Project Specifications

Store #1239
10490 S. Federal Highway
Port St. Lucie, FL 34952

George W Callow
AR0014155

Digitally signed by George W Callow
Date: 2024.06.10 11:17:45 -05'00'

STATE OF FLORIDA
GEORGE W. CALLOW
AR0014155
REGISTERED ARCHITECT

A Project of

AutoZone Stores LLC.

123 S. Front St. 3rd Floor

Memphis, TN 38103

Store Development

"Creating Superior Development Solutions... Pushing the Boundaries, Delivering Results."

Issue Date: 05/20/09
Revised: 05/13/23

TABLE OF CONTENTS PROTOTYPE

Note: The specification sections listed in this Table of Contents are to be used for all ground-up "Build to Suit" and prototype projects. Sections shown in italics may also be applicable and Contractor shall review the drawings to determine if that category of work is indicated to be a part of this project. Contractor shall disregard those sections that do not apply to his project.

AutoZone Store Number:

Address:

City / State / Zip:

TABLE OF CONTENTS FOR REMODEL PROJECTS

Note: The following sections of the specification listed below in this Table of Contents will NOT be applicable to this project.

DIVISION 1 – SECTION 01010 GENERAL REQUIREMENTS

PART 1 GENERAL

1.00 SPECIFICATION NOTES

A. These specifications contain information and requirements for masonry bearing wall buildings, wood framed buildings, steel stud bearing wall buildings and a variety of exterior wall finishes. Contractor shall be responsible for reviewing both the drawings and the specifications to insure he has complete information and a thorough understanding of the requirements.
B. The specifications have been structured so that if the section heading does not specifically say to what building type the information is applicable to, then the information contained therein will apply to all building types.
C. These specifications contain minimum requirements for all AutoZone projects. The project drawings may contain additional requirements or may have items with requirements that are greater than those spelled out in the “AutoZone Project Specifications”. If this be the case, then the drawings will govern.

2.00 CONSTRUCTION DOCUMENT NOTES

A. Drawings will not be scaled. Dimensional data is to be obtained through written information only. Verify all existing conditions, elevations, and dimensions.
B. Make no changes to the Contract Documents without first receiving written permission from AutoZone.
C. Where detailed information is lacking, or if discrepancies should appear within the contract documents, request interpretation from AutoZone prior to the bid due date, or before proceeding with that portion of the work whichever comes first.
D. All work, as outlined in these documents, shall strictly conform to all applicable codes and ordinances. The most stringent shall govern.
E. When a material system is called out, all parts and materials required to complete the system will be furnished and installed as part of the contract.
F. Unless otherwise noted, electrical conduits, plumbing lines, etc., are to be concealed, and framing shall be of adequate size to accomplish this result without changes in the wall plan.
    1. It is the intent of these Contract Documents to define a complete finished facility. Any discrepancies or omissions found which normally would be required shall be provided and finished as if specifically noted.
G. Any unresolved conflicts or discrepancies with the contract documents are to be brought to the attention of AutoZone for resolution prior to the work being installed.

3.00 GENERAL CONSTRUCTION NOTES

A. Contractor shall be responsible for and furnish all materials and labor necessary to complete the project unless a specific item is called out to be furnished and/or installed by others.
B. Contractor shall secure and pay for all necessary permits, utility taps, etc. required. AutoZone shall reimburse the Contractor only for the actual amounts expended with no mark-ups or administrative fees added and Contractor must furnish a paid receipt from the issuing authority along with the invoice.
C. Contractor to coordinate all utility lines and meter locations with the appropriate utilities and other trades to avoid conflicts and problems. Utility services shall include (but not be limited to) water, sanitary, gas, electric power, telephone and propane (if required). Refer to Site Plan for proposal locations.
D. Any additional work, whether on-site or off-site, requested or required by a governing regulatory agency as being required for completion or occupancy permit shall first be discussed with AutoZone before being commenced in order to clearly define the required scope of work. Then a cost estimate and change order shall be prepared and executed prior to the installation of any work.
E. AutoZone retains the right to adjust finish grades 6" (+ or -) to conform to adjacent grades or to facilitate drainage. The contractor may adjust grades to balance cut and fill provided AutoZone agrees to the adjustment in writing prior to beginning work.
F. The Contractor will take whatever steps necessary to prevent erosion resulting from increased runoff during site work construction, in accordance with all local codes.
G. The Contractor will maintain positive drainage to prevent ponding on the sub and/or surface grade.
H. Contractor is to verify and coordinate location and routing of all underground services to the building, as well as any landscape sleeving prior to paving.

I. Any areas, whether on-site or off-site, disturbed during the construction process shall be returned to their original or natural state by the contractor prior to final acceptance of the project by AutoZone.
J. Contractor shall inspect the site and take whatever precautions He deems appropriate to undertake the work.
K. Paint manufacturers listed shall be the only ones accepted for the project. No substitutions shall be allowed.

