profile - only 2.00" high, including base
- Simple and reliable device addressing method
- Uses the noise immune Digital Communication Protocol (DCP), which utilizes interrupts for fast response to fires
- Rate of rise temperature threshold = 15°F/Min (determined by panel)
- Adjustable threshold temperature = 135°F - 190°F (determined by panel)
- UL maximum spacing of 70 feet

SPECIFICATIONS

Operating Voltage	24 - 41 VDC
Standby Current	350µA
Alarm Current	500µA
Transmission Method	DCP - Digital Communication Protocol
Rate of Rise	15° F/Min. (8.3° C/Min.)
UL Temperature Range	135° F to 190° F (57.2° C to 87.8° C)
Operating Temperature Range	14° F to 122° F (-10° C to 50° C)
UL Maximum Spacing	70 feet
Maximum Humidity	95% RH Non-Condensing
Color & Case Material	Bone - ABS blend
Weight	3.2oz (4.9oz. with 4" base)
Bases	YBN-NSA-4, HSB-NSA-6, ASB, SCI-B4, SCI-B6, ASBL

APPLICATION

The Hochiki ATJ-EA Fixed Temperature / Rate of Rise sensors provide accurate temperature measurement data to the fire alarm control panel. These sensors are well-suited for environments where dust, cooking fumes or other factors make the use of smoke sensors impractical.

OPERATION

The ATJ-EA incorporates a highly linear thermistor circuit. The specially designed cover protects the thermistor while allowing maximum air flow. The thermistor circuit produces a voltage proportional to the temperature. This information is transmitted to the control panel as a digital value. When the ambient temperature exceeds a pre-programmed threshold (fixed temp or rate of rise), the sensor transmits an interrupt to the control panel indicating a fire alarm. The fire alarm control panel can adjust the sensor's fixed temperature threshold for different installation requirements.

Up to 127 devices may be installed on each SLC loop. The sensor address may be set by a hand-held programming unit. The sensor mounts to an electronics -free base and incorporates a locking mechanism for security. The base provides mounting slots, terminals for field wiring and a third terminal for a remote indicator/LED. The sensor has dual LEDs for easy viewing of the sensor status.

SENSOR SPACING

Heat sensor spacing shall be in compliance with NFPA 72. The distance between heat sensors shall not exceed their listed spacing **or** all points on the ceiling shall have a sensor within a distance equal to or less than 0.7 times the listed spacing. Heat sensors shall be located within a distance of one-half the listed spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height. For additional instructions see NFPA 72.

PRODUCT LISTINGS

SIGNALING UL LISTED S1383

FM APPROVED 3054858

California State Fire Marshal 7270-0410:0203

Specifications subject to change without notice.

Continued on back.

Hochiki America Corporation
7051 Village Drive, Suite 100, Buena Park, CA 90621-2268
Phone: 714/522-2246 Fax: 714/522-2268
Technical Support: 800-845-6692 or technicalsupport@hochiki.com

ISO 9001:2015 CERTIFIED

ATJ-EA FIXED TEMP/RATE OF RISE HEAT SENSOR

ENGINEERING SPECIFICATIONS

Heat sensors are installed in accordance with NFPA 72, the UL Listed spacing requirements and the rules and regulations set forth by the local authorities having jurisdiction. The contractor shall furnish and install, where indicated on the plans, fixed temp / rate of rise automatic heat sensors.

The heat sensor head and twist lock base needs to be UL Listed compatible with a UL Listed fire alarm control panel.

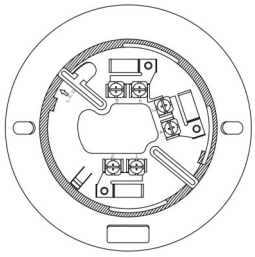
The base permits direct interchange with the Hochiki AIE-EA ionization type smoke sensor, ALG-V, ALK-V/ALK-V2 photoelectric type smoke sensors, ATG-EA, ATJ-EA heat sensors and the ACA-V, ACC-V multi-criteria sensors.

The sensitivity of the sensor is capable of being measured by the control panel.

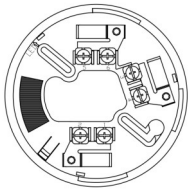
The vandal-resistant, security locking feature is used in those areas as indicated on the drawing. The locking feature is optional and can be implemented when required.

BASES

The Hochiki HSB-NSA-6 and the YBN-NSA-4 mounting bases are electronic free and are a simple, rugged design with screw terminals for wiring connections. A common mounting base allows sensor interchange and maintains loop continuity when sensors are removed. A simple anti-tamper head locking system is provided which is enabled by removing a small plastic tab on the back of the sensor. Once locked, the head can be removed using a small diameter screwdriver.

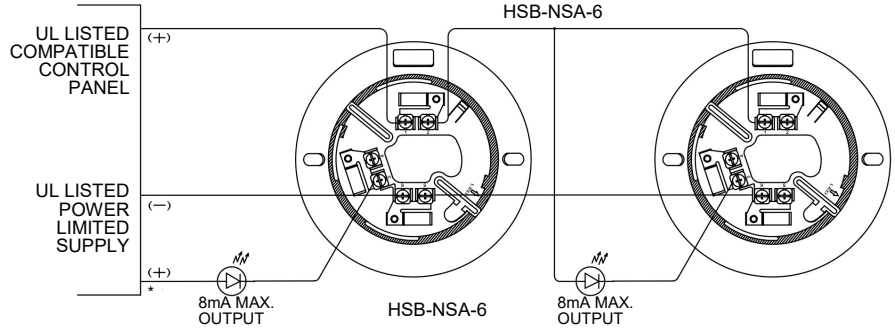


HSB-NSA-6 Base

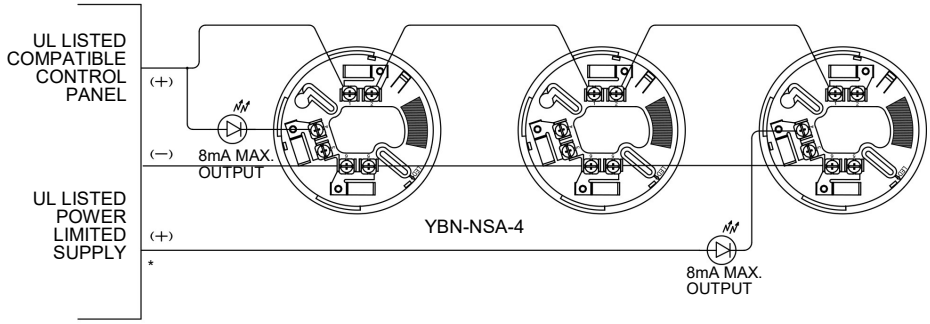


YBN-NSA-4 Base

TYPICAL WIRING DIAGRAMS



*- OPTIONAL WIRING CONFIGURATIONS FOR REMOTE OUTPUT



NOTE: Fire alarm control panel compatibility is required for DCP products. DCP communications protocol allows system components (DCP sensors AIE-EA, ALG-V, ACA-V, ACC-V, ALK-V, ALN-V, ATJ-EA and ATG-EA, bases and modules) to be used concurrently on a system's SLC (Signaling Line Circuit).

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FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7270-0410:0203
CATEGORY:	7270 - HEAT DETECTOR
LISTEE:	Hochiki America Corporation 7051 Village Drive, Ste. 100, Buena Park, CA, 90621 Contact: Hem, Ravi (800) 403-7029 Email: rhem@hochiki.com
DESIGN:	Model ATJ-EA Analog Addressable Combination 15°F Rate of Rise / 135-194°F Fixed Temperature Heat Detector for use with base Models HSB-NSA-6 or YBN-NSA-4. Refer to listee's data sheet for additional detailed product description and operational considerations.
RATING:	17.0 - 40.7 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/temperature rating and UL label.
APPROVAL:	Listed as heat detector for use with separately listed compatible fire alarm control units. Refer to manufacturer's Installation Manual for details.
NOTES:	

08-19-13 gt

Date Issued: 05/21/2025

Listing Expires: 06/30/2026

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

ANALOG SENSOR BASES

YBN-NSA-47

HSB-NSA-67

APPLICATION

The HOCHIKI America YBN-NSA-47 and the HSB-NSA -67 mounting bases are electronics free and contain a simple rugged design with screw terminals for wiring connections. A common mounting base allows sensor interchange and maintains loop continuity when sensors are removed. A simple anti-tamper head locking system is provided which is enabled by removing a small plastic tab on the back of the sensor. Once locked, the head can only be removed using a small diameter screw driver.

OPERATION

The YBN-NSA-47 and HSB-NSA-67 are designed specifically for use with the Hochiki NS Analog models ALO-V, ACA-V, ACD-V, ACC-V, ATJ-EA, ATG-EA, ALN-V, ALK-D, ALK-V, ALG-V, and AIE-EA.

The YBN-NSA-47 and HSB-NSA-67 common mounting bases allows for complete compatibility for all of the Hochiki NS Series Analog sensors. The bases are lightweight and very thin, providing a low profile once installed. The solder-less screw terminals enable quick and easy wiring connections.

STANDARD FEATURES

- UL Listed
- Designed for use with all NS analog sensors
- Available in 4 and 6 inch models
- Contains a security locking tab for tamper protection

SPECIFICATIONS

Security Feature	Plastic Tamper-lock
Color	Bone PC / ABS Blend
Dimensions	HSB-NSA-67: 6 inches YBN-NSA-47: 4 inches
Mounting Box	HSB-NSA-67: 3” & 4” Octagon & Square YBN-NSA-47: 3” Octagon
Compatible Detectors	ALO-V, ACA-V, ACD-V, ACC-V, ATJ-EA, ATG-EA, ALN-V, ALK-D, ALK-V, ALG-V, and AIE-EA

PRODUCT LISTINGS

UL CERTIFIED SAFETY SIGNALING US S1383 | FM APPROVED 455802 | California State Fire Marshal 7490-0410:0132

Specifications subject to change without notice.

Continued on back.

Hochiki America Corporation
7051 Village Drive, Suite 100, Buena Park, CA 90621-2268
Phone: 714-522-2246 Fax: 714-522-2268
Technical Support: 714-670-3229 or technicalsupport@hochiki.com

ANALOG SENSOR BASES

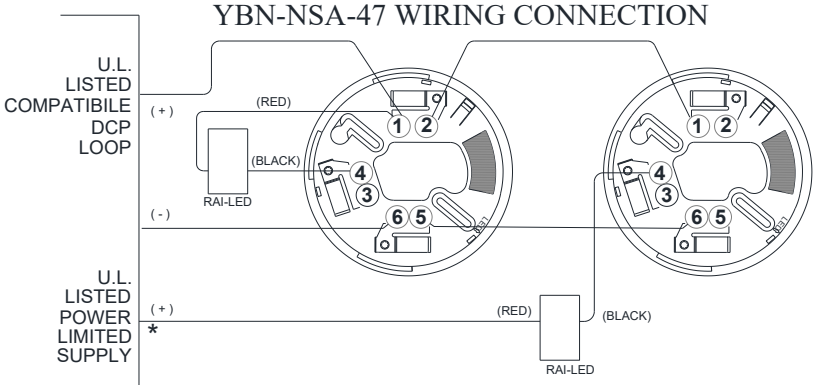
ENGINEERING SPECIFICATIONS

The YBN-NSA-47 and HSB-NSA-67 are designed specifically for use with the Hochiki NS Analog models ALO-V, ACA-V, ACD-V, ACC-V, ATJ-EA, ATG-EA, ALN-V, ALK-D, ALK-V, ALG-V, and AIE-EA.

The vandal-resistant, security locking feature shall be used in those areas as indicated on the drawing. The locking feature shall be optional and can be implemented when required.

TYPICAL WIRING DIAGRAMS

YBN-NSA-47 WIRING CONNECTION

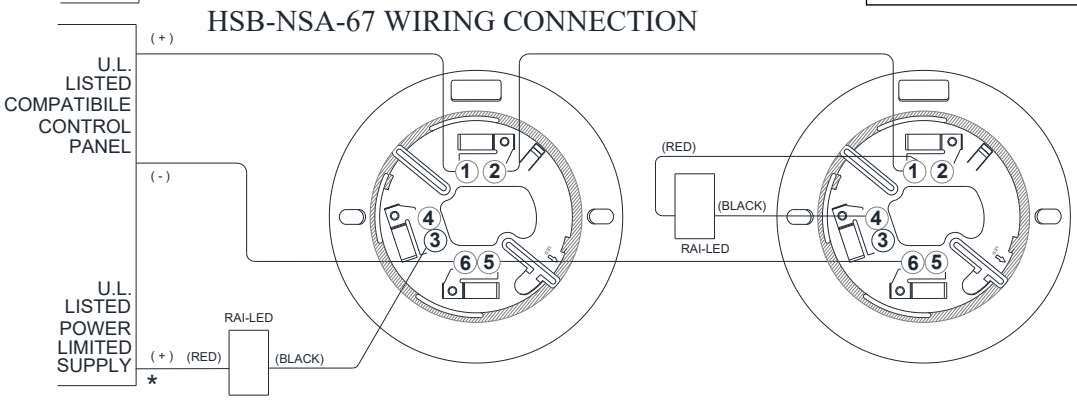


ATTENTION
TOTAL WIRING RESISTANCE
LESS THAN 50Ω (14-18AWG)

ADDRESS DETECTORS PRIOR TO INSTALLATION,
REFER TO TECHNICAL BULLETIN HA-06-433.

REMOVE THE DUST COVER PRIOR TO OPERATION.

HSB-NSA-67 WIRING CONNECTION



* OPTIONAL WIRING CONFIGURATIONS FOR REMOTE ALARM INDICATOR LED, 9.6mA max output

*- OPTIONAL WIRING CONFIGURATIONS FOR REMOTE OUTPUT

NOTE: Fire alarm control panel compatibility is required for DCP products.
State-of-the-art communications protocol, DCP, allows system components (DCP sensors ALO-V, ACA-V, ACD-V, ACC-V, ATJ-EA, ATG-EA, ALN-V, ALK-D, ALK-V, ALG-V, and AIE-EA bases and modules), to be used concurrently in a system's signaling line circuit.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7300-0410:0132
CATEGORY:	7300 - FIRE ALARM CONTROL UNIT ACCESSORIES/MISC. DEVICES
LISTEE:	Hochiki America Corporation 7051 Village Drive, Ste. 100, Buena Park, CA, 90621 Contact: Hem, Ravi (800) 403-7029 Email: rhem@hochiki.com
DESIGN:	Detector bases (2 and 4-wire). Unit is intended for use with a separately listed compatible detector head. Refer to listee's data sheet for detailed product description and operational considerations. Models listed below. HA-4W tttHA-4W1 ttHA-4WX ttHA-2 HA-SL tttHA-SR tttHA-SLR ttHA-RA2 HA-NRA2 ttHA-L12R ttHA-2R tttHA-22R HA-L2 tttHA-L2A ttHA-L2R ttHA-L22 HA-L22A ttHA-L22F ttHA-L22R ttHA-L22S HA-LA2 ttHA-LRA ttHA-LRA2 ttHA-LNA2 HA-LNRA2 HS-2 tttHS-2L tttHS-2D tttHS-21 HS-21L ttHS-21D ttHS-22 tttHS-22L HS-22D ttHS-100 ttHS-200D ttHS-220 HS-220L ttHS-220D ttHS-221 ttHS-221L HS-221D ttHS-221X ttHS-221XL ttHS-221XD HS-224 ttHS-224L ttHS-224D ttHS-225 HS-225L ttHS-225D ttHS-2RB ttHS-21RB HS-220RB ttHS-221RB ttHS-224RB ttHS-2RB4 HSB-2 tttHSB-2N ttHSB-12-1 ttHSB-12-1N

	HSB-12-4 ttHSB-12-4N tHSB-21 ttHSB-21N HSB-100 ttHSB-200 ttHSB-200N ttHSB-220 HSB-220N ttHSB-221 ttHSB-221N ttHSB-221S HSB-224 ttHSB-224N ttHSB-225 ttHSB-225N HSC-4R ttHSC-21L ttHSC-220L ttHSC-220R HSC-221L ttHSC-221R ttHSC-224RA tHSC-224L HSC-224R ttHSC-225L ttHSB-DCP-6 tHSB-NSA-6 HSC-4R12 YBA-M2 ttYBA-M21 ttYBA-M22 ttYBA-M220 YBA-M221 ttYBA-M224 ttYBA-M225 ttYBA-M100 YBA-MAP ttYBA-R3 ttYBA-RL/4 ttYBA-RL/4-1 YBA-RL/4-2 tYBA-RL/4-RA tYBC-RL/12 ttYBC-RL/12-1 YBC-RL/12-2 tYBC-RL/12-4 tYBC-RL/4-RA tYBC-RL/2NC YBC-RL/2NBE tYBJ-RL/2ND tYBN-R/2NA tYBN-NSA-4 NS4-100 ttNS4-220 ttNS4-221 ttNS4-224 NS6-100 ttNS6-220 ttNS6-221 ttNS6-224 FFO-4BASEtFFO-6BASEtFFO-SBASE *YBN-NSA-47t*HSB-NSA-67 Models may or may not come with suffix -W.
RATING:	Refer to the detector base's data sheet.
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.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

APPROVAL:	Listed as bases for use with listee's separately listed compatible smoke and heat detectors. Refer to heat or smoke detector listings for compatibility. Models HA-2R, HA-SLR, HA-LRA2 and HSC Series w/ suffix R are also suitable for releasing device service. Model YBA-R3 is intended for use with thermostat detector only. Models HSC-220R, HSC-221R, HSC-224R, HSC-4R, HSC-4R12, *YBN-NSA-47, and *HSB-NSA-67 complies with the applicable requirements in UL 268, 7th Edition.
NOTES:	Formerly 7300-0410:0100, 0106, 0115, 0124, 0125, 0126, 0130, 0131 & 0133

*Rev. 10-25-23
DAL

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 05/12/2025

Listing Expires: 06/30/2026

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

ALO-V ANALOG PHOTOELECTRIC SMOKE DETECTOR

STANDARD FEATURES

- UL 268 7th Edition Listed
- Designed to resist unwanted alarms from cooking and other nuisance alarm sources
- Advanced multi-criteria smoke detection
- Optical particulate identification
- Early fire smoke detection
- 360° view of detector status LED
- Programmable non-polling LED
- Vandal resistant security locking feature

PRODUCT LISTINGS

APPROVED
455802

California State Fire Marshal
7272-0410:0510

APPLICATION

The ALO-V (UL 268 7th edition listed) is a reliable, high quality multi-criteria Photoelectric Smoke Detector. It can be used in all open areas where Photoelectric Smoke Detectors are required. This detector is also suitable for monitoring smoke in HVAC ducts. The newly developed “multi-spectrum smoke categorization technology” detects smoldering and flaming fires fueled by traditional materials and polyurethane while reducing nuisance alarms.