4.00 UTILITIES and SERVICE

A. Contractor shall, upon receipt of Notice to Proceed, contact utility companies and place in his name all services required for the project. Contractor shall pay all deposits and charges required for the initiation of service, and shall pay monthly use charges during the course of construction.
B. With the submission of the first draw request, Contractor shall include all pertinent information regarding utilities and services. The information shall include the utility company name, address, phone number, contact person, meter number, amount of deposit paid, whether the deposit is refundable and if so, to whom. Failure to provide this information will place the draw request on hold until it is furnished.
C. At the time of submission of the 90 percent draw request, AutoZone will contact the utility companies and have the accounts transferred to his name, and will pay all monthly charges going forward. Contractor must pay past due balances.
D. For those municipalities that require the utilities to be in AutoZone's name from the beginning of the project, Contractor shall, upon receipt of Notice to Proceed, contact utility companies and place in AutoZone's name all services required for the project. Contractor shall pay all deposits and charges required for the initiation of service, and AutoZone shall pay monthly use charges during the course of construction. Contractor shall submit to AutoZone copies of all charges or deposits paid for the initialization of service and AutoZone will reimburse Contractor for same. When AutoZone will be paying for utilities from the beginning of the project, Contractor shall make an appropriate adjustment in the General Conditions line item to account for this cost.
E. It will be the Contractors responsibility to recover deposits previously paid to the utility company. With proper documentation, AutoZone will reimburse Contractor fees paid to utility companies for the setting of meters and utility taps.
F. If natural gas is not available at the project location, then the Contractor shall contact Anthony Sestito with AmeriGas to setup arrangements for propane service. Anthony can be reached at 888-528-9475 ext.13132 and his email address is Anthony.sestito@amerigas.com.

5.00 ITEMS FURNISHED BY AUTOZONE AND INSTALLED BY CONTRACTOR OR AUTOZONE VENDOR

A. Division 5 – Metals:
   1. Section 05210: Steel joists and joist girders, including bridging.
   2. Section 05300: Metal deck and deck screws.
B. Division 8 – Doors and Windows:
   1. Section 08700: Cylindrical locks for the glass and aluminum doors and doors to telephone closet.
   2. Section 08700: Push bar exit device.
C. Division 9 - Finishes
   1. Section 09900: Pounce patterns for interior graphics.
D. Division 10: Specialties
   1. Section 10426: Pylon and wall signs installed by AutoZone Vendor. General Contractor to prepare grade for freestanding sign and building walls for wall signs.
E. Division 11 – Equipment: (Puerto Rico stores only)
   1. Section 11120: Elevating Dock
   2. Section 11200: Standby Generator
F. Division 15 – Mechanical:
   1. Section 15400: Hot water heater.
   2. Section 15500: Mechanical Equipment.
      a. AutoZone shall furnish rooftop heating/cooling unit, curbs, plenums, ducts, diffusers, thermostatic controls, Venstar sensors, and accessories (firestats, smoke detectors, fresh air intakes and / or economizers) where indicated in the Drawings.
      b. Unit shall come internally pre-wired to disconnect switch. Electrical Contractor shall energize the unit at the disconnect switch

c. Installation shall include necessary repairs and replacements during one-year correction period. Applicable manufacturer's warranties for parts and service reimbursement shall extend to installer.
d. Bathroom exhaust fans, Contractor to furnish duct and wall cap.
e. Venstar HVAC equipment.

G. Division 16 – Electrical:
1. Section 16480: Panel boards, circuit breakers and fused disconnects.
2. Section 16500: Interior LED light fixtures and LED tubes; exit and emergency light fixtures; exterior LED light fixtures and lamps; site light poles, anchor bolts and bolt setting templates; and accessories.
3. Section 16500: Venstar automatic lighting control panel; accessories and control relay.

7.00 AUTOZONE FURNISHED VENDORS and SOURCES

A. AutoZone has entered into an agreement for a number of specific items, at pre-determined pricing, with the vendors and suppliers listed below. The general contractor will order and pay for the quantity of each item necessary to complete the work.
1. Section 02520: Cap seal for expansion and construction joints.
2. Section 08250: Overhead Rolling Door.
3. Section 08400: Aluminum storefront, glazing and entrance doors.
4. Section 09660: Resilient tile flooring and underlayment.
5. Section 09660: Floor wax.

8.00 SUBMITTALS & ERECTION DRAWINGS

A. AutoZone's vendors shall furnish shop or erection drawings for the following:
1. Steel joists and deck
2. Aluminum storefront, glazing and entrance doors

B. Contractor shall review and maintain shop drawings and submittals as part of his work and shall be solely responsible for compliance with Contract Documents.