The ASB7, ASBL7, SCI-B47, SCI-B67, YBN-NSA-47, and HSB-NSA-67 bases are compatible with the ALO-V.

OPERATION

The construction of the new chamber enhances the smoke entry for early fire smoke detection. The detection chamber utilizes light from IR and Blue LED sources. In the event of fire, particles of smoke enter the chamber and scatter light in proportion to the smoke density, resulting in an increased analog smoke measurement. The chamber contains a unique baffle design which allows smoke to enter the chamber while preventing external light from affecting the photodiode detector.

When the smoke density exceeds the programmed sensitivity threshold, the detector transmits an interrupt to the fire alarm control panel indicating a fire condition. The fire alarm control panel automatically adjusts the detector threshold to compensate for contamination.

Up to 127 devices are permitted on each SLC loop. The detector address is set by using a model AP7 hand-held programmer. The detector can mount to a variety of bases including electronics-free 4 and 6 inch bases, relay bases, and sounder bases. The detector’s status LED is viewable on the main face of the detector from all directions.

DETECTOR SPACING

Smoke detector spacing shall be in compliance with NFPA 72. For smooth ceilings and in the absence of specific performance-based design criteria, the distance between smoke detectors shall not exceed a nominal spacing of 30 ft. (9.1m) **or** all points on the ceiling shall have a detector within a distance equal to or less than 0.7 times the nominal 30 ft. (9.1m) spacing. Detectors shall be located within a distance of one-half the nominal spacing, measured at right angles from all walls or partitions extending upward to within the top 15 percent of the ceiling height. For additional instructions see NFPA 72.

Specifications subject to change without notice.

Hochiki America Corporation
7051 Village Drive, Suite 100, Buena Park, CA 90621-2268
Phone: 714-522-2246 Fax: 714-522-2268
Technical Support: (714) 670-3229 or technicalsupport@hochiki.com

ISO 9001:2015 CERTIFIED

ALO-V ANALOG PHOTOELECTRIC SMOKE DETECTOR

ALO-V Intelligent Multi-Criteria Photoelectric Smoke Detector

Supply Voltage	Operating Voltage Range (High Signal)	24 - 41 VDC
	Signal Voltage (Peak to Peak)[1]	7 - 9 VDC
Current Consumption	Normal Standby Current	340µA
	Alarm Current (LED Off)[2]	340µA
	Alarm Current (LED On)[2]	8.5mA
	Remote Indicator Current[3]	9.2mA
	Polling Current[4]	6.75mA
Smoke Density Range	1.40 – 3.30%/ft @0 - 300 FPM Open Area	
	1.40 – 2.75%/ft @300 FPM In Duct	
	1.40 – 4.00%/ft @1000 FPM In Duct	
	1.40 – 4.00%/ft @2000 FPM In Duct	
	1.40 – 2.37%/ft @3000 FPM In Duct	
	1.40 – 4.00%/ft @4000 FPM In Duct	
Compatible Bases	YBN-NSA-47, HSB-NSA-67, SCI-B47, SCI-B67, ASB7, ASBL7	
Operating Temperature Range	32°F ~ 120°F	
UL Listed Ambient Temperature	32°F ~ 120°F	
Storage Temperature Range	-22F ~ +140F (104F or less at 95%RH, 140F or less at 80%RH)	
Operating Humidity Limit	<95%RH at 104F, <80%RH at 120F	
Dimension	3.94" diameter x 1.68" tall	
Color	Ivory	
Weight	3.4 oz.	

Notes

1. Measured during FACP transmission. 17V Minimum Voltage (Operating Voltage less Signal Voltage).
2. When the total number of active alarm LEDs is limited by the FACP, additional detectors in Alarm will consume the Alarm Current (LED Off) current.
3. RI is current limited by the detector not to exceed 9.2mA. Actual RI current is equal to the load current for loads less than 9.2mA.
4. Polling Current should be added to sum-total Normal Standby Current for each SLC loop. Voltage drop calculations do not need to include Polling Current.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7272-0410:0510
CATEGORY:	7272 - SMOKE DETECTOR-SYSTEM TYPE-PHOTOELECTRIC
LISTEE:	Hochiki America Corporation 7051 Village Drive, Ste. 100, Buena Park, CA, 90621 Contact: Hem, Ravi (800) 403-7029 Email: rhem@hochiki.com
DESIGN:	Models ALO-V and ALO-V(WHT) Multi-criteria Photoelectric Smoke Detector. The product is intended to detect an abnormal amount of smoke density, in the area in which they are installed and to signal a Listed compatible fire alarm control panel during this condition. Model ALO-V employs an enclosure that is ivory in color and the Model ALO-V (WHT) employs an enclosure that is white in color. Refer to listee's data sheet for additional detailed product description and operational considerations.
RATING:	17-41 VDC Standby Current: 400 uA Alarm Current: 9.10 mA
INSTALLATION:	In accordance with listee's printed installation instructions, NFPA 72, applicable codes and ordinances, and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, model number, rating, and UL label.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

APPROVAL:	Listed as photoelectric smoke detector for use with listee's separately listed compatible detector bases and listee's separately listed compatible fire alarm control units. Acceptable for duct application with air velocities from 0-4000 ft/min. Refer to listee's Installation Instruction Manual for details. Models complies with the applicable requirements in UL 268, 7th Edition and UL 268A, 4th Edition. Compatible Detector Bases: Model ASBL7 (CSFM Listing No. 7300-0410:0210) Models YBN-NSA-47, HSB-NSA-67 (CSFM Listing No. 7300-0410:0132) Model ASB7 (CSFM Listing No. 7300-0410:0161) Models SCI-B47, SCI-B67 (CSFM Listing No. 7300-0410:0186) Compatible Fire Alarm Control Unit: Model L@titude Fire Alarm Control Unit UL 1204 (CSFM Listing No. 7165-0410:0506) Model FireNet Plus 1127 Series (CSFM Listing No. 7165-0410:0180)
NOTES:	

8-11-23 VWW

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 05/12/2025

Listing Expires: 06/30/2026

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

ANALOG SENSOR BASES

YBN-NSA-47

HSB-NSA-67

APPLICATION

The HOCHIKI America YBN-NSA-47 and the HSB-NSA -67 mounting bases are electronics free and contain a simple rugged design with screw terminals for wiring connections. A common mounting base allows sensor interchange and maintains loop continuity when sensors are removed. A simple anti-tamper head locking system is provided which is enabled by removing a small plastic tab on the back of the sensor. Once locked, the head can only be removed using a small diameter screw driver.

OPERATION

The YBN-NSA-47 and HSB-NSA-67 are designed specifically for use with the Hochiki NS Analog models ALO-V, ACA-V, ACD-V, ACC-V, ATJ-EA, ATG-EA, ALN-V, ALK-D, ALK-V, ALG-V, and AIE-EA.

The YBN-NSA-47 and HSB-NSA-67 common mounting bases allows for complete compatibility for all of the Hochiki NS Series Analog sensors. The bases are lightweight and very thin, providing a low profile once installed. The solder-less screw terminals enable quick and easy wiring connections.

STANDARD FEATURES

- UL Listed
- Designed for use with all NS analog sensors
- Available in 4 and 6 inch models
- Contains a security locking tab for tamper protection

SPECIFICATIONS

Security Feature	Plastic Tamper-lock
Color	Bone PC / ABS Blend
Dimensions	HSB-NSA-67: 6 inches YBN-NSA-47: 4 inches
Mounting Box	HSB-NSA-67: 3” & 4” Octagon & Square YBN-NSA-47: 3” Octagon
Compatible Detectors	ALO-V, ACA-V, ACD-V, ACC-V, ATJ-EA, ATG-EA, ALN-V, ALK-D, ALK-V, ALG-V, and AIE-EA

PRODUCT LISTINGS

UL CERTIFIED SAFETY SIGNALING US S1383 | FM APPROVED 455802 | California State Fire Marshal 7490-0410:0132

Specifications subject to change without notice.

Continued on back.

Hochiki America Corporation
7051 Village Drive, Suite 100, Buena Park, CA 90621-2268
Phone: 714-522-2246 Fax: 714-522-2268
Technical Support: 714-670-3229 or technicalsupport@hochiki.com

ANALOG SENSOR BASES

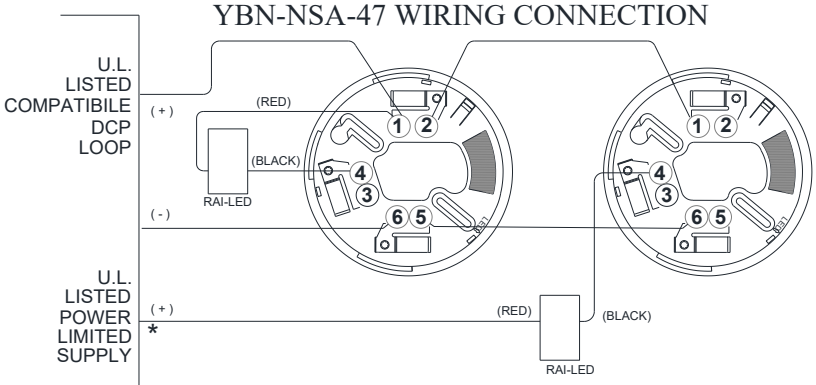
ENGINEERING SPECIFICATIONS

The YBN-NSA-47 and HSB-NSA-67 are designed specifically for use with the Hochiki NS Analog models ALO-V, ACA-V, ACD-V, ACC-V, ATJ-EA, ATG-EA, ALN-V, ALK-D, ALK-V, ALG-V, and AIE-EA.

The vandal-resistant, security locking feature shall be used in those areas as indicated on the drawing. The locking feature shall be optional and can be implemented when required.

TYPICAL WIRING DIAGRAMS

YBN-NSA-47 WIRING CONNECTION

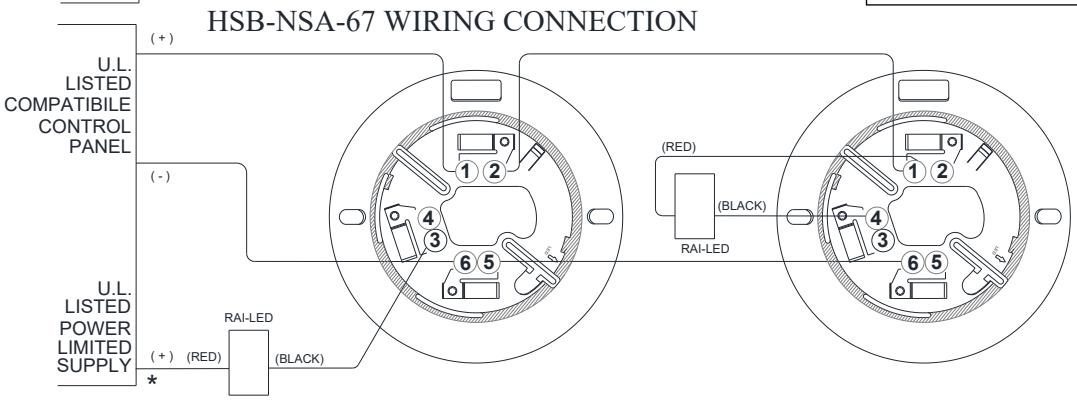


ATTENTION
TOTAL WIRING RESISTANCE
LESS THAN 50Ω (14-18AWG)

ADDRESS DETECTORS PRIOR TO INSTALLATION,
REFER TO TECHNICAL BULLETIN HA-06-433.

REMOVE THE DUST COVER PRIOR TO OPERATION.

HSB-NSA-67 WIRING CONNECTION



* OPTIONAL WIRING CONFIGURATIONS FOR REMOTE ALARM INDICATOR LED, 9.6mA max output

*- OPTIONAL WIRING CONFIGURATIONS FOR REMOTE OUTPUT

NOTE: Fire alarm control panel compatibility is required for DCP products.
State-of-the-art communications protocol, DCP, allows system components (DCP sensors ALO-V, ACA-V, ACD-V, ACC-V, ATJ-EA, ATG-EA, ALN-V, ALK-D, ALK-V, ALG-V, and AIE-EA bases and modules), to be used concurrently in a system's signaling line circuit.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7300-0410:0132
CATEGORY:	7300 - FIRE ALARM CONTROL UNIT ACCESSORIES/MISC. DEVICES
LISTEE:	Hochiki America Corporation 7051 Village Drive, Ste. 100, Buena Park, CA, 90621 Contact: Hem, Ravi (800) 403-7029 Email: rhem@hochiki.com
DESIGN:	Detector bases (2 and 4-wire). Unit is intended for use with a separately listed compatible detector head. Refer to listee's data sheet for detailed product description and operational considerations. Models listed below. HA-4W tttHA-4W1 ttHA-4WX ttHA-2 HA-SL tttHA-SR tttHA-SLR ttHA-RA2 HA-NRA2 ttHA-L12R ttHA-2R tttHA-22R HA-L2 tttHA-L2A ttHA-L2R ttHA-L22 HA-L22A ttHA-L22F ttHA-L22R ttHA-L22S HA-LA2 ttHA-LRA ttHA-LRA2 ttHA-LNA2 HA-LNRA2 HS-2 tttHS-2L tttHS-2D tttHS-21 HS-21L ttHS-21D ttHS-22 tttHS-22L HS-22D ttHS-100 ttHS-200D ttHS-220 HS-220L ttHS-220D ttHS-221 ttHS-221L HS-221D ttHS-221X ttHS-221XL ttHS-221XD HS-224 ttHS-224L ttHS-224D ttHS-225 HS-225L ttHS-225D ttHS-2RB ttHS-21RB HS-220RB ttHS-221RB ttHS-224RB ttHS-2RB4 HSB-2 tttHSB-2N ttHSB-12-1 ttHSB-12-1N

	HSB-12-4 ttHSB-12-4N tHSB-21 ttHSB-21N HSB-100 ttHSB-200 ttHSB-200N ttHSB-220 HSB-220N ttHSB-221 ttHSB-221N ttHSB-221S HSB-224 ttHSB-224N ttHSB-225 ttHSB-225N HSC-4R ttHSC-21L ttHSC-220L ttHSC-220R HSC-221L ttHSC-221R ttHSC-224RA tHSC-224L HSC-224R ttHSC-225L ttHSB-DCP-6 tHSB-NSA-6 HSC-4R12 YBA-M2 ttYBA-M21 ttYBA-M22 ttYBA-M220 YBA-M221 ttYBA-M224 ttYBA-M225 ttYBA-M100 YBA-MAP ttYBA-R3 ttYBA-RL/4 ttYBA-RL/4-1 YBA-RL/4-2 tYBA-RL/4-RA tYBC-RL/12 ttYBC-RL/12-1 YBC-RL/12-2 tYBC-RL/12-4 tYBC-RL/4-RA tYBC-RL/2NC YBC-RL/2NBE tYBJ-RL/2ND tYBN-R/2NA tYBN-NSA-4 NS4-100 ttNS4-220 ttNS4-221 ttNS4-224 NS6-100 ttNS6-220 ttNS6-221 ttNS6-224 FFO-4BASEtFFO-6BASEtFFO-SBASE *YBN-NSA-47t*HSB-NSA-67 Models may or may not come with suffix -W.
RATING:	Refer to the detector base's data sheet.
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.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

APPROVAL:	Listed as bases for use with listee's separately listed compatible smoke and heat detectors. Refer to heat or smoke detector listings for compatibility. Models HA-2R, HA-SLR, HA-LRA2 and HSC Series w/ suffix R are also suitable for releasing device service. Model YBA-R3 is intended for use with thermostat detector only. Models HSC-220R, HSC-221R, HSC-224R, HSC-4R, HSC-4R12, *YBN-NSA-47, and *HSB-NSA-67 complies with the applicable requirements in UL 268, 7th Edition.
NOTES:	Formerly 7300-0410:0100, 0106, 0115, 0124, 0125, 0126, 0130, 0131 & 0133

*Rev. 10-25-23
DAL

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test results and/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria. Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 05/12/2025

Listing Expires: 06/30/2026

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

HSSPKCLP Series Ceiling Mount Speaker/Strobe

HSSPKCLP SERIES

APPLICATIONS

The HSSPKCLP Series are ceiling mount, selectable candela speaker/strobes designed to meet code requirement for audio, visual and voice communications. The HSSPKCLP Series are quality speaker products that offer both dependable evacuation signaling and visual alarms, or a combination of both. The high output tamperproof candela selections are 15, 30, 75, 95 and 115.

The HSSPKCLP Series can be mounted in a 4" square x 2-1/8" deep back box. An extension ring is not needed.

The HSSPKCLP Series strobes can be synchronized by using the HAVSM Synchronization Module.

PRODUCT LISTINGS

SIGNALING UL LISTED

California State Fire Marshal

- UL 1480, UL 1638 & UL 1971 Listed - S8370
- CSFM Listed - 7320-0410:0194

Product Compliance

- NFPA 72
- Americans with Disabilities Act (ADA)

STANDARD FEATURES

- Nominal Voltage 24 VDC
- Tamperproof Field Selectable candela options of 15, 30, 75, 95 & 115
- Speaker only models can be wall or ceiling mounted
- Unit Dimensions: 6.1" x 1.88"
- Synchronize HSSPKCLP Series by using Hochiki America Series HAVSM Synchronization Module
- High Quality dBA Output
- Frequency Range 400-4000Hz
- Input Terminals supports 12 to 18 AWG
- Field selectable power taps: 1/8W, 1/4W, 1/2W, 1W, 2W and 4W
- Field Selectable Speaker Voltage 25 or 70.7 VRMS Standard
- Tamperproof Grill
- Strobe maintains constant flash rate (1Hz) regardless of input voltage
- Faceplate Available in Red or Off-White

Specifications subject to change without notice.

Hochiki America Corporation
7051 Village Drive, Suite 100 Buena Park, CA 90621-2268
Phone: 714/522-2246 Fax: 714/522-2268
Technical Support: 800/845-6692 or technicalsupport@hochiki.com

HSSPKCLP Series

Model Number	Part Number	Desciption	Nominal Voltage
HSSPK24CLPR	0500-06280	Speaker/Strobe	24VDC
HSSPK24CLPW	0500-06290	Speaker/Strobe	24VDC
HSSPK24CLPPR	0500-06260	Speaker/Strobe	24VDC
HSSPK24CLPPW	0500-06270	Speaker/Strobe	24VDC
HSSPKCLPR	0500-06300	Speaker	N/A
HSSPKCLPW	0500-06310	Speaker	N/A

Notes:
- The HSSPKCLP Series is not listed for outdoor use
- Operating temperature: 32° to 120° F (0° to 49° C)

Model designations:
"P" = Plain (no lettering), "R" = Red Faceplate, "W" = Off-White Faceplate

Low Profile Speaker dBA @ 10 ft.		
Input Watts	25 Volts	70.7 Volts
1/8	74.6 dBA	73.7 dBA
1/4	77.7 dBA	76.7 dBA
1/2	80.5 dBA	79.6 dBA
1	83.1 dBA	82.5 dBA
2	85.6 dBA	85.4 dBA
4	87.9 dBA	87.9 dBA

HSSPKCLP Series Strobe Current Ratings					
Candela	15cd	30cd	75cd	95cd	115cd
24 VDC	72mA	88mA	176mA	200mA	214mA
UL Max[1]	120mA	120mA	272mA	318mA	360mA

[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). For strobes the UL max current is usually at the minimum listed voltage (16VDC for 24VDC units). For audibles the max current is usually at the maximum listed voltage. For unfiltered FWR ratings, see installation manual.

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7320-0410:0194
PARENT LISTING No.:	7320-0569:0137
CATEGORY:	7320 - SPEAKERS
LISTEE:	Hochiki America Corporation 7051 Village Drive, Ste. 100, Buena Park, CA, 90621 Contact: Hem, Ravi (800) 403-7029 Email: rhem@hochiki.com
DESIGN:	Models HSSPKCLPR, HSSPKCLPW speakers and Models HSSPK24CLPPR, HSSPK24CLPPW, HSSPK24CLPR and HSSPK24CLPW speaker strobes. Models HSSPKCLPR, HSSPKCLPW are intended for ceiling and wall mount. Other models are ceiling mounted only. Refer to listee's data sheet for additional detailed product description and operational considerations.
RATING:	Speaker 25 Vrms and 70.7 Vrms Strobe 21-30 VDC Flash Rate 60 flashes per minute Candela 15, 30, 60, 75 & 15/75, 110
INSTALLATION:	In accordance with listee's printed installation instructions, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction. All models are intended for indoor use only and are mounted in a listed double-gang backbox.
MARKING:	Listee's name, model number, electrical ratings and UL label.
APPROVAL:	Listed as speakers and speaker strobes for use with separately listed compatible fire alarm control units. Models HSSPK24CLPPR, HSSPK24CLPPW, HSSPK24CLPR and HSSPK24CLPW speaker strobes are suitable for the hearing impaired applications. For indoor use only. Refer to manufacturer’s Installation Manual for details. These devices do not generate a temporal pattern signal. If the distinctive three-pulse Temporal Pattern Fire Alarm Evacuation signal (for total evacuation).
NOTES:	

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

08-08-11 bh

This listing is based upon technical data submitted by the applicant. OSFM Fire Engineering staff has reviewed the test resultsand/or other data but does not make an independent verification of any claims. This listing is not an endorsement or recommendation of the item listed. This listing should not be used to verify correct operational requirements or installation criteria.Refer to listee's data sheet, installation instructions and/or other suitable information sources.

Date Issued: 07/21/2025

Listing Expires: 06/30/2026

Authorized By: **Michael Huang** , Program Coordinator
Fire Engineering & Investigations Division

WSSPK Series

Outdoor Speaker and Speaker/Strobe Series

1 unit per carton, 2 pounds per carton

Applications

The Gentex WSSPK Series is an outdoor listed, wall mount, speaker and speaker/strobe designed to meet code requirements for audio, visual and voice communications. The WSSPK Series are quality speaker products that offer both dependable evacuation signaling and visual alarms, or a combination of both.

The WSSPK24 speaker/strobe offers a fixed 15/75 candela. The WSSPK Series provides a 25 or 70.7 VRMs speaker with field selectable power taps of 1/8W, 1/4W, 1/2W, 1W, 2W or 4W.

Included with the WSSPK Series speaker and speaker/strobe is the GBLP outdoor listed back box. Using the GBLP back box with the WSSPK Series provides protection from weather related conditions and allows the necessary full candela output.

The WSSPK devices are ANSI/UL 1480, ANSI/UL 1638 and CAN/ULC S526 and/or CAN/ULC S541 listed and warranted for 3 years from the date of purchase.

Standard Features

- Speaker/strobe nominal voltage 24 VDC
- 24 VDC fixed 15/75 candela
- WSSPK speaker and WSSPK24 speaker/strobe shipped with GBLP outdoor listed back box
- WSSPK unit dimension: 6.1" (15.494 cm) square x 3.19" (8.10 cm) deep
- WSSPK24 unit dimension: 6.1" (15.494 cm) square x 4.06" (10.31) deep
- Speaker voltage 25 or 70.7 VRMs standard, field selectable
- Field selectable power taps: 1/8W, 1/4W, 1/2W, 1W, 2W, 4W
- High quality dBA output (intelligible)
- Frequency range 400-4000Hz
- Screw terminals, separate in/out wiring (12-18 gauge)
- Synchronize use the Gentex AVSM Control Module
- Tamperproof grill
- Faceplate available in red or off-white
- Wall Mount

WSSPK Speaker and WSSPK24 Speaker/Strobes

Model Number	Part Number	Lettering
WSSPKR - Speaker	904-1437-002	
WSSPKW - Speaker	904-1438-002	
WSSPK24-15/75WR	904-1433-002	FIRE Text
WSSPK24-15/75WW	904-1435-002	FIRE Text
WSSPK24-15/75AWR	904-1431-002	ALERT Text
WSSPK24-15/75AWW	904-1432-002	ALERT Text

R = Red Faceplate, W = White Faceplate

A = ALERT text (speaker/strobe only)

All units are available in plain (no lettering)
Plain units are not returnable

SSPK24WLP Strobe Current Ratings (mA)

	24 VDC (16-33 Volts)	
Candela	24 VDC	UL Max
15/75	63 mA	96 mA

Speaker dBA @ 10 ft.

Input Watts	25 Volts	70.7 Volts
1/8	74.6 dBA	73.7 dBA
1/4	77.7 dBA	76.7 dBA
1/2	80.5 dBA	79.6 dBA
1	83.1 dBA	82.5 dBA
2	85.6 dBA	85.4 dBA
4	87.9 dBA	87.9 dBA

Product Listings

SIGNALING C UL US LISTED

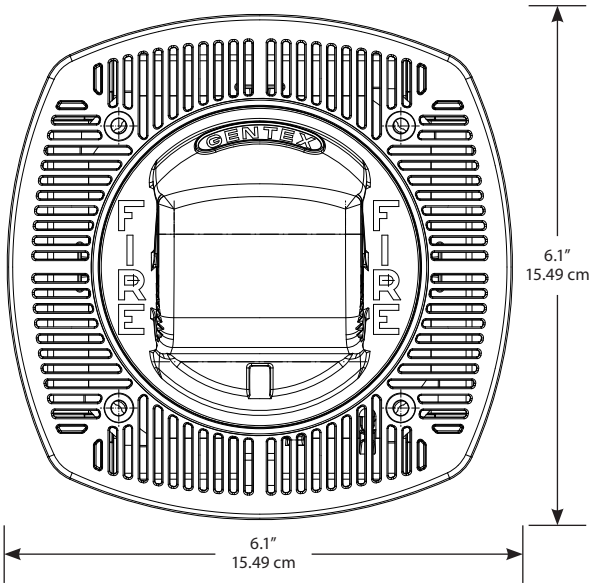
- ANSI/UL 1480 and ANSI/UL 1638 Listed
- CAN/ULC S526 and/or CAN/ULC S541 Listed
- CSFM: 7320-0569:0141

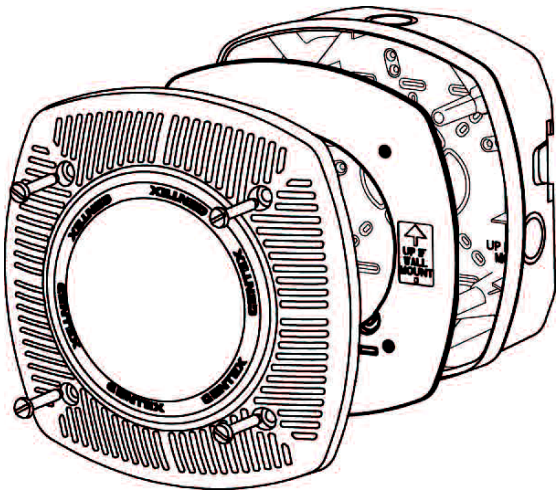
Product Compliance

- NFPA 72 and NFPA 720
- IBC/IFC/IRC
- City & State Ordinances/Laws/Regulations
- Quality Management System is certified to: ISO 9001:2008

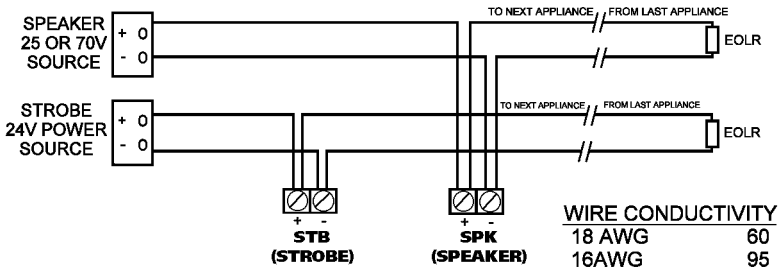
WSSPK Series

Outdoor Speaker and Speaker/Strobe Series





Wiring Diagram



WIRE CONDUCTIVITY	
18 AWG	60
16AWG	95
14AWG	153
12AWG	244

* MAX. WIRE DISTANCE (IN FEET) = $\frac{\text{PANEL VOLTAGE - DEVICE MINIMUM VOLTAGE}}{\text{TOTAL CURRENT DRAW}}$ x WIRE CONDUCTIVITY (STROBE ONLY)

Notes

- Indoor operating temperature: 32° to 120°F (0° to 49°C)
- Outdoor operating temperature: -31° to 150°F (-35° to 66°C)
- The WSSPK Series is listed for outdoor use
- For nominal and peak current across ANSI/UL regulated voltage range for filtered DC power and unfiltered (FWR [Full Wave Rectified]) power, see installation manual
- This appliance is not recommended for use on coded or pulsing signaling circuits

Architect & Engineering Specifications

The fire alarm speaker shall be Gentex WSSPK, WSSPK24 or equivalent and shall be listed by Underwriters Laboratories, Inc. (ANSI/UL) per ANSI/UL 1638, ANSI/UL 1480 and with CAN/ULC S526 and/or CAN/ULC S541 Listed. The speaker shall be capable of producing alarm tones or voice on all 25 or 70.7 VRMs audio systems. The speaker shall provide incremental tap settings of 1/8, 1/4, 1/2, 1, 2 or 4 watts. Minimum dBA rating at 1/4 watt shall be 76.7 dBA at 70.7 volts and a minimum dBA rating at 4 watts shall be 87.9 dBA at 70.7 volts. Tap settings shall be adjustable with field selectable jumper pins. The speaker shall also have an optional visual signal capability with an operating current of 96 mA or less at 24 VDC for the 15/75 Cd strobe circuit. The strobe appliance shall have an input voltage range of 16-33 volts with either direct current or full wave rectified power for 24 volt models. The visual signal shall have a 1Hz flash rate regardless of input voltage. All field wiring connections shall be made via separate in-out terminal connections. The appliance has extended temperature range of -31°to 150°F (-35° to 66° C) and shall satisfy all outdoor and sever environment applications. The GBLP back box includes a gasket that must be inserted between the box and device and include drain holes in the back box to allow for drainage, the seal on the GBLP is not water tight.

GENTEX CORPORATION

Fire Protection Products Group | 10985 Chicago Drive | Zeeland, MI 49464
gentex.com | **Phone:** 616.392.7195 | **Toll-free:** 800.436.8391 | **Fax:** 616.392.4219

551-0072-03

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7320-0569:0141
CATEGORY:	7320 - SPEAKERS
LISTEE:	Gentex Corporation 10985 Chicago Drive, Zeeland, MI, 49464 Contact: Bohn, Jim (616) 931-3569 Email: jim.bohn@gentex.com
DESIGN:	Models WSSPK speaker, WSSPK24-15/75WLP speaker strobes and GBLP backbox. Model WSSPK followed by R (red) or W (white). Model WSSPK, followed by A (amber), B (blue0, G (green), R (red) indicating, followed by 24-15/75, may be followed by -A (alert) , -P (plain), then followed by W (wall) and followed by R (red) or W (white). Suffix WLP indicates wall mount and low profile design. All models are intended for use with Model GBLP backbox for outdoor applications. Strobe is intended for non-fire applications. Refer to listee's data sheet for additional detailed product description and operational considerations.
RATING:	Speaker tt25 Vrms and 70.7 Vrms Strobe ttt24 VDC Flash Rate tt60 flashes per minute Candela tt15/75
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, ratings, and UL label.
APPROVAL:	Listed as speakers and speaker strobes for use with separately listed compatible fire alarm control units. Model WSSPK24-15/75WLP is NOT suitable for the fire alarm notification for the hearing impaired applications. For indoor and outdoor applications. Refer to manufacturer’s Installation Manual for details. These devices do not generate a temporal pattern signal. If the distinctive three-pulse Temporal Pattern Fire Alarm Evacuation signal (for total evacuation) in accordance with NFPA 72, 2002 Edition is required, the appliance must be used with a fire alarm control unit that can generate the temporal pattern signal.
NOTES:	

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

10-06-08 bh

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Date Issued: 05/07/2025

Listing Expires: 06/30/2026

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

WEST PENN WIRE
AV, SECURITY & NETWORKING SOLUTIONS
Since 1971

D990

16/2 Unshielded Low Capacitance FPLR Rated
Addressable Fire Alam SLC Circuits

Construction & Dimensions

CONSTRUCTION & DIMENSIONS	-
CONDUCTOR PARAMETER	-
• Number of Conductors	2
• AWG Size	16
• Conductor Stranding	Solid
• Conductor Type	Bare Copper
• Nominal DCR	4.1 Ohm/1000ft
INSULATION PARAMETER	-
• Insulation Type	Polypropylene - PP
• Insulation Thickness	0.015 in
• Insulation Color Code	1. Black 2.Red
SHIELDING PARAMETER	-
• Shield Type	None
ELECTRICAL CHARACTERISTICS	-
• Nom. Cap. Between Conductors	17 pF/ft

Overall Construction

OVERALL CONSTRUCTION PARAMETERS	-
Jacket Type	PVC
Jacket Thickness	0.030 in
Nominal Cable O.D.	0.223 in
Plenum	No
NEC UL Rating	FPLR
RoHS Compliant	Yes
Pull Tension	62 lbs
Bend Radius	2.007 in
Cable Weight	29 lbs

Overall Electrical & Optical Characteristics

OVERALL ELECTRICAL/OPTICAL CHARACTERISTICS	-
UL Flammability	UL1666 Vertical Shaft
Operating Range	-20 to 60 Deg C
UL Voltage Rating	300

D990

16/2 Unshielded Low Capacitance FPLR Rated
Addressable Fire Alam SLC Circuits

Related Products

RELATED PRODUCTS	-
Plenum Number	D60991

WEST PENN WIRE
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Since 1971

998

12/2 Solid Unshielded FPLR
Fire Alarm Signaling

Construction & Dimensions

CONSTRUCTION & DIMENSIONS	-
CONDUCTOR PARAMETER	-
• Number of Conductors	2
• AWG Size	12
• Conductor Stranding	Solid
• Conductor Type	Bare Copper
• Nominal DCR	1.8 Ohm/1000ft
• Cabling Lay Length	4.25 in
• Twists/Foot	2.8 twist/ft
INSULATION PARAMETER	-
• Insulation Type	Polypropylene - PP
• Insulation Thickness	0.01 in
• Insulation Color Code	1. Black 2.Red
SHIELDING PARAMETER	-
• Shield Type	None
ELECTRICAL CHARACTERISTICS	-
• Nom. Cap. Between Conductors	23 pF/ft

Overall Construction

OVERALL CONSTRUCTION PARAMETERS	-
Jacket Type	PVC
Jacket Thickness	0.022 in
Nominal Cable O.D.	0.244 in
Plenum	No
NEC UL Rating	FPLR
RoHS Compliant	Yes
Pull Tension	158 lbs
Bend Radius	2.195 in
Cable Weight	57 lbs

Overall Electrical & Optical Characteristics

OVERALL ELECTRICAL/OPTICAL CHARACTERISTICS	-
UL Flammability	UL1666 Vertical Shaft
Operating Range	-20 to 60 Deg C
UL Voltage Rating	300

998

12/2 Solid Unshielded FPLR

Fire Alarm Signaling

Related Products

RELATED PRODUCTS	-
Plenum Number	60995B
Aquaseal Direct Burial Number	AQ227

WEST PENN WIRE
AV, SECURITY & NETWORKING SOLUTIONS
Since 1971

972

2 Conductor 14AWG Solid Parallel Constructed FPL Rated

Fire Alarm Signaling

Construction & Dimenstions

CONDUCTOR PARAMETERS	-
Number Of Conductors	2
AWG Size	14
Conductor Stranding	Solid
Conductor Type	Bare Copper
Nominal DCR	2.6 Ohm/1000ft
INSULATION PARAMETERS	-
Insulation Type	PVC
Insulation Thickness	0.032 in
Insulation Color Code	1. Red, 2. Red/Yellow Stripe
SHIELDING PARAMETERS	-
Shield Type	None
ELECTRICAL CHARACTERISTICS	-

Overall Construction

OVERALL CONSTRUCTION PARAMETERS	-
Jacket Type	PVC
Nominal Cable O.D.	.128x.228 in
Plenum	No
NEC UL Rating	FPL
RoHS Compliant	Yes
Bend Radius	2.2 in
Cable Weight	36 lbs

Overall Electrical & Optical Characteristics

OVERALL ELECTRICAL/OPTICAL CHARACTERISTICS	-
UL Flammability	UL1685
Operating Range	-20 to 60 Deg C
UL Voltage Rating	300

PART NUMBERS	-
9721000	1000ft Put - Up

Detailed Specification & Technical Data

AQ225

16/2 Unshielded AQUASEAL Direct Burial CL3/FPL Rated
Audio, Control, Alarm Direct Burial

Construction & Dimensions

CONSTRUCTION & DIMENSIONS	-
CONDUCTOR PARAMETER	-
• Number of Conductors	2
• AWG Size	16
• Conductor Stranding	19x29
• Conductor Type	Bare copper
• Nominal DCR	4.2 Ohm/1000ft
INSULATION PARAMETER	-
• Insulation Type	PVC-Nylon
• Insulation Thickness	0.02 in
• Insulation Color Code	1. Black 2.Red
SHIELDING PARAMETER	-
• Shield Type	Aquaseal Water Blocking Tape
ELECTRICAL CHARACTERISTICS	-
• Nom. Cap. Between Conductors	28 pF/ft