C. Products and/or systems identified in the Specifications are the only ones approved for incorporation into the work. AutoZone will not consider any substitutions or alternates unless written request has been submitted at least seven (7) days prior to the date for receipt of bids. Incorporation of requested substitutions would only be acceptable with written approval of AutoZone. This approval if granted will be for the specific project requested and should not be considered a blanket approval.

9.00 TYPE OF CONTRACT

A. This is a lump sum (stipulated sum) General Contract. The General Contractor shall be responsible for all phases of work, to the extent required by the Contract Documents.

B. "AutoZone Inc. Standard Construction Agreement", dated September 1996 and First Reissued June 12, 1998, Articles 1 through 18, inclusive, along with Addendums 1 through 3 are part of this Contract as though fully set forth herein and shall govern all work under this Contract.

10.00 INSURANCE COVERAGE

A. Subject to the specific provisions and requirements of the AutoZone Inc. Standard Construction Agreement the Contractor will be obligated to take out and maintain the following coverage:
1. Workman's Compensation
2. Comprehensive General Liability
3. Comprehensive Automobile Liability
4. Excess Liability (Umbrella Policy)

B. AutoZone will be obligated to take out and maintain Owner's Liability (Builder's Risk) for the duration of the project.

C. Contractor shall provide any other rider or endorsement to cover any project situation not covered by one of the coverages listed above.

D. Contractor shall furnish to AutoZone certificates of insurance naming AutoZone as an additional insured for each specific project.

11.00 BONDS

A. AutoZone will furnish any required bond for off-site work unless other arrangements are agreed to in writing.

B. Contractor shall ensure that all inspections relating to bonded work have been made and shall furnish proof to AutoZone of such approved inspections. Contractor shall also provide assistance to AutoZone in obtaining the release of such bonds.

12.00 SITE SURVEILLANCE

A. AutoZone will be furnishing auto-recording cameras through a company called OxBlue to document the construction progress of the project from start to finish.
B. The contractor shall be responsible for contacting OxBlue prior to commencing any work, receiving the initial camera along with a diagram show where the camera should be positioned, providing the support structure for the camera and mounting same. Follow the instruction contained in the Bid and AFI packages of information.
C. For simple remodel projects there will be only one camera provided for the interior work. For groun-up prototype projects there will be two cameras provided. The initial one is to cover the exterior work and once the building structure is complete OxBlue will send a second camera to be mounted in the interior of the building to record that phase of construction. For larger projects including Mega-Hubs there may be two or three cameras utilized.
D. Once the store has opened for business, the contractor shall be responsible for sending all cameras and mounting hardware back to OxBlue within ten (10) days. If the material is not returned within that time frame the cost of same will be deducted from the final payment.

End of Section

DIVISION 1 – SECTION 01020 AZ VENDOR LIST

01020 AUTOZONE FURNISHED VENDOR LIST

Division 1 General Requirements		**Section 01010**	**General Requirements**
OxBlue		404-400-7622	Conner Nettles
Division 5 Metals		**Sections 05210 & 05300**	**Steel Bar Joists & Metal Deck**
Valley Joist Company		256-845-2330	Dennis Mackey
Division 8 Doors & Windows		**Section 08700**	**Hardware – Cylinder Locks**
MBS Security		901-324-2910	Samantha Jackson
Division 8 Doors & Windows		**Section 08700**	**Hardware – Push Bar Exit Device**
MBS Security		901-324-2910	Samantha Jackson
Division 9 Finishes		**Section 09900**	**Painting – Pounce Patterns**
Signs Now		901-368-0784	Fax – 901-368-1415
Division 10 Specialties		**Section 10426**	**Signage**
Jones Sign		920-983-6700	Fax – 920-983-9145
Division 11 Equipment		**Section 11120**	**Elevating Dock (Puerto Rico stores only)**
LDG Technical		787-296-4511	Leisha Fontanez – Puerto Rico
Blue Giant		905-457-3900	Steve Greco – Ext. 223 – United States
Division 11 Equipment		**Section 11200**	**Standby Generator (Puerto Rico stores only)**
R K Power		787-286-6454	Jayson Miranda – Puerto Rico
Division 15 Mechanical		**Section 15400**	**Electric Water Heater / Toilet Exhaust Fans**
Graybar Electric Company		314-573-2080	Joe Stoll Email – autozone@graybar.com
Division 15 Mechanical		**Section 15500**	**Heating & Air Conditioning Equipment**
Carrier Company		901-366-3306	Phillip May
York Heating and Air		405-419-6272	Shawna Stephens
Division 15 Mechanical		**Section 15500**	**Venstar HVAC Controls**
Venstar, Inc.		818-812-9808	John Coulsell Fax – 818-341-8763
Division 16 Electrical		**Section 16400**	**Fused Main Disconnects**
Graybar Electric Company		314-573-2080	Joe Stoll Email – autozone@graybar.com
Division 16 Electrical		**Section 16480**	**Panelboards & Circuit Breakers**
Graybar Electric Company		314-573-2080	Joe Stoll Email – autozone@graybar.com
Division 16 Electrical		**Section 16500**	**Light Fixtures, Lamps & Accessories**
314-573-2080		314-573-2080	Joe Stoll Email – autozone@graybar.com
Division 16 Electrical		**Section 16500**	**Light Fixtures, Lamps & Accessories**
Graybar Electric Company		314-573-2080	Joe Stoll Email – autozone@graybar.com
Division 16 Electrical		**Section 16500**	**Lighting Control Panel & Accessories**
Venstar, Inc.		818-812-9808	John Coulsell Fax – 818-341-8763

Note: Not all items listed above will be furnished on every project review drawings to determine if specific product will be required to complete your project.

End of Section

DIVISION 1 – SECTION 01030 AZ SUPPLIER LIST

01030 AUTOZONE SUPPLIER / SOURCE LIST

Division 2	**Site Work**	**Section 02520**	**Joint Cap Seal**
Greenstreak, Inc.		800-325-9504	Fax – 800-551-5145
Division 8	**Doors & Windows**	**Section 08250**	**Overhead Rolling Door**
Best Rolling Doors		973-738-3000	Brian Santore
Cornell Overhead Rolling Door		800-882-6773	Melissa Kern
Division 8	**Doors & Windows**	**Section 08400**	**Aluminum Storefront, Glazing and Entrance Doors**
Oldcastle Envelope		972-551-6217	Cindy Martin
		972-750-5565	Michelle Griffen
U.S. Aluminum		800-421-6144	D.J. Friese
YKK AP America Inc		678-838-6035	Jamilla Walcott
Division 9	**Finishes**	**Section 09900**	**Painting – Paint**
Sherwin-Williams Paint Co.		512-585-0713	Wade Griffen
Division 9	**Finishes**	**Section 09660**	**Resilient Tile Flooring & Underlayment**
Armstrong World Industries		800-442-4212	Fax – 813-973-4517
Division 9	**Finishes**	**Section 09660**	**Resilient Tile Flooring - Floor Wax**
Johnson Diversey, Inc.		800-558-2332	

End of Section

DIVISION 1 – SECTION 01410 TESTING LAB SERVICES

PART 1 GENERAL

1.01 WORK INCLUDED:

A. Selection and payment.
B. Authorities and duties of the Testing Laboratory.
C. Testing Laboratory reports.
D. Limits of Testing Laboratory authority.
E. Contractor responsibilities.
F. Schedule of observations and tests.

1.02 SELECTION AND PAYMENT

A. AutoZone or "build to suit" Developer / Owner will employ and pay for services of an independent Testing Laboratory to perform specified observations and testing. For Earthwork Testing, every effort should be made to utilize the firm that prepared the Geotechnical Report for the project. The firm engaged to do earthwork testing may or may not be engaged to do the balance of the testing required for the project.
B. Testing Laboratory shall be licensed in the state in which the project is located. All work performed shall be under the supervision of a licensed engineer.
C. Contractor's or Owner's employment of Testing Laboratory shall in no way relieve Contractor of obligation to perform work in accordance with requirements of Contract Documents.

1.03 AUTHORITIES AND DUTIES OF TESTING LABORATORY

A. Cooperate with AutoZone, Architect or Engineer of Record and Contractor; provide qualified personnel after due notice.
B. Perform specified inspections, sampling and testing of materials and methods of construction. Comply with specified standards. Ascertain compliance of materials with requirements of Contract Documents.
C. Notify Contractor and AutoZone of observed irregularities or deficiencies in work or products.
D. Perform additional tests as required by AutoZone.

1.04 LIMITS OF TESTING LABORATORY AUTHORITY

A. Testing Laboratory may not release, revoke, alter or enlarge requirements of Contract Documents.
B. Testing Laboratory may not approve or accept any portion of the work.
C. Testing Laboratory may not assume any duties of Contractor.
D. Testing Laboratory has no authority to stop the work.

1.05 TESTING LABORATORY REPORTS

A. After each observation and test, promptly submit a copy of the report to AutoZone Project Coordinator, the Architect and Engineer of Record and to Contractor.
    1. All reports shall be addressed to individuals and sent electronically via email.
B. Reports shall include the following information:
    1. Date issued
    2. Store number and location
    3. Name, address, and telephone number of Testing Laboratory
    4. Name and signature of inspector
    5. Type of observation or test
    6. Date and time of sampling, observation, or test
    7. Record of temperature and weather conditions
    8. Identification of product and Specifications Section
    9. Location of sample or test
    10. Results and / or interpretation of tests or observations
    11. Conformance with Contract Documents
C. Upon completion of the work, Testing Laboratory shall furnish a certified statement that all required tests and observations were made in accordance with the requirements of the Contract Documents.