Overall Construction

OVERALL CONSTRUCTION PARAMETERS	-
Jacket Type	UV Resistant PVC
Jacket Thickness	0.04 in
Nominal Cable O.D.	0.295 in
Plenum	No
NEC UL Rating	CL3, FPL, PLTC
RoHS Compliant	Yes
TIA Test	TIA455-82 Water Penetration Test
Pull Tension	55 lbs
Bend Radius	2.655 in
Cable Weight	48 lbs

Overall Electrical & Optical Characteristics

OVERALL ELECTRICAL/OPTICAL CHARACTERISTICS	-
UL Flammability	UL1685
Operating Range	-20 to 90 Deg C
UL Voltage Rating	300

AQ225

16/2 Unshielded AQUASEAL Direct Burial CL3/FPL Rated
Audio, Control, Alarm Direct Burial

Related Products

RELATED PRODUCTS	-
Plenum Number	25225B
Non Plenum Number	225
Aquaseal Number	AQC225
4 Pole SpeakOn	CN-NL4FC
SpeakOn Panel Mount	CN-NL4MP

Detailed Specification & Technical Data

AQ227

12/2 Unshielded AQUASEAL Direct Burial CL3/FPL Rated
Audio, Control, Alarm Direct Burial

Construction & Dimensions

CONSTRUCTION & DIMENSIONS	-
CONDUCTOR PARAMETER	-
• Number of Conductors	2
• AWG Size	12
• Conductor Stranding	19x25
• Conductor Type	Bare copper
• Nominal DCR	1.7 Ohm/1000ft
INSULATION PARAMETER	-
• Insulation Type	PVC-Nylon
• Insulation Thickness	0.02 in
• Insulation Color Code	1. Black 2.Red
SHIELDING PARAMETER	-
• Shield Type	Aquaseal Water Blocking Tape
ELECTRICAL CHARACTERISTICS	-
• Nom. Cap. Between Conductors	32 pF/ft

Overall Construction

OVERALL CONSTRUCTION PARAMETERS	-
Jacket Type	UV Resistant PVC
Jacket Thickness	0.04 in
Nominal Cable O.D.	0.34 in
Plenum	No
NEC UL Rating	CL3, FPL, PLTC
RoHS Compliant	Yes
TIA Test	TIA455-82 Water Penetration Test
Pull Tension	146 lbs
Bend Radius	3.06 in
Cable Weight	78 lbs

Overall Electrical & Optical Characteristics

OVERALL ELECTRICAL/OPTICAL CHARACTERISTICS	-
UL Flammability	UL1685
Operating Range	-20 to 90 Deg C

AQ227

12/2 Unshielded AQUASEAL Direct Burial CL3/FPL Rated

Audio, Control, Alarm Direct Burial

Related Products

RELATED PRODUCTS	-
Plenum Number	25227B
Non Plenum Number	227
4 Pole SpeakOn	CN-NL4FC
SpeakOn Panel Mount	CN-NL4MP

Detailed Specification & Technical Data

AQ295

14/2 Shielded Indoor/Outdoor Direct Burial CL3/FPL Rated
Audio, Control, Alarm Direct Burial

Construction & Dimensions

CONSTRUCTION & DIMENSIONS	-
CONDUCTOR PARAMETER	-
• Number of Conductors	2
• AWG Size	14
• Conductor Stranding	19x27
• Conductor Type	Bare copper
• Nominal DCR	2.7 Ohm/1000ft
INSULATION PARAMETER	-
• Insulation Type	PVC-Nylon
• Insulation Thickness	0.02 in
• Insulation Color Code	1. Black 2.Red
SHIELDING PARAMETER	-
• Shield Type	Overall 100% Aluminum Foil
• Shield Type 2	Aquaseal Water Blocking Tape
• Drain Wire Type	Tinned Copper
• Drain Wire AWG	24 AWG
ELECTRICAL CHARACTERISTICS	-
• Nom. Cap. Between Conductors	46 pF/ft
• Nom. Cap. Conductor to Shield	83 pF/ft

Overall Construction

OVERALL CONSTRUCTION PARAMETERS	-
Jacket Type	UV Resistant PVC
Jacket Thickness	0.04 in
Nominal Cable O.D.	0.35 in
Plenum	No
NEC UL Rating	CL3, FPL, PLTC
RoHS Compliant	Yes
TIA Test	TIA455-82 Water Penetration Test
Pull Tension	99 lbs
Bend Radius	3.15 in
Cable Weight	67 lbs

Overall Electrical & Optical Characteristics

OVERALL ELECTRICAL/OPTICAL CHARACTERISTICS	-
UL Flammability	UL1685
Operating Range	-20 to 90 Deg C

AQ295

14/2 Shielded Indoor/Outdoor Direct Burial CL3/FPL Rated
Audio, Control, Alarm Direct Burial

Related Products

RELATED PRODUCTS	-
3 Pin XLR Male	CN-NC3MX
3 Pin XLR Female	CN-NC3FX
3.5mm Stereo Mini	CN-NYS231

CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION
OFFICE OF THE STATE FIRE MARSHAL
FIRE ENGINEERING & INVESTIGATIONS DIVISION
BUILDING MATERIALS LISTING PROGRAM

LISTING SERVICE

LISTING No.:	7161-0859:0101
CATEGORY:	7161 - CABLES-FIRE PROTECTIVE SIGNALING
LISTEE:	West Penn Wire 2200 U.S. Highway 27 South, Richmond, IN, 47374 Contact: Dorna, Gerald (765) 994-9963 Email: gerald.dorna@belden.com
DESIGN:	Types FPL and FPLP power limited fire protective signaling cable. Refer to listee's data sheet for detailed product description and operational considerations.
RATING:	
INSTALLATION:	In accordance with listee's printed installation instructions, NEC Article 760, applicable codes and ordinances and in a manner acceptable to the authority having jurisdiction.
MARKING:	Listee's name, type, NEC rating and UL label.
APPROVAL:	Listed as power-limited fire protective signaling cable.
NOTES:	

Rev. 12-15-23 bh

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Date Issued: 06/09/2025

Listing Expires: 06/30/2026

Authorized By: **Michael Huang**, Program Coordinator
Fire Engineering & Investigations Division

EARTHWORK

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this section shall include the furnishing of all labor, materials and equipment required to complete the clearing and grubbing, excavation, backfilling and compacted fill work as indicated on the drawings and as specified herein.

1.02 WORK INCLUDED (But not limited to the following items)

a. Clearing and removal from site of all vegetation, rubbish and material (concrete, glass, wood, etc.) from previous use of the property not indicated on the drawings to remain.

b. Excavating soil under buildings for compacted fill, if required.

c. Preparing of area upon which fill is to be placed and placing of compacted fill.

d. Furnish imported fill material, if required.

e. Excavating for all footings, floor slabs, walks, walls, curbs, pits, etc.

f. Proper bracing and shoring of all excavation where necessary to prevent caving.

g. Backfilling foundations, placing and compacting fill for slabs and as required for area grading.

h. Excavation and preparation of subgrade for asphaltic concrete surfacing.

i. Applying water to obtain compaction required in fills.

j. Final finish grading.

k. Top soil fill in areas indicated.

l. Cleaning of site of all material excavated and not used and disposing of away from site.

1.03 RELATED WORK

a. Excavating, trenching and backfilling for the plumbing, electrical or mechanical trades which is specified under the section to which it applies.

1.04 OWNER'S REPRESENTATIVE

a. The earthwork operations will be under the direct inspection of the Geotechnical Engineer of Record for this Project, who shall be registered by the State as a Professional Engineer and who will be employed by the Owner. Refer to Section 01402, Tests and Inspections.

b. The Geotechnical Engineer shall be the Owner's representative in control of all earthwork. The Geotechnical Engineer will approve or disapprove fill materials; will make appropriate tests and pass or reject compacted fill and will designate for removal any unsuitable materials, which may remain at the bottom of the excavated area after the limits of excavation indicated by the drawings have been reached.

c. The contractor shall comply with the instructions of the Geotechnical Engineer as to the aspects of the work described above and shall cooperate with the Geotechnical Engineer in his performance of these duties.

1.05 GEOTECHNICAL REPORT #022-22059 Aug 5, 2022 as prepared by Krazan & Associates, Inc.

a. Unless otherwise noted, the recommendations for site preparation found in the soils report shall be followed but shall not be considered a part of this section. It shall be incumbent upon this contractor to review the soils report on file in the Architect's office. No additional monies will be allowed for any costs incurred due to negligence of the contractor in not reviewing the soils report.

1.06 PROTECTION

a. Protection of Property: Care shall be taken to prevent damage to adjoining property and this contractor shall make good any damage resulting from this operation.

b. Maintain protections and barricades as required. Cooperate with other trades requiring access.

c. Survey work furnished by the owner, such as horizontal and vertical control survey monuments, bench marks, etc., shall be carefully maintained. Said work, if disturbed or destroyed, shall be replaced by the contractor's surveyor at the contractor's expense.

d. Loads of material moving to or from the site shall be trimmed to prevent droppings along the street.

1.07 UNDERGROUND PIPES, CONDUITS AND UTILITIES

a. Observe applicable regulations in work affecting underground utilities. Protect active utilities from damage and remove or relocate only as indicated or

specified. Remove and plug or cap inactive or abandoned utilities encountered in excavating or grading. In absence of specific requirements, plug or cap at least 5 feet outside building walls and foundations.

b. Excavating or trenching for new pipe, conduit or utility lines within five feet of building lines and under exterior walks, drives or pavement is subject to provisions of these specifications with respect to protection from moisture, backfilling and grading.

c. Lines Containing Liquid: Check for leaks and certify to owner. Run such lines at least 5 feet outside building lines wherever possible.

d. Notify utility companies and owner for all utilities to be cut off, modified or relocated. Maintain active utilities and protect same. No utilities shall be cut off without first obtaining permission from the Owner.

1.08 DRAWINGS AND SPECIFICATIONS

Cuts and Fills: The grades shown on the drawings do not necessarily indicate a balance of cut and fill. Any excess earth not needed for filling shall be removed from the site. Any earth required for filling shall be furnished by the contractor and shall meet the requirements under materials section for earth fill.

1.09 INSPECTION OF SITE

The contractor shall accept the site as he finds it at the time of submitting his bid for this work and no allowances will be made for any error or negligence resulting from his failure to inspect the site prior to submitting his bid proposal.

1.10 LAWS AND ORDINANCES

All excavating, bracing, barricading, backfilling, etc., shall be done in accordance with all applicable laws and/or ordinances.

1.11 ASTM STANDARD SPECIFICATIONS

Where reference is made to ASTM Standard Specifications, the latest issue of such specifications shall apply, except where other specific issue dates are identified in the Soils Report, T24, Part 2, or the applicable C.B.C. Standard.

1.12 SURFACE WATER

Surface water shall be controlled by grading as necessary to prevent erosion, damming or ponding in the bottom of structural excavations.

1.13 ALLOWABLE TOLERANCES

Maximum variation from indicated grades shall be 1/10 of one foot.

PART 2 PRODUCTS

2.01 MATERIALS

a. Earth for filling and backfilling shall be acceptable to the Architect and Geotechnical Engineer and shall be free from all objectionable material and shall be a clean, granular material suitable for compaction. Must be tested and approved by the Soils Engineer.

b. Top Soil: A fertile, friable, loamy soil, free from toxic amounts of acids and alkalis, capable of sustaining healthy plant life. To be approved by Architect.

c. Imported soils shall consist of essentially granular, silty sands with low expansion potential and free of grasses, weeds, debris, rocks larger than 4" in maximum dimension and soluble sulfates in excess of 200 parts per million. Import fill shall contain sufficient silt and clay binders to render them stable in footing trenches and capable of maintaining specified elevation tolerances during paving operations.

d. Imported soils to be used as engineered fill should also meet the following gradation and quality criteria:

(1) Percent Passing #200 Sieve	20 to 50
(2) Maximum Liquid Limit	40
(3) Maximum Plasticity Index	10
(4) Minimum R-Value	50
(5) Maximum Expansion Index a. Per ASTM D4829	15

e. Only soils passing DTSC standards shall be allowed.

f. Pea Gravel- to be used for drainage course material (backfill) and decorative finishes shall be screened gravel that consists of clean, washed, small round stones which will be retained by a No.4 (4.75mm) sieve and will pass a 3/8"(9.5mm) sieve.

PART 3 EXECUTION

3.01 SITE CLEARING

Clear the building site of all vegetation and rubbish, including all brush, grass, weeds, trees, roots, concrete slabs and footings, A.C. paving, tin cans, glass, wood, brick and large rocks (1-1/2" or larger), etc. Strip the entire property and easements down to bare earth. All vegetation and rubbish cleared and stripped from the site shall be removed from the site and legally disposed of.

3.02 PREPARATION OF AREA UPON WHICH FILL IS TO BE PLACED

a. **Clearing and grubbing-** should consist of stripping grasses; removing trees and shrubs, including roots greater than 1 inch in diameter, removing existing structures, foundations, slabs, and miscellaneous asphalt and concrete; removing buried utility lines; locating and removing or disposing of abandoned septic tanks and seepage pits (dry well) if any are encountered during site clearing and grubbing operations.

b. **Stripping-** Prior to soil compaction, existing ground surfaces should be stripped of surface vegetation. A stripping depth of one inch should be adequate. In no instances should stripped material be used in engineered fill or blended with and compacted in original ground.

c. **Slabs and Pavements-** Shall be completely removed. Asphaltic concrete fragments may be used in fill provided they are broken down to a maximum dimension of two inches and adequately disbursed within a friable soil matrix. Soil-AC mixtures should not be used within proposed building areas.

d. **Foundations-** Existing at the time of grading should be completely removed.

e. **Backfilling Cavities-** All voids or depressions created by clearing and grubbing operations should be backfilled with either on-site soils or acceptable imported fill materials. Materials used to backfill cavities should be placed and compacted in accordance with Paragraph 3.06.

f. After the area to be filled is cleared and over-excavated to the minimum depth(s) recommended in the soils report, it shall be plowed or scarified to the depth of at least twelve (12) inches, and until the surface is free of ruts or uneven features which will tend to prevent uniform compaction. It shall then be compacted to a depth of at least twelve (12) inches in accordance with specifications for compacting fill material in Paragraph 3.03.

3.03 PLACING, SPREADING AND COMPACTING FILL MATERIAL

a. The fill material shall be placed in layers which, when compacted, shall not exceed six inches (6"). Each layer shall be spread evenly and shall be thoroughly mixed during the spreading to insure uniformity of material in each layer. When the moisture content of the fill material is below that specified by the Engineer, water shall be added until the moisture content is as specified. When the moisture content of the fill material is above that specified by the Engineer, the fill material shall be aerated by blading or other satisfactory methods until the moisture content is as specified.

b. After each layer has been placed, mixed and spread evenly, it shall be thoroughly compacted to not less than ninety percent (90%) of maximum dry density in accordance with ASTM D 1557, compaction shall be by self-propelled multiple-wheel pneumatic tired rollers or other approved types of rollers. Rollers shall be of such design that they will be able to compact the fill to the specified

density. Rolling shall be accomplished while the fill material is at the specified moisture content. Rolling of each layer shall be continuous over its entire area and the roller shall make sufficient passes to insure that the desired density has been obtained.

c. Field density tests shall be taken as directed by the Engineer and when these tests indicate that the density of any layer of fill or portion thereof is below the required ninety percent (90%) density, that particular layer or portion shall be reworked until the required density has been obtained.

d. The fill shall be brought to within 0.1' plus or minus of the design finished grades and the surface shall be bladed to a smooth and uniform surface.

e. Placing on Slope: Where the slope of the sub-grade surface on which fill is to be placed is 10:1 or steeper, bench the sub-grade in flat benches or at least ten feet (10'-0") in width prior to filling thereon. Prepare and compact each bench in accordance with the specifications for site preparations. Benching, preparation and compaction of the benched sub-grade may be done simultaneously with the filling operation; and the material excavated in benching may be mixed and compacted with new fill unless deemed unsuitable by the Soils Engineer. All fill materials shall be subject to the approval of the Soils Engineer as excavated and placed.

3.04 PREPARATION OF FLOOR SLAB SUBGRADE IN CUT AREAS

Subgrade for concrete floor slabs in cut areas shall be prepared as in 3.02 above. The compacted subgrade shall be bladed to a smooth and uniform surface.

3.05 EXCAVATIONS

a. The bottom of all excavations shall be smooth, level and firm and at the depth called for on the drawings. Any excavation made deeper than indicated on the drawings shall not be backfilled but filled with concrete by the concrete contractor. Concrete mix shall be of the same mix as specified for footings.

b. All excavations shall be kept free of standing water by pumping, draining or any means necessary to this end.

c. Sides of footings may be formed by neat excavations if banks will stand without caving. If caving results, footing excavations shall be made to a line not less than 18" beyond each face of the footing to permit installation and removal of forms. Faces of footings abutting a property line shall be formed in all cases.

d. The contractor shall bear all costs for additional work on account of overexcavation.

3.06 BACKFILLING

a. After forms are stripped and concrete surfaces approved, the space between the earth banks and the concrete shall be filled with clean earth. The backfill material shall be placed in layers, which, when compacted, shall not exceed six (6) inches in depth. It shall be moistened with water to bring it to the optimum moisture content and thoroughly compacted by means of mechanical compactors to indicated grades and to a density equal to that of the soil at the bottom of the footings, but not less than 90% of the maximum dry density in accordance with ASTM D 1557.

3.07 TOP SOIL

Place 12" of specified material in planters and planted areas; 6" of same in lawn or turf areas.

3.08 GRADING

After fill and backfill work has been completed, the areas outside of the building shall be finish graded to the indicated grades. Finish grades of lawn areas in general: 1" below walk grades; planted areas: 2" below walk grades; in planters: 6" below tops of planter walls. The areas inside of the building to receive slabs or other construction work shall be fine finish graded to the required grades. All grading shall be left even and free of all debris, shall be to the grades indicated on the drawings and shall be raked clean just prior to the owner's acceptance of the completed building.

3.09 DISPOSAL AND CLEANUP

a. Rubbish, Debris, Rocks, Trees, etc.: Hauled away from site promptly and legally disposed of.

b. Topsoil Strippings: Legally dispose of off site.

c. Excess earth resulting from cutting and excavation to be legally disposed of off the site or hauled to an area as designated and stockpiled.

d. Dust and Noise Abatement: During entire period of construction and during loading, keep area and material being loaded sprinkled to reduce dust in air and annoyance to premises and neighborhood. Exercise all reasonable means to abate undue noise.

e. Clean up site, remove all debris and leave premises in clean and orderly condition.