1.06 CONTRACTOR RESPONSIBILITIES

A. Always cooperate with Testing Laboratory personnel and provide access to the work and storage areas as required.
B. Provide a copy of the structural documents, project specifications and geotechnical report as a minimum to the Testing Laboratory prior to the beginning of required inspections.
C. Provide incidental labor and facilities to obtain and handle samples at the site; to facilitate tests and inspections; and to store and cure test samples.
D. Based on Project Schedule, notify AutoZone and Testing Laboratory 72 hours in advance of operations requiring observation and / or testing services. If for any reason tests or observations cannot be performed after such notice, Contractor shall be responsible for the reimbursement to the AutoZone and / or Testing Laboratory for personnel and travel expenses incurred due to Contractor's negligence.
E. Notify Testing Laboratory when roof deck is going to be installed so that bar joist welds and imbed anchors can be inspected easily.
F. Notify Testing Laboratory and pay for additional samples and tests required for Contractor's convenience.
G. Notify Testing Laboratory and pay for additional inspections, sampling and testing required when initial tests indicate work does not comply with Contract Documents.

PART 2 PRODUCTS (not used)

PART 3 EXECUTION

3.01 SCOPE OF WORK

A. The work to be performed by the Testing Laboratory shall be as specified in this Section and as determined in meetings with AutoZone project personnel.

3.02 EARTHWORK (Section 02200)

A. Testing Laboratory shall conduct a survey of the Contractor's proposed location of borrow soil materials and shall establish the suitability of any proposed fill material by determining the required engineering properties. Soil tests shall include soil classification, mechanical analysis, moisture density curve determination, and plasticity index determination.
B. Testing Laboratory shall provide one optimum moisture density curve for each type of soil, natural, imported fill, or on-site fill, encountered in subgrade and fills under building slabs and paved areas. Curves shall be generated in accordance with ASTM D-1557, "Test Methods for Moisture Density Relationships of Soil and Soil Aggregate Mixtures".
C. Testing Laboratory shall observe that subgrade and fill layers are firm, unyielding and meet the specification compaction requirements before further construction work is performed thereon.
D. Perform field density tests in accordance with ASTM D 1556 (sand cone method) or ASTM D 2922 (nuclear method), as applicable. If field tests are performed using nuclear methods, make calibration checks of both density and moisture gauges at the beginning of work, on each different type material encountered, and at intervals as directed by the Geotechnical Engineer.
    1. Footing Subgrade: For each strata of soil on which footings will be placed, perform at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata.
    2. Paved Areas and Building Slab Subgrade: Perform at least one field density test of subgrade for every 2,000 sq. ft. of paved area or building slab, but in no case fewer than three tests. In each compacted fill layer, perform one field density test for each 2,000 sq. ft. of overlaying building slab or paved area, but in no case fewer than three tests
    3. Foundation Wall Backfill: Perform at least two field density tests at locations and elevations as directed by AutoZone or its representative.
    4. Furnish copies of test reports as required under Paragraph 1.05 of this Section of the Specifications. If reports by Testing Laboratory indicate field densities lower than specified requirements, the Contractor shall perform additional compaction as necessary until the specified density is obtained and Testing Laboratory shall run additional tests to confirm results. This work shall be performed at no additional expense to AutoZone.
E. Testing Laboratory shall inspect and verify that field conditions are consistent with soils report test results and that pier foundations, if required, are being correctly installed in proper soil strata and at proper elevation.

3.03 ASPHALT (Section 02510)

A. Testing Laboratory shall secure all necessary asphalt samples, make density tests, determine thickness, and check finished surfaces of each course for smoothness. Record location within project documents of where cores are taken, and the results found all in accordance with ASTM D-3549.
B. Contractor shall be responsible for patching all surfaces where cores are taken.
C. Furnish copies of reports as required in Paragraph 1.05 of this Section of the Specifications.

3.04 SITE CONCRETE (Section 02520)

A. Testing Laboratory shall secure all necessary concrete samples, make air content, and slump tests, record location within project of concrete tested, mold, cure, store and deliver required cylinders to the laboratory.
B. Testing Laboratory shall review concrete design mix prior to placement.
C. Each class of concrete shall be tested for the following, and sampling shall be taken from fresh concrete:
   1. Slump: ASTM C-143; one test for concrete at point of discharge; and one test for each set of compressive strength test specimens. Any water added to bring mix to specified water / cement ratio shall be noted on the batch ticket and in report. All slumps and test cylinders will be taken after the addition of any water.
   2. Air Content: ASTM C-173; volumetric method for lightweight or normal weight concrete; ASTM C-231; pressure for normal weight concrete; one for each set of compressive strength test specimens.
   3. Concrete Temperature: Test hourly when air temperature is 40 degrees F. and below, or when 80 degrees F. and above; and each time a set of compression test specimens made.
   4. Compression Test Specimen: ASTM C-31; one set of four 6 by 12 inch cylinders for each compression strength test; mold and store cylinders for field cured test specimens.
   5. The above listed sampling and testing shall be done for each 40 cubic yards placed each day, or at a minimum of each day's concreting. One cylinder shall be tested at 7 days for information and two cylinders shall be tested at 28-days for acceptance. One cylinder shall be held in reserve for future testing if 28-day results do not comply with specified requirements. A report of 7 and 28-day strength tests shall be made by Testing Laboratory on the day testing is done and distributed as required in Paragraph 1.05 of this Section of the Specifications.
D. Average of any three consecutive 28-day strength tests shall be equal to or greater than specified strength, and not more than 10 percent of tests shall have values less than specified strength. In no case shall a test have a value less than 90 percent of specified strength.
E. In event test results do not meet specification requirements; the fourth cylinder shall be tested at 56 days at no cost to AutoZone. If this test does not meet specification requirements, AutoZone shall determine the next course of action to be taken by Contractor. All work pursuant to this action shall be at Contractor's sole expense.
F. Once site paving has been completed, Testing Laboratory shall core the concrete to determine actual thickness that has been placed. For full concrete parking lots take a minimum of ten cores, four in the drive aisles, four in the parking areas, and two in the loading area. For combination parking lots (asphalt and concrete) take a minimum of six cores four in the parking areas and two in the loading area. Core diameters shall be 2" or smaller and locations shall be determined by the Testing Laboratory, randomly placed, and shall cover all thickness of paving called for on the drawings. If any core does not indicate the required thickness, then additional cores shall be taken to determine the magnitude of the substandard area. Patching or repair of paving where cores are taken shall be made with 4000 psi grout mix, packed tight and struck flush with surrounding surfaces and will be the responsibility of the Contractor. Once coring has been completed, Testing Laboratory shall furnish a report which includes each core taken individually identified, the dimensional location of the core and the thickness of the core. Send two copies of report to AutoZone and one copy to the Contractor. If cores indicate that concrete does not meet specification requirements, AutoZone shall determine the next course of action to be taken by Contractor. All work pursuant to this action shall be at Contractor's sole expense.

3.05 BUILDING CONCRETE (Section 03100)

A. Testing Laboratory shall secure all necessary concrete samples, make air content, and slump tests, record location within project of concrete tested, mold, cure, store and deliver required cylinders to the laboratory. All samples shall be taken from fresh concrete.
B. Testing Laboratory shall review concrete design mix prior to placement.
C. Testing Laboratory shall inspect reinforcement placement in foundations and concrete stem walls.

BUILDING CONCRETE (Section 03100) Continued

D. Each class of concrete shall be tested for the following:
   1. Slump: ASTM C-143; one test for concrete at point of discharge; and one test for each set of compressive strength test specimens. Any water added to bring mix to specified water / cement ratio shall be noted on the batch ticket and in report. All slumps and test cylinders will be taken after the addition of any water.
   2. Air Content: ASTM C-173; volumetric method for lightweight or normal weight concrete; ASTM C-231; pressure for normal weight concrete; one for each set of compressive strength test specimens.
   3. Concrete Temperature: Test hourly when air temperature is 40 degrees F. and below, or when 80 degrees F. and above; and each time a set of compression test specimens made.
   4. Compression Test Specimen: ASTM C-31; one set of four 6 by 12 inch cylinders for each compression strength test; mold and store cylinders for field cured test specimens.

E. The above listed sampling and testing shall be done for each 40 cubic yards placed each day, or at a minimum of each day's concreting.

F. One cylinder shall be tested at 7 days for information and two cylinders shall be tested at 28-days for acceptance. One cylinder shall be held in reserve for future testing if 28-day results do not comply with specified requirements. A report of 7 and 28-day strength tests shall be made directly by Testing Laboratory on the day testing is done and distributed as required in Paragraph 1.05 of this Section of the Specifications.

G. Average of any three consecutive 28-day strength tests shall be equal to or greater than specified strength, and not more than 10 percent of tests shall have values less than specified strength. In no case shall a test have a value less than 90 percent of specified strength.

H. In event test results do not meet specification requirements; the fourth cylinder shall be tested at 56 days at no cost to AutoZone. If this test does not meet specification requirements, AutoZone shall determine the next course of action to be taken by Contractor. All work pursuant to this action shall be at Contractor's sole expense.

I. Once building slab has been poured, Testing Laboratory shall core the concrete to determine actual thickness that has been placed. Take a minimum of two cores. Core diameters shall be 2" or smaller and locations shall be determined by the Testing Laboratory, randomly placed. If any core does not indicate the required thickness, then additional cores shall be taken to determine the magnitude of the substandard area. Patching or repair of slab where cores are taken shall be made with 4000 psi grout mix, packed tight and struck flush with surrounding surfaces and will be the responsibility of the Contractor. Once coring has been completed, Testing Laboratory shall furnish a report which includes each core taken individually identified, the dimensional location of the core and the thickness of the core. Send two copies of report to AutoZone and one copy to the Contractor. If cores indicate that concrete does not meet specification requirements, AutoZone shall determine the next course of action to be taken by Contractor. All work pursuant to this action shall be at Contractor's sole expense.