3.10 CERTIFICATION OF GRADES

a. The contractor and the soils engineer shall, at the conclusion of the grading work, certify to the Architect that the grading has been performed in accordance with the specifications and is satisfactory for its intended use.

b. Building Pad Certifications - The Contractor shall arrange for and hire a licensed Land Surveyor or Civil Engineer with authority to practice Land Surveying registered in the State of California to verify the depth and extents of all building over excavations. In addition, the Surveyor or Civil Engineer shall record final elevations of building pads and pavement subgrade. These elevations shall be signed and sealed by the Surveyor or Civil Engineer, labeled "As Graded Elevations", and transmitted to the Architect before work commences on the building foundations.

3.11 Excess Water Control

a. Do not place, spread, or roll any fill material during unfavorable weather conditions. Do not resume operations until moisture content and fill density are satisfactory to the Engineer.

b. Provide berms or channels to prevent flooding of subgrade.

c. Where soils have been softened or eroded by flooding or placement during unfavorable weather, remove all damaged areas and re-compact as specified for Filling below.

d. Provide and maintain, at all times during construction, ample means and devices with which to promptly remove and dispose of all water from every source entering the excavations or other parts of the work. Dewater by means which will ensure dry excavations and the preservation of the final lines and grades of bottoms of excavations.

e. Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material. Apply water in manner to prevent free water appearing on surface during or subsequent to compaction operations.

f. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

g. Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by disking, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

END OF SECTION
05/14/2024

TERMITE CONTROL

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this section shall include the furnishing of all labor, materials and equipment required to complete the "preconstruction" soils treatment under and adjacent to structures to provide a uniform toxic barrier in all routes of termite entry.

1.02 PROTECTION

Allow no disturbance of treated soil between application of poison and pouring of concrete.

1.03 GUARANTEE

a. Furnish to Owner a written five (5) year warranty against subterranean termites.

b. Warranty shall cover against invasion or propagation of subterranean termites, damage to building or building contents caused by termites; repairs to building or building content so caused.

c. Areas of infestation appearing within the warranty period shall be retreated at no additional cost to the Owner.

d. Areas of damage of building or building contents shall be repaired at no additional cost to the Owner for both material and labor to a maximum cost of $5,000.00 per each building location.

e. Make an inspection of the Work once each year at no additional cost to the Owner for a total period of 5 years following date of Notice of Completion for the purpose of detecting termite infestation.

f. If termite infestation is found during that 5 year period, retreat according to prevailing practices of the trade within 10 days after such infestation is discovered.

g. Owner reserves the right to renew warranty for an additional 5 years. Contractor shall provide the Owner with a proposal prior to beginning work for the cost of the additional 5 year warranty for the Owners review and comments.

PART 2 PRODUCTS

2.01 MATERIALS

Apply one of the following chemicals as a water emulsion at concentrations and volume specified. If impervious soils make a reduction in volume of solution necessary, increase percentage of toxicant used in proportion to insure same amount of insecticide be used per linear or square foot.

Demon TC, as manufactured by Zeneca
Premise

Dominion
Equal as approved by Architect. See Div. 00, Section 10, Article 19.

PART 3 EXECUTION

3.01 APPLICATION

a. Apply in strict conformance with the manufacturer's recommendations.

b. All termite control must be performed by a state licensed structural pest control company.

3.02 APPLICATION RATES

a. Surface Preparation:

1. Remove foreign matter which could decrease effectiveness of treatment on areas to be treated. Loosen, rake, and level soil to be treated, except previously compacted areas under slabs and foundations. Toxicants may be applied before placement of compacted fill under slabs, if recommended by toxicant manufacturer.

b. Apply in accordance with manufacturer's recommendation.

c. Apply under all building pads, footings and areas within 2'-0" of buildings.

1. Allow not less than 12 hours for drying after application before beginning concrete placement or other construction activities.

d. Apply to substrate immediately prior to the installation of the membrane vapor barrier to avoid losses due to evaporation.

1. When substrate is crushed rock fill applied below membrane vapor barrier, apply additional treatment to soil prior to installation of fill.

e. Footing trenches shall be treated not more than 24 hours prior to concrete pour.

f. Treat critical locations such as utility footing penetrations and expansion joints with linear treatment at the manufacturer's recommended rate.

1. Treat inside of utility trenches for a minimum of 48" beyond the building pad.

g. Reapply soil treatment solution to areas disturbed by subsequent excavation or other construction activities following application.

h. Take precautions to protect adjoining property and areas designated for planting.

i. Application Rates shall be as follows unless otherwise specified or approved by the Architect:

1. One gallon per 10 sq. ft. as overall treatment under slab and attached porches.
2. 4 gallons per 10 lin. ft. along inside and outside of exterior foundation walls, and around utility services and other features, that will penetrate slab.
3. 2 gallons per 10 lin. ft. in voids of unit masonry foundation walls or piers.

END OF SECTION
10/3/2013

VEGETATION CONTROL

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include the furnishing of all labor, materials and equipment required to complete the sterilization to prevent seed germination and plant growth, under paving, sidewalks and other areas indicated on the drawings.

1.02 PROTECTION

Take necessary precautions to protect adjoining property and areas designated for planting on building site.

1.03 Certification

No products shall be sprayed or spread unless the applicator has been licensed and certified by the State of California to disperse product specified in this section or approved by the State of California for the intended use.

PART 2 PRODUCTS

2.01 Materials:

a. Contractor shall submit State of California approved product for weed eradication

PART 3 EXECUTION

3.01 Apply in accordance with the manufacturer's recommendation, state and federal guidelines.

END OF SECTION
05/15/2008

ASPHALTIC CONCRETE

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include all labor, material, equipment, and appliances required to complete all the work shown on the drawings and/or specified hereunder.

1.02 WORK INCLUDED

a. Rolling and preparing the finish sub-grade to receive asphaltic concrete.

b. Laying of aggregate base and paving with asphaltic concrete of all areas as indicated on the drawings.

c. Redwood header boards around the areas to be paved with asphaltic concrete unless otherwise noted.

d. Fog seal.

1.03 RELATED WORK

a. Vegetation control is specified under Section 32 05 13.02.

b. Finish grading is specified under Earthwork, Section 31 20 00; however, rolling preparation of finish grade under asphalt paving is part of this contract.

1.04 GUARANTEE

In addition to the guarantee as specified elsewhere in these Specifications, this Contractor shall repair or restore to first class condition any portion of the asphaltic concrete paving in which creeping, shoving, cracking, raveling, softening or other defects that are due to improper placing or defective materials that appear or become apparent within one (1) year from the date of acceptance.

PART 2 PRODUCTS

2.01 MATERIALS

a. Hot-Mix Asphaltic Concrete, Type "B", uniformly graded aggregate to 1/2" maximum medium grading, graded as per State of California Division of Highways, Standard Specifications Section 39 and intimately mixed with 5 - 6-1/2% Asphalt. Asphalt shall be Performance Grade PG64-10. No R.A.P. (Reclaimed Asphalt Pavement) shall be used.

b. Redwood: All heart foundation grade redwood.

c. Redwood Headers: 3x6 redwood.

d. Aggregate Base: Class 2, 3/4" aggregate graded as per State of California Division of Highways, Standard Specifications, Section 26.

e. Fog Seal: Asphalt emulsion SS-1/SS-1h mixed with water 1:1.

PART 3 EXECUTION

3.01 INSPECTION

a. Verify gradients and elevations of sub base are correct.

b. Beginning of installation means acceptance of substrate.

3.02 TOLERANCES

a. Flatness: Maximum variation of 1/4 inch, measured with 10-foot straight edge.

b. Compacted Scheduled Thickness: Within 1/4 inch of design thickness.

c. Variation from True Elevation: Within 1/2 inch.

3.03 INSTALLATION

a. Preparation of Grade: All base over which asphaltic concrete is to be placed shall be rolled with a three (3) to five (5) ton roller, making seven (7) passes over all of the areas to receive asphaltic concrete.

b. Paving for Vehicular Traffic: Asphaltic concrete and aggregate base shall be placed to thicknesses shown on the plans. Asphalt concrete shall be placed and compacted in accordance with Section 39 and base material shall be spread and compacted in accordance with Section 26 of the State of California, Division of Highways Standard Specifications. The finish shall have no variations greater than one-quarter inch (1/4") in ten feet (10'-0") and the texture of finish shall be uniform and at a maximum density for the type of aggregate used.

c. Header boards: Unless otherwise noted, place redwood header boards around the areas to be paved with asphaltic concrete. To secure the header boards, use 1" x 4" x 1'-6" long redwood stakes at four feet (4'-0") on center.

d. Fog Seal: Spray the entire area after the paving is completed at a rate of approximately 0.1 gallon per square yard as per Section 37 of the State specifications.

3.04 GENERAL REQUIREMENTS

a. Layout of Work: This contractor shall lay out his work and be responsible for the accuracy of the measurements.

b. Cooperation: This contractor shall cooperate with the other trades in establishing the time of commencing and completing the work of this section.

c. Approvals: The material source from which asphaltic concrete is procured shall be approved by the Architect.

d. Protection of Other Work: Care shall be taken to prevent damage to existing property, concrete slabs and to any of the new work performed under the contract and shall make good any damage resulting from this operation.

e. Inspection of Site: This contractor shall be held to have examined the site and satisfied himself to the existing conditions and the conditions under which he will be obliged to operate.

END OF SECTION
05/15/2008

CONCRETE PAVING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 WORK INCLUDED

a. Site concrete paving, Chain-link fence foundation, including sidewalks.

b. Curbs, gutters.

1.02 RELATED SECTIONS

a. Site grading

b. Asphalt concrete paving

c. Landscaping

d. Reinforcing steel

e. Sewerage and drainage (storm sewer)

1.03 QUALITY ASSURANCE

a. Comply with the latest publications for materials and operations of the following:

1. The American Society for Testing and Materials (ASTM).

2. American National Standards Institute (ANSI).

3. The American Concrete Institute (ACI).

4. The American Welding Society (AWS).

5. Portland Cement Associations (PCA).

6. State Building Codes.

7. State of California, Department of Transportation (CALTRANS) Standard Specifications, latest edition.

b. Certify in writing that Contractor has not less than five years experience in the field of providing specified finishes.

c. Perform work specified herein under the personal and constant supervision of a competent construction superintendent experienced in this class of work.

d. Provide slump tests for checking consistency of concrete mixture shall be made in accordance with ASTM C-143.

e. Pay for any and all re-inspection, re-testing, re-design required due to the failure of concrete to meet requirements.

f. For additional reference information, consult Portland Cement Association booklet; Cement Mason's Guide to Building Concrete Walks, Drives, Patios, and Steps.

g. All concrete work: True to lines and grade as indicated on the drawings. Be responsible for proper drainage, without birdbaths, on all concrete paving surfaces. Bring discrepancies or omissions on drawings, or conditions on the site, which prevents proper drainage to the attention of the Architect in writing for corrections before work proceeds.

h. All Construction: Conform to current applicable codes and ordinances.

i. Coordinate placement of embedded items to avoid block-outs and cutting in finished work.

1.04 SUBMITTALS

a. Submit manufacturer's certification that materials meet specification requirements.

b. Submit concrete mix design.

1.05 PACKAGING, DELIVERY, STORAGE AND HANDLING

a. Deliver packaged materials in manufacturer's original, unopened containers bearing manufacturer's name and brand.

b. Protect materials delivered against inclusion of foreign matter.

c. Store materials in dry location and protect against water.

1.06 JOB CONDITIONS

a. Inspection:
   1. Examine areas for conditions under which work is to be performed. Report in writing to Architect all conditions contrary to those shown on the drawing or specified herein and all other conditions that will affect satisfactory execution of work such as improperly constructed substrates or adjoining work. Do not proceed with work until unsatisfactory conditions have been corrected.

   2. Start of work constitutes acceptance of the conditions under which work is to be performed. After such acceptance, be responsible for correcting all unsatisfactory and defective work resulting from such unsatisfactory condition at own expense.

b. Do not start work until temperature is at least 50 degrees F and rising, or if rain is predicted within eight hours.

c. Owner will select a qualified testing laboratory to take samples for testing during the course of the work as considered necessary. Cost of such test will be paid for by Owner. Cooperate in making tests and be responsible for notifying the designated laboratory in sufficient time to allow taking of sample at time of placement.

d. If test shows that concrete is below specified strength, remove all such concrete, as directed by Architect. Pay for removal of low strength concrete and its replacement with concrete of proper specified strength and testing.

PART 2 PRODUCTS

2.01 MATERIALS

a. Cement: Shall conform to ASTM C-150, Type II, low alkali.

b. Concrete: Shall be 2500 psi, Class B, 5.25 sack mix unless otherwise indicated; conforming to Section 90 of the State Standard Specifications.

c. Aggregate: Shall be 1 inch maximum, conforming to ASTM C-33.

d. Water/cement ratio: Shall not exceed 7.6 gals. /sack cement.

e. Reinforcing: Shall conform to ASTM A-615, Grade 40, deformed bars, or smooth dowels. Smooth Dowels shall be use at expansion joints.

f. Curing Compound: Shall conform to AASHTO Des. M148, Type 2, Class A, white pigmented, except the loss of water in the water retention test should not exceed 0.04 grams per square centimeter of surface.

g. Preformed Joint Filler: Shall conform to ASTM D-1751 or ASTM D-994, 1/2 inch thick unless otherwise indicated.

h. Water: Shall be clean and free from deleterious acids, alkali, oil, and organic matter, and shall be potable.

i. Slump: Maximum slump shall be 4", conforming to ASTM C-143.

j. Form Release: Shall be a 100% chemically reactive release agent conforming to Corps of Engineers CEGS-03300, Section 10.8. Form oil, diesel oil or kerosene not allowed.

k. Dowels at Expansion Joint: Shall be installed with “Speed-Dowel” by Sika-Green streak #PSD09/#4 TX or approved equal.

l. Dowels at (E) Concrete: Shall be installed with Speed-Load by Sika-Green Streak #PSD ½ x SLT or approved equal.

PART 3 EXECUTION

3.01 SUBGRADE PREPARATION

a. Subgrade for the curb, gutter, fire-lane, valley-gutters, concrete paving, and sidewalks: Grade to plus or minus 0.1 feet. Compact all subgrade on which concrete is to be placed to a depth of 6 inches to a relative compaction of 90 percent prior to placing of any concrete.

b. Protect the subgrade from damage after the preparation has been completed. This contractor shall be responsible for all additional fine grading as required.

c. Test the completed subgrade for grade and cross section by means of a template supported on side forms. Wet the subgrade and forms thoroughly, immediately in advance of placing concrete.

3.02 FORMS

a. Forms: Shall be smooth on the side placed next to the concrete, with a true smooth upper edge, and rigid enough to withstand the pressure of fresh concrete without distortion.

b. All forms shall be thoroughly cleaned and coated with form release to prevent the concrete from adhering to them. Depth of face forms for concrete curbs, equal to the full-face height of the curb.

c. Carefully set forms to alignment and grade; conform to the required dimensions. Hold forms rigidly in place by stakes. Brace at 12" o.c. at plywood (5/8" min.) forms and 24" o.c. at 2x forms. Use clamps, spreaders and braces where required to insure rigidity in the forms.

d. Do not remove the form on the front of curbs in less than one hour nor more than six hours after the concrete has been placed. In no event shall forms be removed while the concrete is sufficiently plastic to slump. Do not remove side forms for gutters and sidewalks in less than 12 hours after the finishing has been completed.

3.03 CURB AND GUTTER CONSTRUCTION

a. Expansion joints 1/2 inch wide shall be constructed in curbs and gutters at 30-foot intervals, at each side of structures and at the ends of curb returns. Expansion joints shall be filled with pre-molded joint filler conforming to the provisions in State Standard Specifications, Section 51-01.12C, "Premolded Expansion Joint Fillers". Expansion joint filler shall be shaped to the cross section of the curb and gutter. Reinforcing Dowels shall be smooth. Contraction joints shall be constructed at 10-foot maximum spacing. Cut contraction joints minimum 1-1/4 inch deep with a jointing tool after surface has been finished. Joints shall be constructed at right angles to the curb lines. Concrete shall be placed and compacted in forms without segregation.

b. Prior to the removal of the forms, the surface shall be finished true to grade by means of a straightedge float, not less than 10 feet in length, operated longitudinally over the surface of the concrete. Form clamps shall be so constructed as not to interfere with the operation of this float.

c. Immediately after removing the front curb forms, the face of the curb shall be troweled smooth to the flow line of the integral curb and gutter, and then finished with a steel trowel. The top shall be finished and the front and back edges rounded as shown on the plans.

d. After the face of the curb has been troweled smooth, apply a final fine brush finish with brush strokes parallel to the line of the curb. Give gutters a broom finish with strokes parallel to the line of the gutter.

e. Top and face of the finished curb: Shall be of uniform width, free from humps, sags, or other irregularities. When a straightedge 10 feet long is laid on the top of face of the curb or on the surface of gutters, the surface shall not vary more

than 0.01 foot from the edge of the straightedge, except at grade changes or curves.

f. Depress curbs to provide entrances for driveways and wheelchair ramps. The entrances shall be of the dimensions shown on the plans.

g. Clean, at own expense, all discolored concrete. The concrete may be cleaned by abrasive blast cleaning or other methods approved by the Architect.

h. Make repairs by removing and replacing the entire unit between scoring lines or joints.

3.04 VALLEY GUTTER, CONCRETE PAVING MOW STRIPS AND SIDEWALKS

a. Fresh concrete shall be struck off and compacted until a layer of mortar has been brought to the surface. The surface shall be finished to grade and cross-section with a float, troweled smooth and finished with a broom. The float shall not be less than 10 feet in length and not less than 6 inches in width. Brooming shall be transverse to the line of traffic and, if water is necessary, it shall be applied to the surface immediately in advance of brooming. Test all valley gutters to prove conformance with Article 3.03 e.

b. Expansion joints 1/2 inch wide shall be constructed at all turns and opposite expansion joints in adjacent curb. Where curb is not adjacent, expansion joints shall be constructed at intervals of 30 feet. Expansion joints shall be filled with pre-molded joint filler conforming to the provisions in Section 51-1.12c, "Premolded Expansion Joint Fillers". Contraction joints shall be constructed at 10-foot maximum spacing. Cut contraction joints minimum 1-1/4 inch deep with a jointing tool after surface has been finished.

c. Where concrete borders are to be placed around or adjacent to manholes, drop inlets, or other miscellaneous structures in gutter depressions, island paving, or driveway areas, such structures shall be constructed to final grade before the borders are constructed.

3.05 CONCRETE FINISHES

Broom Finish: Texture with medium broom finish to produce a uniform, non-skid (broom) finish on all surfaces with less than a 6% slope. Texture shall be a heavy broom finish on all surfaces with greater than 6% slope.