3.06 UNIT MASONRY (Section 04200)

A. Testing Laboratory shall make observations, perform tests, and make reports as follows:
   1. Verify that reinforcing dowels have been positioned as required by the drawings.
   2. Observe and test masonry construction at frequency necessary to determine if the work conforms to Contract Documents. Items to be inspected include but are not limited to size, spacing, location, lap, and grade of reinforcing; type and placement of masonry units; grouting of cells and construction procedure.
      a. Mortar properties will be per requirements of ASTM C-270 and test and evaluation report per ASTM C-780
      b. Grout properties will be per requirements of ASTM C-476 and test and evaluation report per ASTM C-1019.
      c. Tests shall be performed for each 1000 square feet of wall or portion thereof.
   3. Furnish daily inspection reports and distribute to all required parties as required in Paragraph 1.05 of this Section of the Specifications. Bring discrepancies to the immediate attention of Contractor for correction, then if uncorrected, to AutoZone and building official.
   4. Submit final report stating whether masonry construction was, to the best of Testing Laboratory's knowledge, in conformance with the Contract Documents and applicable provisions of governing building code.

3.07 STRUCTURAL STEEL AND STEEL JOISTS (Sections 05120 & 05210)

A. Testing Laboratory shall make observations, perform tests, and make reports as follows:
B. Field Welding: Observe and test in accordance with AWS D1.1 and as follows:
   1. Perform visual inspection of all welds. Check for size, pinholes, undercut and overlap. Any visual indication of cracks shall be checked further using nondestructive methods.
   2. Perform nondestructive tests of welds as follows:
      a. Fillet Welds: One spot test per member. Magnetic particle testing may be used.
      b. Partial Penetration Welds: One spot test per weld using magnetic particle testing.
      c. Full Penetration Welds: Test the entire length of all field welds. Use radiographic or ultrasonic testing techniques.
   3. All welds that fail shall be rewelded and retested until they pass. When spot testing is designated, each spot test shall cover at least 4 inches of weld length. When spot testing reveals indications of flaws requiring repair, the entire length of the weld in that welded joint shall be tested. The cost of all retesting shall be at Contractor's expense.
C. High Strength Bolted Connections: Inspect in accordance with AISC Specifications for Structural Joints and as follows:
   1. Visually inspect all bolts.
   2. In connections which transfer tension or are slip-critical type, check a minimum of two bolts of every connection between girders and columns for proper torque with a calibrated torque wrench.
   3. All bolted connections that fail shall be corrected and retested. The cost of all retesting shall be at Contractor's expense.
D. Verify anchor bolt condition, position, size, projection and embed prior to placing concrete
E. Verify bearing and connections of steel joists and joist girders. Verify spacing and connections of bridging and bracing for steel joists and joist girders.
F. Verify location, sizes, bearing and connections of steel framing.
G. Verify metal deck connections to structure.
H. Verify light gage framing sizes and connections.
I. Furnish daily inspection reports and distribute to all required parties as required in Paragraph 1.05 of this Section of the Specifications. Bring discrepancies to the immediate attention of Contractor for correction, then if uncorrected, to AutoZone and building official.

3.08 POST INSTALLED ANCHORS for ANGLE SUPPORTING DECK

A. Testing Laboratory shall make observations, perform tests, and make reports as follows:
   1. Inspection during installation of adhesive anchors to verify the depth and diameter of the hole and preparation per manufacturer's specifications and applicable ICC reports.
   2. Confirm all anchors are in place and have been installed in accordance with manufacturer's printed instructions.
   3. Distribute reports to all required parties as required in Paragraph 1.05 of this Section of the Specifications.

3.09 SPECIAL INSPECTIONS

A. Refer to structural drawings and local building department requirements for additional required special inspections over and beyond those required above.

End of Section

DIVISION 2 – SECTION 02010 SITE CLEARING

PART 1 GENERAL

1.01 GENERAL CONDITIONS

A. AutoZone makes no warranty and assumes no responsibility for the condition or type of construction of any building(s) or structures on site existing at the time new construction commences.

B. Contractor shall accept premises as found; clear building site as specified.

1.02 SUMMARY

A. This section includes the following:
   1. Protection of existing trees
   2. Removal of trees and other vegetation
   3. Topsoil stripping
   4. Clearing and grubbing
   5. Removing above grade improvements
   6. Removing below grade improvements

1.03 PROJECT CONDITIONS

A. Traffic: Conduct site clearing operations to ensure minimum interference with roads, streets, walks and other adjacent occupied or used facilities. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction.