3.06 CONCRETE CURING

a. Spray the entire surface of the concrete uniformly with a white pigmented curing compound. Should the film of compound be damaged from any cause before the expiration of 72 hours, repair the damaged portions immediately with additional compound.

b. Surface so newly placed concrete to be cured by the pigmented curing compound shall be kept moist or wet until the curing compound is applied and the curing compound shall not be applied until all patching or surfacing finishing has been completed.

c. The curing compound shall be delivered to the work in ready-mixed form. At the time of use, the compound shall be in a thoroughly mixed condition with the

pigment uniformly dispersed throughout the vehicle. The compound shall not be diluted or altered in any manner.

d. Curing compound that has become chilled to such an extent that it is too viscous for satisfactory application shall be warmed to a temperature not exceeding 100 degrees F.

e. Apply the curing compound to the exposed surface at a uniform rate of one gallon per 150 square feet of area.

3.07 CLEAN UP

a. Upon completion of other work in buildings, all concrete paving surfaces shall be swept clean and all mortar and stains removed therefrom.

b. The Contractor shall remove from the premises all surplus material, equipment, and debris as a result of work in this Section.

END OF SECTION
11/30/2022

CHAIN LINK FENCES AND GATES

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL

1.01 SCOPE OF WORK

The work of this Section shall include all labor, material, equipment and appliances and required to complete the fencing indicated on the drawings and specified herein.

1.02 WORK INCLUDED

a. All chain link fencing, posts, headrails, braces, fittings, fabric, hardware and gates.

b. Excavation and concrete footings for chain link fence work.

c. Privacy slats for fences and gates.

1.03 RELATED WORK

Concrete design and concrete mow strips - see Section 03 10 00.

1.04 GENERAL REQUIREMENTS

a. Workmanship: Only skilled workmen experienced in their respective trades and work shall be employed. All work shall be performed in a first-class workmanlike manner and shall be subject to the approval of the Architect.

b. Measurements: The contractor shall take measurements of the building site and verify the dimensions indicated on the drawings.

c. Completeness: The contractor shall furnish and install all appurtenances required to give a complete and satisfactory fence.

d. Responsibility: The contractor shall be responsible for properly locating the fence within the property lines.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

a. MASTER-HALCO

b. USA Industries, (801) 972-5124

c. Substitutions: See Div.00, Section 10, Article 19, whenever any material is specified by name and/or number thereof, such specifications shall be deemed to be used for the purpose of facilitating a description of the materials and establishing quality, and shall be deemed and construed to be followed by the words "or approved equal". No substitution will be permitted which has not been submitted for prior approval by the Architect. All materials shall be new and the

best of their class and kind and free of visible defects. Sufficient descriptive literature and/or samples must be furnished for any materials submitted as "equal" substitutes. All materials shall be guaranteed for a period of one (1) year against material defects and workmanship.

2.02 MATERIALS

a. Chain Link Fencing: Shall be 6'-0" high typically or as indicated on drawings.
   (1) Standard fabric shall be 2" mesh, 9ga GBW with 1.2 oz/ft. zinc coating with KK (Knuckle) selvage.

   (2) Slatted fabric shall be Slat Master 80% Privacy 3-1/2"x5" mesh, 9ga GBW with 1.2 oz/ft. zinc coating.

b. Posts shall conform to Table I. Length of posts shall be compatible with the specified fence height, or shall be as detailed. The term "Terminal posts" shall apply to end, corner, and pull posts. The term "Line posts" is defined as the vertical posts installed between terminal posts. The term "Gate posts" shall apply to the post supporting the weight of the gate.

TABLE 1

Post Type	Fabric Heights	Size	Weight (lb./l.f.)
Terminal	6 ft. or less	2.875" o.d.	5.79
	6'-1" to 12'-0"	4" o.d.	9.11
	Over 12'-0"	6.625" o.d.	18.97
Line	12'-0" or less	2.375" o.d.	3.65
	Over 12'-0"	2.875" o.d.	5.79
	Gate Leaf Widths	Post Size	
Gate	6'-0" or less	2.875" o.d.	5.79
	6'-1" to 13'-0"	4" o.d.	9.11
	13'-1" to 18'-0"	6.625" o.d.	18.97
	18'-1" to 23'-0"	8.625" o.d.	28.55
Sliding Gate	Varies	Same as terminal post	

c. Line Posts: Shall be hot-dip galvanized, Class I steel pipe, Grades A and B, 1.2 oz. zinc-coated, Schedule 40, per ASTM A-120. See Table 1 for pipe diameter and weights for applicable heights.

d. End, Corner, Pull and Gate Posts: Shall be hot-dip galvanized, Class I steel pipe, Grades A and B, 1.2 oz. zinc-coated, Schedule 40, per ASTM A-120. See Table 1 for pipe diameter and weights for applicable heights. Install corner posts at the beginning and at all ends of all radii.

e. Depth and Setting of Posts: All posts shall be set three feet (3') min. in concrete footings. Concrete base shall be 39" deep x 10" diameter for line posts and 39" deep x 14" diameter for end/gate posts, unless otherwise noted. The cement shall extend three inches (3") below bottom of all posts.

f. Top and Bottom Rails and Bracing: Shall be hot-dip galvanized pipe (1.66") o.d., weight 2.27 pounds per linear foot. Attach fabric to top rail with 13 ga. annealed galvanized wire, double wrapped at 12" o.c.

g. Post Tops: Shall be hot-dip galvanized. All posts fitted with heavy ornamental tops.

h. Fittings: Shall be heavy weight malleable wrought iron or heavy weight pressed steel and shall be hot-dip galvanized. Fabric shall be fastened to end corner and gate posts with 1/4" x 3/4" stretcher bars and not less than 1/8" x 3/4" wide stretch bar bands at one foot (1'-0") center to center.

i. Fabric Attachment: Fabric shall be fastened to line posts with 9 ga. annealed galvanized wire, single wrapped approximately at eighteen inch (18") centers minimum 5 per post.

j. Gates: Gate frames to be made of hot-dip galvanized pipe (1.90") o.d., weight 2.72 pounds per linear foot. Gate corners shall be welded. Fabric to be same as in fence. Gates to be complete with heavy weight malleable iron hinges and catches. Single gate to have a fork latch with padlock attachment, double gates shall have drop-bar with gate holdbacks.

k. Rolling Gates: Supply 6" round wheels with two (2) (1.66") o.d. rail track on the side of the fence.

l. Concrete: See Section 03 10 00.

m. Latches: Shall be fork-latch type and attachments for padlock locking on all gates.

n. Finish: All materials entering into the construction of this fence shall be heavily hot dip galvanized.

o. Tension Wire: Shall be 7 ga. coil spring class III steel wire, 1.2 oz. zinc coated attached to fabric with 9 ga. hog rings at 24" o.c.

p. Privacy slats:
   (1) All slats shall be manufactured from a combination of color pigments, quality high density virgin polyethylene and ultraviolet inhibitors.
   (2) Color, provide minimum 6 color choices. Color to be selected by Architect.
   (3) Provide 25 years limited warranty against color fading, breakage of slats and locking channel under normal climatic extremes.

PART 3 EXECUTION

3.01 EXAMINATION AND VERIFICATION OF DRAWINGS AND SITES

It shall be The Contractor's responsibility to report to the Architect any deviations between the drawings, specifications and the site. Failure to do so prior to the installing of equipment, shall be done at the contractor's expense.

3.02 ORDINANCES AND REGULATIONS

All local, municipal and state laws and rules and regulations governing or relating to any portion of this work are hereby incorporated into and made a part of these specifications and their provisions shall be carried out by the contractor. Anything contained in these specifications shall not be construed to conflict with any of the above rules and regulations or requirements of same. However, when these specifications and/or drawings call for or describe materials, workmanship or construction of a better quality, higher standard or larger size, specification and/or drawings shall take precedence over the requirements of said rules and regulations.

3.03 INSTALLATION

a. Headrails and top of fabric shall be level and true to line.
b. Posts shall be spaced not over ten foot (10'-0") centers or where shown on plans.
c. Fencing shall stair-step up or down retaining walls, grades, curbs, etc., in a level, perpendicular and satisfactory fashion.

3.04 CLEAN UP

All excess soil, debris, rubbish, etc., which results from work performed under this section shall be cleaned up and removed from the site. It shall be legally disposed of off site.

END OF SECTION
06/10/2024

IRRIGATION

DIVISION 00 AND 01 ARE A PART OF THIS SECTION

Part 1 - General

1.01 Description of Work

A. All labor, materials, tools and the transportation and performance of all the work required as indicated on the Drawings and Specifications and reasonably incidental to:
   1. Irrigation laterals and couplings.
   2. Sprinkler heads and swing joints.
   3. Utility boxes.
   4. All related trenching and backfilling.

1.02 Related Work

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division O and Division 1 Specification Sections, apply to work of this Section.

1.03 Quality Assurance

A. Examine all sections of Specifications and Drawings for Work related to this Section.
B. Install irrigation system in accordance with all applicable codes and regulations. Installer shall have had considerable experience and demonstrate ability in the installation of irrigation systems of specified type(s) in a neat, orderly, and responsible manner in accordance with recognized standards of workmanship.
C. Contractor shall check static pressure downstream of existing control valve location for this scope of work and notify Landscape Architect in writing of the pressure available.
D. Contractor shall notify the Landscape Architect and the Inspector 5 working days in advance when each work phase is ready to be inspected.
E. Contractor shall provide "As-Built "plans for the irrigation system per the General Conditions and prior to final acceptance of work. In addition, (1) colored coded controller chart bond copy shall be reduced in size, laminated with vinyl film, and placed in the controller enclosure, and two full size mylar copies shall be provided to the Owner.
F. The Contractor shall maintain continuous power and water supply to all facilities that are directly or indirectly affected by this construction, unless other arrangements are made with the Owner for temporary shut-offs.
G. The Contractor shall protect the public health, safety and welfare during all phases of the work.
H. Contractor's price shall include an amount to install two (2) additional sprinkler heads of each type from that quantity shown on the drawings at no additional cost to the Owner. Nozzle changes to accommodate existing conditions shall be provided at no additional cost to the District. All unused additional sprinklers shall be delivered to the District as spares prior to final payment.
I. Crew Training for Solvent Weld PVC & Thrust Block Installation:
   1. The Contractor shall be required to provide crew members that will install PVC for mandatory training and certification. Contractor shall schedule training a minimum of 10 days prior to the installation of any pipe on the site.
J. All meetings, including training, shall be conducted in English. The Contractor shall

provide an interpreter, at the Contractors expense, to translate for his/her non-English or poor English speaking representative(s).

1.04 Guarantee

A. Contractor shall provide a one (1) year guarantee from the filing date of the Notice of Completion and Final Acceptance of the Work. Any pipes, valves, heads, planting, and paving, which has settled shall be reinstalled to the proper level at no cost to the District. Completely restore all damaged planting, paving, or other improvements.

1.05 Instruction, Training and Support

A. Provide instruction to the District 's maintenance personnel in the operation and maintenance of the system. All warranties, product data and manuals shall be bound together with 8 1/2" by 11" reduced site irrigation plans showing zones in 9" by 12" black 3 ring binders. Contractor is to provide for one year of on-site technical support and continuing training after the filing date of the Notice of Completion by the District at no additional cost to the District.

Part 2 - Products

2.01 Acceptable Manufacturers

A. Rainbird Sprinkler Mfg.
B. Christy

2.02 Materials: All materials shall be as indicated on the plan, irrigation schedule and as specified herein.

A. Piping and Fittings:
   1. Polyvinyl chloride pipe:
      a. ASTM D2241, rigid, unplasticized PVC, extruded from virgin parent material. Provide pipe homogeneous through and free from visible cracks, holes, foreign materials, blisters, wrinkles, and dents.
         (1) Lateral Lines: Schedule 40 PVC.
   2. PVC pipe fittings:
      a. Fittings for Schedule 40 PVC shall be ASTM D2241 Schedule 40 PVC molded fittings suitable for solvent weld, slip joint Ring Tite seal or screwed connections. Fittings made of other materials are not permitted.
         (1) Sleeve lateral lines below walks and paving.
         (2) PVC schedule 40 fittings w/ glued joints shall be utilized. The glue manufacturer shall furnish training for landscape contractor. Staff personnel shall be certified and wear a photo ID after receiving training.
         (3) Size slip fitting socket taper to permit a dry unsoftened pipe end to be inserted no more than halfway into the socket. Saddle and cross fittings are not permitted.

B. Solvent: ASTM D2466 recommended by manufacturer of approved pipe.
C. Controllers – Existing controller to remain.
D. Control Valves: Existing remote control valves to remain.
E. Heads
   1. Pop-ups rotors shall be as specified on plans.
   2. Install all turf heads with swing joint assemblies.
   3. Install two deep root watering systems per tree.

F. Swing Joints:
   1. For irrigation rotor heads:
      a. Low/Regulated Pressure Areas – 1" Rainbird TSJ Series
      b. High Pressure Areas – 1" TSJ – PRS Series

G. Valve boxes: Existing valve boxes to remain, unless broken or damaged. If so, boxes and/or lids to be replace with equal new product.

2.03 Valve Tags – If existing control valves in this scope of work have no ID tags, Contractor shall install T. Christy Enterprises, standard size tags, which shall be irrigation yellow color with controller letter and valve numbers hot stamped in black (ie: A-1 for controller A – Valve #1). ID Tags shall be installed prior to the punch list review.

2.04 Trenches

A. Fill to match adjacent grade elevations with approved earth fill material. Place and compact fill in layers not greater than 6" depth. Provide compaction of 95% over existing main lines where they cross under areas with concrete or AC paving. Compact all other trench backfill to 85%.

B. Trench depth for lateral lines shall be a minimum of 12" deep. Under paving trench depth shall be a minimum of 24" deep. Maintain 12" of horizontal clearance between lines of other trades.

2.05 Thrust Blocks

A. Thrust Blocks sizes and dimensions shall be based on "Thrust Form Systems" charts for 2000 lb/ft² Soil Bearing Capacity at 150 psi.

Part 3 – Execution

3.01 Inspection

A. Examine final grades and installation conditions. Do not start irrigation system work until unsatisfactory conditions are corrected.

3.02 Preparation

A. Layout and stake the location of each pipe run and all sprinkler heads and sprinkler valves. Obtain Landscape Architect's acceptance of layout prior to excavating.
B. Strip sod for pipe trenches with a mechanical sod stripper uniformly 1" to 1-1/2" thick with clean cut edges.
C. Place sleeves as indicated for installation of piping and conduit for control wires.

3.03 Installation

A. Excavating and backfilling:
   1. All excavation shall be considered unclassified excavation and include all materials encountered.
   2. Excavate trenches to depth and width indicated on drawings to permit proper handling and installation of pipe and fittings.
   3. Fill to match adjacent grade elevations with approved earth fill material. Place and compact fill in layers not greater than 6" depth.
   4. Provide compaction of 95% over existing main lines where they cross under areas with concrete or AC paving. Compact all other trench backfill to 90%.

5. Replace stripped sod in sufficient time to allow for satisfactory sod recovery and growth. Water stripped and reinstalled sod until irrigation system is placed in operation.
6. Replace paving of same materials, using joints and patterns to match existing adjoining paving surfaces.

B. Plastic Pipe:
1. Install plastic pipe in accordance with manufacturer's installation instructions. Provide for thermal expansion and contraction.
2. Saw cut plastic pipe. Use a square-in sawing vice, to insure a square cut. Remove burrs and shavings at cut ends prior to installation.
3. Make plastic-to-plastic joints with solvent weld joints for slip seal joints. Use only solvent recommended by the pipe manufacturer. Install plastic pipe fittings in accordance with pipe manufacturer's instructions. Contractor shall make arrangements with pipe manufacturer for all necessary field assistance.
4. Make plastic to metal joints with plastic male adapters.
5. Make solvent weld joints in accordance with manufacturer's recommendations.
6. Allow joints to set at least 24 hours before pressure is applied to the system.
7. Maintain pipe interiors free of dirt and debris. Close open ends of pipe by acceptable methods when pipe installation is not in progress.

C. Sprinklers, fittings, valves, and accessories:
1. Install fittings, valves sprinkler heads, risers and accessories in accordance with manufacturer's instructions, except as otherwise indicated.
2. Set sprinkler heads perpendicular to finished grade and 2 inches from pavement edge, except as otherwise indicated. Nozzle changes shall be made at no cost to the District.
3. Obtain Landscape Architect's review and acceptance of height for proposed sprinkler heads and valves prior to installation.
4. Locate sprinkler heads to assure proper coverage of indicated areas. Do not exceed sprinkler head spacing distance indicated.
5. All turf heads should be mounted on specified swing joints.
6. Install valve access boxes on a suitable base of gravel to provide a level foundation at proper grade and to provide drainage of the access box.

D. Flushing, testing, and adjustment:
1. After sprinkler piping and risers are installed and before sprinkler heads are installed, open control valves and flush out the system with full head of water.
2. Adjust sprinklers after installation for proper and adequate distribution of the water over the coverage pattern. Adjust for the proper arc of coverage to avoid overspray onto buildings and minimize overspray onto hardscape.
3. Tighten nozzles on rotor type sprinklers after installation. Adjust sprinkler adjusting screw on lateral line or circuit as required for proper radius. Interchange nozzles patterns as directed by the Landscape Architect, to give best arc of coverage.
4. Adjust all electric remote control valve pressure regulators and flow control stems for system balance and optimum performance.
5. Test and demonstrate the controller by operating appropriate day, hour, and station selection features as required of each season per Service section below.

3.04 Disposal of Waste Material

A. Stockpile, haul form site, and legally dispose of waste materials, including unsuitable excavated materials, rock, trash, and debris.
B. Maintain disposal route clear, clean, and free of debris.

3.05 Acceptance

A. Test and demonstrate to the Landscape Architect and District satisfactory operation of the system free of leaks.
B. Instruct the District 's designated personnel in the operation of the system, including adjustment of sprinklers, controller(s), valves, pump controls, and moisture sensing controls.
C. Upon acceptance the District will assume operation of the system.
D. All record documents must be approved and submitted prior to final payment per the General Conditions.

3.06 Cleaning

A. Perform cleaning during installation of the work and upon completion of the work. Remove from site all excess materials, soil, debris, and equipment. Repair damage resulting from irrigation system installation.
B. Extreme care shall be taken by the landscape contractor when backfilling of trenches. They shall be left flush with the existing surrounding soil level. Tamp soil and rake level to make level bed for turf to re-establish.

END OF SECTION

SODDING

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

Part 1 – General

1.01 Summary

A. Description of Work

1. All labor, materials, tools and the transportation and performance of all work required as per specifications
    a. Place and rototill soil amendments
    b. Prepare subgrade to receive soil amendments
    c. Rake and level by fine grading to plans
    d. Certification of existing grades
    e. Install sod
    f. Maintenance
    g. Guarantee
    h. Clean up of site

B. Related Work

1. General and supplemental conditions
2. Irrigation
3. Grading

1.02 Delivery, Storage and Handling

A. Sod shall be delivered and installed within 24 hours of harvest at anytime of the year. Sod not installed within this period shall be inspected and approved by the Landscape Architect or the owner's representative prior to its installation.

B. Sod strength shall be such that the sod rolls on slabs may be handled, lifted and moved w/o substantial breaking or tearing.

C. Substitutions will not be permitted unless specified sod is not available. Any substitutions require the approval of the Landscape Architect.

1.03 Project Conditions

A. Notify Landscape Architect at least 7 working days prior to start of installations operations.

B. Contractor shall verify actual site conditions and report any discrepancies between the plans and actual conditions to the District and stop doing any work in areas to be sodded.

C. Protect existing utilities, paving and other facilities from damage caused by sod installation operations.

D. Perform sod installation work only after planting or other work affected ground surface has been completed

E. Restrict and redirect all foot traffic from new grass before it is established by staking with colored tape, to indicate new sodded areas.

F. At the completion of grading the Contractor shall install the irrigation system prior to installation of sod.

1.04 Quality Control

A. Contractor is to be fully informed regarding the management and control of fugitive dust and shall comply with all current San Joaquin Valley Air Pollution Control District "Visible Dust Emissions" (VDE) requirements.

B. Additionally, protect storage piles and bulk materials as required to comply w/VDE requirements.

C. Contractor shall be a licensed C-27 Landscape Contractor and shall have a minimum of five years experience.

1.05 Warranty

A. Provide a uniform stand of grass by watering, mowing and maintaining sod areas until final acceptance.

1. Replace sod areas with specified materials which fail to provide a uniform stand of grass until all affected areas are accepted by the Landscape Architect.

Part 2 - Products

2.01 Materials

A. Sod

1. Sod shall be freshly harvested grown from high quality propagated material on Methyl Bromide fumigated soil with appropriate State and Federal regulatory agency approved pesticides and herbicides for control of disease, insects and weeds. Sod shall meet or exceed the standards of the State of California regulations for nursery inspection.
2. Cutting Sod
   a. Sod shall be cut by machine to a thickness of between 1/4" and 5/8", not including top growth or thatch.
   b. Size of rolls or slabs shall be consistent to the supplier's standards width and length and may not vary more that 2% in either dimension. Top growth shall be uniform in 1/2" to 3/4" and of good color, free of debris.
   c. Sod moisture content shall be neither too wet nor too dry at the time of harvest to adversely affect its ability to be transplanted.

B. Soil Amendments

Areas to be planted with sod and irrigated shall receive soil amendments.

1. The following soil amendments shall be incorporated into the soil prior to planting.
   a. Four (4) cubic yards compost shall be incorporated per 1000 sq. ft. of soil surface area and rotor-tilled to depth of 6".
   b. Humate soil conditioner - @ 400 lbs per 1000 sq. ft. spread evenly after tilling, grading, and before planting.
   c. Humate soil conditioner w/Mn - @ 100 lbs per 1000 sq. ft. spread evenly after tilling, grading, and before planting.
   d. Live Earth Triple 8 Plus product - @ 25 lbs per 1000 sq ft.
   e. Ag Grade Magnesium-@ Manufacturer's corrective rate
   e. A copy of delivery slips on all materials used on the project shall be delivered to the authorized District representative.
2. Delivery slips shall be provided at time of material delivery to site. Delivery will not be allowed without delivery slips on any items.

C. Water

1. Water shall be clean, fresh and free of substances of matter that would inhibit growth of sod grass.

Part 3 – Execution

3.01 Grades, Soil Preparations and Certification

A. Finish Grades

1. Coordinate soil preparation work with the requirements for finish grading

B. Weed, Debris, Clods and Rock removal

1. All Areas to be planted shall be cleared of all weeds and debris prior to soil preparation and finish grading.
2. At time of planting areas to be sodded shall be free of stones, stumps, roots or other deleterious matter 1" in diameter or larger and shall be free from all wire, plaster or similar objects that would be a hindrance to planting or maintenance.

C. Protect existing underground improvements from damage.
D. The contractor shall have the final grade certified by a surveyor licensed in the State of California. The final grades shall be within the tolerances specified in this section.

3.02 Installation

A. After preparation of soil has been completed, the areas to receive sod shall be brought to finish grade.
   1. Contractor shall make the entire area smooth, even and well firmed.
   2. Contractor shall insure that finish grades are generally one (1) inch below the surface of walks, curbs, paved areas and boxes without abrupt changes in gradient.
B. The ground surface shall be inspected by the Landscape Architect prior to sod installation to determine suitability for planting.
   1. The Contractor shall obtain such approval prior to installation.
C. Sod type shall be Celebration bermuda grass sod, as specified on the plans, and shall be delivered and installed within 24 hours of harvest anytime of the year, unless approval is given for a specific preservation technique.
D. Fertilize
   1. Apply fertilizer as specified in "Soils Amendments" section.
   2. Lightly water to aid the breakdown of the fertilizer.
   3. Apply fertilizer within 48 hours before laying sod.
E. Laying Sod
   1. Lay sod as soon as possible after delivery to prevent deterioration.
   2. Lay sod closely knit together with no one joint visible and pieces not overlapped. Lay smooth and flush with adjoining paving, curbing or other sod strips.
   3. Immediately water sod areas after installation. Water in sufficient amounts to saturate sod and upper 6" of soil.
   4. After sod and soil has dried sufficiently to prevent damage, roll sod areas to insure a good bond between sod and soil and to remove minor depression and irregularities. Insure rolling equipment weight to be not more than 250 lbs. or less than 150 lbs.

3.03 Maintenance Period

A. Maintain sod areas immediately after placement for a period of 90 days. This constitutes firm attachment to the soil by the sod and exhibits a vigorous growing condition as agreed to by the Landscape Architect and the District.
B. Mow grass at regular intervals, weekly, or as required to maintain grass at a height of 1/2" to 1". Do not cut more than 1/3 of grass blade at any one mowing. Neatly trim edges and hand clip where necessary. Immediately remove all clippings after mowing and trimming. Contractor shall be responsible for a minimum of three mowings and more as required by the Landscape Architect depending on the growth of the lawn.
C. Water when required and in sufficient quantities to prevent grass and underlying soil from drying out.
D. Roll when required to remove minor depressions or irregularities.

E. Control growth of weeds. When using herbicides, apply in accordance with manufacturer's recommendations. Remedy damage resulting from negligent or improper use of herbicides.
F. Immediately repair or replace any areas that show deterioration or bare spots.
G. Protect sod areas with warning signs during maintenance period.
H. Six weeks after installation begin fertilization program as indicated on the plans.

3.04 Acceptance

A. Inspection to determine acceptance of sod lawns will be made by the Landscape Architect, upon Contractor's request.
   1. Provide notification, at least 10 working days before requesting inspection date.
   2. Sod areas will be acceptable provided all requirements, including maintenance, have been completed with, and a healthy uniform close stand of the specified grass is established free of weeds, undesirable grass species, nutsedge, disease and insects.
B. Upon acceptance, the Owner will assume lawn maintenance.

3.05 Cleanup

A. Perform cleanup during installation of the work and upon completion of the work.
   1. Remove from site all excess materials, debris and equipment.
   2. Repair damage resulting from sod installation operations.

END OF SECTION

TREES, PLANTS AND GROUND COVER

DIVISIONS 00 AND 01 ARE A PART OF THIS SECTION

PART 1 GENERAL INFORMATION

1.01 SUMMARY

A. Inclusions:
   1. Provisions set forth in Divisions 0 and 1;
   2. Soil preparation;
   3. Trees
   4. Planting mixes;
   5. Mulch and planting accessories;
   6. Maintenance;
   7. Submittal preparation;
   8. Clean up.

B. Related Sections:
   1. Section 02441:Irrigation Systems
   2. Section 02487:Sod

1.02 QUALITY ASSURANCE

A. Plant names indicated shall comply with "Standardized Plant Names" as adopted by the latest edition of the American Joint Committee of Horticultural Nomenclature.

B. Names of varieties not listed conform generally with names accepted by the nursery trade.

C. Provide stock true to botanical name and legibly tagged.

D. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock". A plant shall be measured as it stands in its natural position.

E. All plants shall be nursery grown under climatic conditions similar to those in the locality of the project for a minimum of 2 years.

F. Stock furnished shall be at least the minimum size indicated.
   1. Larger stock is acceptable, at no additional cost, providing that the larger plants will not be cut back to size indicated.

G. Plants may be inspected and approved at the place of growth, for compliance with specification requirements for quality, size, and variety.
   1. Such approval shall not impair the right of inspection and rejection upon delivery at the site or during the progress of the work.

H. Warranty:
   1. Warrant plant material to remain alive and be in healthy vigorous condition for a period of 1 year after completion and acceptance of entire project.
      a. Inspection of plants will be made by the Landscape Architect at completion of planting.
   2. Replace plants that are dead as determined by the Landscape Architect, or are in an unhealthy or unsightly condition, or have lost their natural shape due to dead branches, or other causes, at the Contractor's expense.

a. Warrant all replacement plants for 1 year after installation.

1.03 PROJECT CONDITIONS

A. Notify Landscape Architect at least 7 working days prior to installation of plant material.

B. Protect existing utilities, paving, and other facilities from damage caused by landscape operations.

C. In the event that quantity discrepancies or material omissions occur in the plant materials list shown on the drawings, the planting plans shall govern.

D. The irrigation system will be installed prior to planting.
1. Locate, protect, and maintain the irrigation system during planting operations.
2. Repair irrigation components damaged during planting operation at the Contractor's expense.

PART 2 PRODUCTS

2.01 MATERIALS

A. Provide plants typical of their species or variety; with normal, densely developed branches and vigorous root systems.
1. Provide only sound, healthy, vigorous plants free from defects, disfiguring knots, sunscald injuries, frost cracks, abrasions of the bark, plant diseases, insect eggs, borers, and all forms of infestation.
2. Plants shall have a fully developed form without voids and open spaces.
a. Plants held in storage will be rejected if they show signs of growth during storage.

B. Container-growth stock: Grown in a container for sufficient length of time for the root system to have developed to hold its soil together, firm, and whole.
1. No plants shall be loose in the container.
a. Container stock shall not be pot bound.

C. Provide tree species that mature at heights over 25'-0' with a single trunk. Trees that have the main trunk forming a "Y" shape are not acceptable.

D. Plants planted in rows shall be matched in form.

E. Plants larger than those specified in the plant list may be used when acceptable to the Landscape Architect.

F. The height of the trees, measured from the crown of the roots to the top of the branch, shall not be less than Industry standard for each plant species and variety.

G. No pruning wounds shall be present with a diameter of more than 1" and such wounds must show vigorous bark on all edges.

I. Replace plant materials found dead or not in a healthy growing condition.
1. Plants that die or lose more than 30% of their original leaves shall be replaced under this Section.
2. Replace plant materials of same size and species, with a new warranty commencing on date of replacement.

J. Trees shall be species and size-identified in plant schedule, grown in climatic conditions

similar to close locality of the work.

K. Plants shall be symmetrical, typical for variety and species, sound, healthy, vigorous, free from plant disease, insect pests or their eggs, excessive abrasions or other objectionable disfigurements, and shall have healthy, normal root systems, well filling their containers, but not to the point of being root bound. Tree trunks shall be sturdy and well hardened off.

L. Substitutions for the indicated plant materials will be permitted.
   1. Provided the substitute materials are approved in advance by the Landscape Architect and the substitutions are made at no additional cost to the Owner.
   2. Except for the variations so authorized, all substitute plant materials shall conform to the requirements of these specifications.
   3. If accepted, substitute materials are of less value than those indicated or specified, the Contract price will be adjusted in accordance with the provisions of the Contract.

M. Plant Inspection and Rejection: Root condition of plants will be determined by the Landscape Architect through the removal of earth from the roots of at least two (2) plants but not more than 2% of the total number of species from each source.

2.02 SOIL AMENDMENTS

A. Soil amendments and soil preparation to be as indicated on plans.

PART 3 EXECUTION

3.01 PREPARATION

A. Remove foreign materials, plants, roots, stones, and debris from areas to be planted.
   1. At time of planting, areas to be planted shall be free of stones, stumps, roots, or other deleterious matter 1" in diameter or larger and shall be free from all wire, plaster, or similar objects that would be a hindrance to planting or maintenance.

B. Protect existing underground improvements from damage.

C. Any and all contaminated soil shall be removed and replaced with acceptable fertile import soil as determined by soils analysis.

D. Cultivate all planting areas by ripping to depth of 12 inches with an agricultural implement designed for that purpose. Rip area in two directions, perpendicular to each other.
   1. Repeat cultivation areas where equipment has compacted subgrade.

E. Excavate circular plant pits with vertical sides, except for plants specifically indicated to be planted in beds.
   1. Provide plant pits twice the width of the diameter of the root system for all the trees.
   2. Depth of pit shall accommodate the container root ball, such that the top of the root crown shall be 1” above finish grade.
   3. Scarify the bottom of the pit to a depth of 4".
   4. Remove excavated materials from the site.

3.02 DELIVERY, STORAGE, AND HANDLING

A. Deliver fertilizer materials in original, unopened, and undamaged containers, showing

weight, analysis, and the name of manufacturer.

B. Store in manner to prevent wetting and deterioration.

C. Take precautions in preparing plants for moving.
   1. Spray deciduous plants in foliage with an approved "Anti-Desiccant" immediately after digging to prevent dehydration.
   2. Dig, pack, transport, and handle plants with care to ensure protection against injury.
   3. Inspection certificates required by law shall accompany each shipment invoice or order to stock and on arrive, the certificate shall be filed with the Landscape Architect.
   4. Protect plants from drying out.
      a. If plants cannot be planted immediately upon delivery, properly protect them with oil, wet peat moss, or in manner acceptable to the Landscape Architect.
      b. Water heel-in plantings daily.
   5. No plant shall be bound with rope or wire in a manner that could damage or break the branches.

D. Cover plants transported on open vehicles with protective covering to prevent wind burn.

E. Reject plants when ball of earth surrounding roots has been cracked or broken preparatory to or during planting.

F. Provide dry, loose topsoil for planting bed mixes. Frozen or muddy topsoil is not acceptable.

3.03 INSTALLATION

A. Planting shall be performed only by experienced workmen familiar with planting procedures under the supervision of a qualified supervisor.

B. Locate plants as indicated or as approved in the field after staking by the Contractor.
   1. If obstructions are encountered that are not shown on the drawings, do not proceed with planting operations until alternate plant locations have been selected.

C. Set plant material in the planting pit to proper grade alignment.

D. Set plants upright, plumb, and faced to give the best appearance or relationship to each other or adjacent structure.

E. Set plant material 1" above the finished grade.

F. No filling will be permitted around trunks or stems.

G. Backfill the pit with planting mixture.
   1. Do not use frozen or muddy mixtures for backfilling.
   2. Form a ring of soil around the edge of each planting pit to retain water.
   3. Backfill mix shall be equal parts of native soil and sand, plus the soil amendments indicates below.
   4. The Backfill mix blend to contain the following:
      a. Humate Soil Conditioner - 45% humic @ approx 1 lb or 2 cup.
         per gallon container size.
         36"Box tree- 35 lbs
      b. 'Aquasmart Pro' moisture retention product at the following rates -
         36" box- 5.0 cups

H. Tree Staking:
   1. Inspect trees for injury to trunks, evidence of insect infestation, and improper pruning before wrapping.
   2. Staking:
      a. Stake all trees immediately after lawn sodding operations, and prior to acceptance.
   3. All work shall be subject to acceptability of the Landscape Architect.

I. Pruning:
   1. Pruning branches of deciduous stock after planting to balance the loss of roots and preserve the natural character appropriate to the particular plant requirements.
      a. In general, remove 1/4 to 1/3 of the leaf bearing buds. Proportion shall, in all cases be acceptable to the Landscape Architect. Remove or cut back broken, damaged, and non-symmetrical growth of new wood.
   2. Multiple Leader Plants: Preserve the leader that will best promote the symmetry of the plant.
      a. Cut branches flush with the trunk or main branch, at a point beyond a lateral shoot or bud a distance of not less than 1/2 the diameter of the supporting branch.
         1) Make cut on an angle.
   3. Prune evergreens only to remove broken or damaged branches.

J. Care of Existing Trees:
   1. Water existing trees every 2 weeks until acceptance.
   2. Water thoroughly with a fine mist spray head, soaker hose, or hose at a low flow rate over the entire drip line area as required to allow water to penetrate to a depth of 12" to 18".

3.04 INSPECTION

A. Examine proposed planting areas and conditions of installation.
   1. Do not start planting work until unsatisfactory conditions are corrected.

3.05 MAINTENANCE

A. Planted and turf areas will be inspected at completion of installation and accepted to compliance with specified materials and installation requirements.

B. After all work indicated on the drawings or herein specified has been completed, inspected, and approved by the Landscape Architect, the Contractor shall commence a ninety (90) day Maintenance Period.
   1. This ninety (90) day Maintenance Period shall occur within the specified project completion timeframe.

3.06 WORK IN PROGRESS

A. Contractor shall continuously maintain areas included in the Contract during the progress of the work and until final acceptance of the work.

B. During Maintenance Period the contractor shall maintain the site and this includes all mowing (at height approved by District), watering, mulching, cultivating, spraying, and trimming necessary to bring the planted areas to a healthy growing condition, and any additional work needed to keep the areas neat, edged, and attractive.
   1. This shall be required on a weekly basis.

C. During the maintenance period, the Contractor, at his own expense, shall replace any plant indicating weakness or the probability of dying.

D. All basins around trees shall be maintained at a four (4) inch depth throughout progress of the work, unless otherwise instructed by the District's authorized representative.

E. Tree stakes that for any reason are damaged or rendered inadequate for support shall be repaired and restored to their original condition.

F. Constant diligence shall be maintained for the advent of disease, insects, and/or rodent infestation, and proper preventative or control measures taken.

G. All trees shall be maintained in their natural shapes.
   1. Tall or scraggly branches shall be thinned out where necessary.
   2. In no case shall trees be trimmed by heading or shearing.
   3. Any plants severely pruned in this manner shall be removed and replaced at the Contractor's expense.

H. Liquid maintenance program to be applied with the installed fertigation unit:
Maintenance 6 weeks after installation. Apply to all turf areas,
Live Earth Triple 8 Plus Product @ 12.5lbs per 1000sq ft.

I. At completion of maintenance period, all areas included in the Contract shall be substantially clean and free of debris.
   1. All plant materials shall be alive, healthy, and free of infestations.

J. The Contractor, at his expense, shall repair any erosions or slippage of soil caused by watering.

3.07 CLEAN UP

A. All walks, curbs, and gutter shall be kept clear of debris, mud, dust, and standing water by sweeping, mopping, or hosing down, as required to maintain cleanliness throughout.

3.08 NOTICE

A. The Contractor, within fourteen (14) days of written notification by the District's authorized representative, shall remove and replace all guaranteed plant materials that for any reason fail to meet the requirements of the guarantee.
   1. All plant material replaced shall be guaranteed for the original period, starting from the date of replacement.

B. Written Notice:
   1. At the end of the specified Maintenance Period, the Contractor shall present written notice to the District's authorized representative that he has completed the required maintenance, and upon acceptance by District, any further maintenance will be the responsibility of the District.

END OF SECTION

WATER DISTRIBUTION

DIVISION 00 AND 01 ARE A PART OF THIS SECTION

PART 1 - GENERAL

1.1 DESCRIPTION OF WORK:

a. Pipe and fittings for water piping.
b. Valves.
c. Valve boxes.
d. Accessories.
e. Refer to Division-31 Section “EARTHWORK”

1.2 REFERENCES

A. ASTM Test Method D1557.

B. ANSI/ASTM D2466 - Polyvinyl Chloride (PVC) Plastic Pipe Fittings, Schedule 40.

C. ANSI/AWWA C110 - Ductile Iron and Grey-Iron Fittings, 3 inch through 48 inch, for Water and Other Liquids.

D. ANSI/AWWA C151 - Ductile-Iron Pipe, Centrifugally Cast in Metal Molds or Sand-Lined Molds, for Water or Other Liquids.

E. ANSI/AWWA C500 - Gate Valves, 3 through 48 in NPS, for Water and Sewage Systems.

F. ANSI/AWWA C900 - Standard for Polyvinyl Chloride (PVC) Pressure Pipe, 4 inch through 12 inch, for Water.

G. ASTM D1785 - Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and DR 18.

H. ASTM D2855 - Making Solvent-Cemented Joints with Polyvinyl Chloride (PVC) Pipe and Fittings.

I. ASTM D3139 - Joints for Plastic Pressure Pipes using Flexible Elastomeric Seals.

1.3 SUBMITTALS

A. Product Data: Provide data on pipe materials, pipe fittings, valves and accessories.

B. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

C. Project Record Documents: Submit under provisions of Division 01.

1. Accurately record actual locations of piping mains, valves, connections, and appurtenances.
2. Identify and describe discovery of uncharted utilities, or utilities found at locations different than indicated on plans.

1.4 QUALITY ASSURANCE

A. Perform work in accordance with product manufacturer's recommendations and these Contract Documents.

B. Valves: Manufacturer's name and pressure rating marked on valve body.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle all products required.

PART 2 - PRODUCTS

2.1 PIPE MATERIALS

A. Ductile Iron Pipe (for iron pipe larger than 3 inches in diameter, above ground): ANSI/AWWA C150/A21.50 and ANSI/AWWA C151/A21.51, thickness Class 50, with cement - mortar lining and seal coating per ANSI/AWWA C104/A21.4.

1. Fittings: ANSI/AWWA C110/A21.10, ductile iron.
2. Joints: Flanged.

B. PVC Pipe (for pipe 3" and smaller, underground): ASTM D1785, Schedule 40; 1120 high impact.

1. Fittings: ANSI/ASTM D2464, Schedule 80 PVC (Schedule 40 PVC for pipes 1 ½ inches and smaller).
2. Joints: ASTM D2855, solvent weld.

C. PVC Pipe (for pipe 4" and larger, underground): ANSI/AWWA C900 DR 18, 1120 high

impact.

1. Fittings: ANSI/AWWA C111, cast iron.
2. Joints: ASTM D3139 compression gasket ring.

2.2 VALVES

A. General: Brass or Bronze body, non-rising stem, inside screw, single wedge or disc, IPS ends.

B. Valves Up to 2 inches: Full port ball valves.

C. Valves 2-1/2 inches and Larger: Gate valves, ANSI/AWWA C500, Iron body, bronze trim, non-rising stem with square nut or control handle wheel, resilient single wedge, threaded or flanged.

2.3 VALVE BOXES

A. Valve Boxes and Covers: Precast reinforced concrete with cast iron lid marked for service, Christy No. G5 traffic box or approved equal. Cover marking shall read "Water".

1. A one-piece PVC riser extension shall be provided as necessary to allow unobstructed access to valve operating nut.

2.4 ACCESSORIES

A. Concrete for Thrust Blocks and Valve Box Surface Collars: Concrete type specified in Division 03.

B. Solvent Cement and Primer for PVC Pipe and Fittings: Per ASTM F656 and ASTM D2564.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify existing conditions. All plot dimensions are approximate. Before proceeding with any work, carefully check and verify all dimensions and report any variations to the Inspector.

B. Due to the scale of the drawings, it is not possible to indicate all offsets, fittings, etc., which may be required. Carefully investigate the structural and finished conditions affecting all work, and plan work accordingly, furnishing such fittings, etc., as may be required to meet such conditions. Drawings are generally diagrammatic and indicative of the work to be installed in the most direct and workmanlike manner, so that conflicts between water

systems, planting, and architectural features will be minimized.

C. Do not install the facilities as indicated on the drawings when it is obvious in the field that unknown obstructions might not have been considered in the engineering. Such obstructions or differences should be brought to the attention of the Architect.

3.2 PREPARATION

A. Prepare for pipe installation by assembling all needed materials.

B. Cover all PVC pipe during storage.

3.3 TRENCHING

A. Trenching shall be in accordance with Division 31 Section "Trenching."

3.4 BEDDING

A. Where trench or pit has been overexcavated, place bedding material at bottom of excavations, level soil materials in continuous layers not exceeding 6 inches uncompacted depth.

B. Backfill around sides and to a level six inches above the top of pipe with bedding sand, tamped in place.

C. Maintain optimum moisture content of bedding material to attain required compaction density.

3.5 INSTALLATION, PIPE AND FITTINGS

A. Install pipe at locations and depths indicated on Drawings.

B. Install pipe, fittings, and associated materials in accordance with manufacturer's written recommendations.

C. Route pipe in straight line, whenever possible. All changes in direction of pipes shall be made with fittings, not by bending.

D. Install pipe to allow for expansion and contraction without stressing pipe or joints.

E. Form and place concrete for thrust blocks at each elbow, tee, angle or other significant change of direction in loose-joint pipe as indicated on Drawings.

F. Establish elevations of buried piping to ensure not less than 24 inches of cover for domestic water lines and 30 inches of cover for fire water lines, except at connections to existing lines, which may be shallower or deeper, or where shown otherwise on Drawings.

G. When two water pipes are to be installed in same trench, maintain 4-inch horizontal clearance between pipes.

H. Backfill trench or other excavation in accordance with Division 31 Section "Trenching and Backfilling".

3.6 INSTALLATION, VALVES

A. Set valves on solid bearing.

B. Where valves are installed below finish surface grade, center and plumb valve box and any necessary extensions over valve. Set box cover flush with finished grade.

C. Pour concrete collar around top of valve box as indicated on Drawings.

D. Furnish and install valves and valve boxes in addition to those shown on plans as required for isolation of lines for construction and disinfection, while minimizing disruption of service to buildings, at no additional cost to Owner.

3.7 INSTALLATION, THREADED CONNECTIONS

A. Assemble all plastic and galvanized steel threaded pipe and fittings using an approved Teflon tape applied to the male threads only. A minimum of two (2) wraps and a maximum of three (3) wraps of an approved Teflon tape will be required.

B. At all plastic (PVC) pipe connections, work the ductile iron connections first. Connections shall always be plastic into steel, never steel into plastic.

C. A non-hardening sealant and lubricant similar to Permatex #51 or LASCO blue pipe sealant may be used in lieu of Teflon tape. Apply sealant to clean male threads brushing into grooves and to the first three threads of the female threads.

3.8 DISINFECTION OF DOMESTIC WATER PIPING SYSTEM

A. Disinfect all domestic water piping systems in accordance with AWWA Standard C601, "AWWA Standard for Disinfecting Water Mains", and in accordance with administrative authority. Disinfection process shall be performed in cooperation with health department having jurisdiction and witnessed by a representative of the Architect. During procedure signs shall be posted at each water outlet stating, "Chlorination - Do No Drink". After disinfection, water samples shall be collected for bacteriological analysis. Certificate of Bacteriological Purity shall be obtained and delivered to the Owner through the Architect.

3.9 FIELD QUALITY CONTROL

A. Test completed piping systems according to requirements of authorities having jurisdiction.

1. Do not enclose, cover, or put into service before inspection and approval.

B. Field inspection will be performed under provisions of Division 01 General Requirements Sections.

C. Compaction testing will be performed in accordance with ASTM Test Method D1557.

D. If compaction tests indicate Work does not meet specified requirements, recompact and retest at no additional cost to Owner.

E. If tests indicate that Work does not meet specified requirements, remove work, replace and retest at no additional cost to Owner.

END OF SECTION
03/08/2023

SANITARY SEWAGE SYSTEMS

DIVISIONS 0 AND 1 ARE A PART OF THIS SECTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

a. Extent of sanitary sewage systems work is indicated on drawings and schedules, and by requirements of this section.
b. Refer to Division-03 sections for concrete work required for sanitary sewage systems.

1.02 QUALITY ASSURANCE:

a. Manufacturer's Qualifications: Firms regularly engaged in manufacture of sanitary sewage system's products of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.

b. Installer's Qualifications: Firm with at least 3 years of successful installation experience on projects with sanitary sewage work similar to that required for project.

c. Codes and Standards:

1. Plumbing Code Compliance: Comply with applicable portions of Uniform Plumbing Code and Kern County Standards.

1.03 SUBMITTALS:

a. Product Data: Submit manufacturer's technical product data and installation instructions for sewage system materials and products.
b. Shop Drawings: Submit shop drawings for sanitary sewage systems, showing piping materials, size, locations and inverts. Include details of underground structures, connections and manholes. Show interface and spatial relationships between piping and proximate structures.
c. Record Drawings: At project closeout, submit record drawings of installed irrigation piping and products, in accordance with requirements of Division 1.
d. Maintenance Data: Submit maintenance data and parts lists for sanitary sewage system materials and products. Include this data, product data, shop drawings, and record drawings in maintenance manual; in accordance with requirements of Division

PART 2 - PRODUCTS

2.01 IDENTIFICATION:

a. Underground-Type Plastic Line Marker: Manufacturer's standard permanent, bright-colored, continuous-printed plastic tape, intended for direct-burial service; not less than 6" wide x 4 mils thick. Provide green tape with black printing reading "CAUTION SEWER LINE BURIED BELOW".

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering identification markers which may be incorporated in the work include, but are not limited to, the following:

Allen Systems Inc.
Emed Co., Inc.
Seton Name Plate Corp.

2.02 PIPES AND PIPE FITTINGS:

a. General: Provide pipes of one of the following materials, of weight/class indicated. Provide pipe fittings and accessories of same material and weight/class as pipes, with joining method as indicated.
b. Cast-Iron Soil Pipe: ASTM A 74, hub and spigot ends, service weight unless otherwise indicated.
c. Fittings: Cast-iron hub and spigot complying with ASTM A 74; lead/oakum caulked joints, or compression joints with rubber gaskets complying with ASTM C 564.
d. Vitrified Clay Pipe: AASHTO M65, bell-and-spigot ends, extra strength unless otherwise indicated.
e. Fittings: Vitrified clay bell and spigot, same strength as adjoining pipe, compression joints complying with ASTM C 425.
f. P.V.C. Sewer Pipe: ASTM D 3043, SDR 35 for 3", 4", and 6".
g. Joints: ASTM D 2564 gaskets, ASTM F 477 elastomeric seal.
h. Pipe shall be made from PVC having a minimum cell classification of 12454-B, 12454-C or 13364-B, as defined by ASTM D1784.
i. Pipe stiffness shall be 46 psi minimum when measured in accordance with ASTM D2142.
j. Pipe and fittings shall conform to ASTM designations D3212 and F477.
k. Fittings shall be made from PVC having a minimum cell classification of 12454B, 12454C or 13343C as defined by ASTM D1784.
l. Each length of pipe shall be marked with the applicable ASTM, SCR (if applicable),

cell classification, nominal pipe size and manufacturer's name or trade mark.

m. A certificate of compliance from the pipe manufacturer shall be provided for each type of material used.
n. PVC pipe shall not deviate from straight by more than 1/16th inch per foot (camber) when the maximum offset is measured from the concave side of the pipe.
o. PVC pipe shall be of the bell and spigot type. Bells shall be factory attached to the pipe. Wyes or tees for house service connections shall be complete fittings.

PART 3 - EXECUTION

3.01 INSTALLATION OF IDENTIFICATION:

a. General: During back-filling/top-soiling of sanitary sewage systems, install continuous underground-type plastic line marker, located directly over buried line at 6" to 8" below finished grade.

3.02 INSTALLATION OF PIPE AND PIPE FITTINGS:

a. General: Install piping in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated.
b. Inspect piping before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site.
c. Lay piping beginning at low point of system, true to grades and alignment indicated, with unbroken continuity of invert.
d. Place bell ends or groove ends of piping facing upstream.
e. Install gaskets in accordance with manufacturer's recommendations for use of lubricants, cements, and other special installation requirements.
f. Cast-Iron Soil Pipe: Install in accordance with applicable provisions of CISPI "Cast Iron Soil Pipe & Fittings Handbook".
g. Vitrified Clay Pipe: Install in accordance with ASTM C 12.
h. Cleaning Piping: Clear interior of piping of dirt and other superfluous material as work progresses. Maintain swab or drag in line and pull past each joint as it is completed.
i. In large, accessible piping, brushes and brooms may be used for cleaning.
j. Place plugs in ends of uncompleted conduit at end of day or whenever work stops.
k. Flush lines between manholes if required to remove collected debris.
l. Joint Adapters: Make joints between different types of pipe with standard manufactured adapters and fittings intended for that purpose.

3.03 TAP CONNECTIONS:

a. Make connections to existing piping and underground structures, so that finished work will conform as nearly as practicable to requirements specified for new work.

b. Use commercially manufactured wyes for branch connections. Field cutting into piping will not be permitted. Spring wyes into existing line and encase entire wye, plus 6" overlap, with not less than 6" of 3000 psi 28-day compressive strength concrete.

c. Branch connections made from side into existing 4" to 21" piping shall have wye sprung into existing line, and entire wye encased with not less than 6" of 3000 psi 28-day compressive strength concrete.

d. Take care while making tap connections to prevent concrete or debris from entering existing piping or structure. Remove debris, concrete, or other extraneous material which may accumulate.

3.04 BACKFILLING:

a. General: Conduct backfill operations of open-cut trenches closely following laying, jointing, and bedding of pipe, and after initial inspection and testing are completed. Bed plastic pipe with 2" sand. Backfill pipe with sand to 6" over pipe.

3.05 FIELD QUALITY CONTROL:

a. Testing: Perform testing of completed piping in accordance with local authorities having jurisdiction. In addition: manholes and pipe shall be tested for watertightness. Leakage shall not exceed the rate of 200 gallons per 24 hours per inch diameter per 1,000 feet of sewer pipe.

END OF SECTION
07/30/2007

STORM DRAIN SYSTEMS

DIVISIONS 0 AND1 ARE A PART OF THIS SECTION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK:

a. Extent of storm drain systems work is indicated on drawings and schedules.
b. Refer to Division-2 section "Earthwork" for excavation and backfill required for storm drain systems.
c. Refer to Division-3 sections for concrete work required for storm drain systems.

1.02 QUALITY ASSURANCE:

a. Manufacturer's Qualifications: Firms regularly engaged in manufacture of storm drain system's products of types, materials, and sizes required, whose products have been in satisfactory use in similar service for not less than 5 years.
b. Installer's Qualifications: Firm with at least 3 years of successful installation experience on projects with storm drain work similar to that required for project.
c. Codes and Standards:
    1. Comply with applicable portions of State of California Department of Transportation.

1.03 SUBMITTALS:

a. Product Data: Submit manufacturer's technical product data and installation instructions for storm drain system materials and products.
b. Record Drawings: At project closeout, submit record drawings of installed storm drain piping and products, in accordance with requirements of Division 1.

PART 2 - PRODUCTS

2.01 PIPES AND PIPE FITTINGS:

a. General: Provide pipes of one of the following materials, of weight/class indicated. Provide pipe fittings and accessories of same materials and weight/class as pipes, with joining method as indicated.
b. Reinforced Concrete Pipe: ASTM C76, Class III unless otherwise indicated with rubber gasket joints per ASTM F477 (12” and larger).
c. PVC Pipe: SDR 35 per ASTM D3034 with rubber gasket joints conforming to ASTM F477 (18” and smaller).

PART 3 - EXECUTION

3.01 INSTALLATION OF PIPE AND PIPE FITTINGS:

a. General: Install piping in accordance with governing authorities having jurisdiction, except where more stringent requirements are indicated, and according to manufacturer's recommendations.

b. Inspect piping before installation to detect apparent defects. Mark defective materials with white paint and promptly remove from site.

c. Lay piping beginning at low point of system, true to grades and alignment indicated, with unbroken continuity of invert.

d. Place bell ends or groove ends of piping facing upstream.

e. Install gaskets in accordance with manufacturer's recommendation for use of lubricants, cements, and other special installation requirements. If plastic pipe is used, waterstop gaskets shall be provided at all plastic to concrete interfaces.

f. Cleaning Piping: Clear interior of piping of dirt and other superfluous material as work progresses. Maintain swab or drag in line and pull past each joint as it is completed.

g. Place plugs in ends of uncompleted conduit at end of day or whenever work stops.

h. Interior Inspection: Inspect piping to determine whether line displacement or other damage has occurred.

i. Make inspections after lines have been installed and approximately 2' of backfill is in place, and again at completion of project.

j. If inspection indicates poor alignment, debris, displaced pipe, infiltration or other defects, correct such defects, and reinspect.

3.02 TAP CONNECTIONS:

a. Make connections to existing piping and underground structures, so that finished work will conform as nearly as practicable to requirements specified for new work.

3.03 BACKFILLING:

a. General: Conduct backfill operations of open-cut trenches closely following laying, jointing, and bedding of pipe, and after initial inspection and testing are completed.

b. Lay PVS pipe on 2” sand bedding. Backfill around PVC with sand to 6” over pipe. Temp sand into the haunch area. Backfill remainder of pipe with native soils compacted to 90%.

3.04 FIELD QUALITY CONTROL:

a. Testing: Perform testing of completed piping in accordance with local authorities having jurisdiction.

END OF SECTION
07/13/2009