B. Protection of Existing Improvements: Provide protections necessary to prevent damage to existing improvements indicated to remain in place.
   1. Protect improvements on adjoining properties and on the Project Site.
   2. Restore damaged improvements to their original condition, as acceptable to property owners.
   3. Existing boundary or control monuments provided by AutoZone shall be maintained throughout construction. Any control damaged shall be replaced at Contractor's expense.

C. Protection of Existing Trees and Vegetation: Protect existing trees and other vegetation indicated to remain in place against:
   1. Unnecessary cutting, breaking or skinning of roots; skinning or bruising of bark.
   2. Smothering of trees by stockpiling construction materials or excavated materials within drip line.
   3. Excess foot or vehicular traffic; or parking of vehicles within drip line.
   4. Provide temporary guards to protect trees and vegetation to be left standing.
      a. Contractor shall be responsible for all fines, penalties, or fees levied due to removal of trees in wetlands, right-of-ways, or off the Project Site.
      b. Water trees and other vegetation to remain within limits of contract work as required in order to maintain their health during the course of construction operations.
      c. Provide protection for roots over 1-1/2 inch diameter cut during construction operations. Coat cut faces with emulsified asphalt, or other acceptable coating formulated for use on damaged plant tissues. Temporarily cover exposed roots with wet burlap to prevent roots from drying out; cover with earth as soon as possible.
   5. Repair or replace trees and vegetation indicated to remain which are damaged by construction operations in a manner acceptable to AutoZone or governing jurisdiction. Employ a licensed arborist to repair damages to trees and shrubs.
   6. Replace trees, which cannot be repaired and restored to full growth status as determined by the arborist.

D. Improvements on Adjoining Property: Authority for performing removal and alteration work on property adjoining the Project Site will be obtained by AutoZone prior to issuance of Notice to Proceed. Extent of work on adjacent property is indicated on Drawings.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION

3.01 GENERAL

A. All work is to be accomplished in strict accordance with all ordinances and requirements of the governing local, state and/or federal agency applicable to this project.

B. Within the subject property the intent is to have a clean, clear site free of all existing items noted to be removed in order to permit the construction of the new project.
C. Remove all utilities to existing structures whether shown or not. Cut and cap all underground lines at the property line.
D. For all items noted to be removed, remove not only above ground elements but all underground elements as well, including but not necessarily limited to foundations, gravel fills, tree roots, etc.
E. Tree roots shall be excavated to a depth of at least 6" below footings and to 2 ft. below slab sub base and surrounding finish grades.
F. If this work is being performed under a separate contract, notify the project manager immediately upon completion of work in order to allow new construction to commence at the earliest possible date.
G. The contractor shall obtain any required permits and/or notices authorizing building demolition and disposal of debris. The contractor shall obtain all required certificates of severance of utility services as may be required by local utility companies.
H. Where items have been removed or left a depression the contractor shall fill same back to surrounding natural grade. The fill material shall be placed in accordance with the requirements contained in the soils report and/or section 02200 Earthwork which ever is more stringent.

3.02 SITE CLEARING

A. General: Remove trees, shrubs, grass and other vegetation, improvements, or obstructions as required to permit installation of new construction. Remove similar items elsewhere on site or premises as specifically indicated. Removal includes digging out and off-site disposal of stumps and roots. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct installation of new construction.
B. Topsoil: Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones and other objects over 1-1/2 inches in diameter and without weeds, roots and other objectionable material.
    1. Strip topsoil to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material.
        a. Remove heavy growths of grass from areas before stripping.
        b. Where existing trees are indicated to remain, leave existing topsoil in place within drip lines to prevent damage to root systems.
    2. Stockpile topsoil in storage piles in areas indicated or directed. Construct storage piles to provide free drainage of surface water. Cover storage piles to prevent wind erosion if required.
    3. Dispose of unsuitable or excess topsoil same as specified for disposal of waste material.
C. Clearing and Grubbing: Clear site of trees, shrubs and other vegetation except for those indicated to be left standing.
    1. Completely remove stumps, roots and other debris protruding through ground surface.
    2. Use only hand methods for grubbing inside drip line of trees indicated to remain.
    3. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation of earthwork is indicated.
        a. Place fill material in horizontal layers not exceeding 9 inches loose depth and thoroughly compact to a density equal to adjacent original ground.
D. Removal of Improvements: Remove existing above-grade and below-grade improvements as indicated and as necessary to facilitate new construction.
    1. Removal of abandoned underground piping or conduit interfering with construction is included under this Section.

3.03 DISPOSAL OF WASTE MATERIAL

A. Burning on the Project Site: Burning is not permitted on the Project Site.
B. Removal from the Project Site: Remove waste materials and unsuitable or excess topsoil from the Project Site. Waste materials shall be disposed of in a certified landfill.

End of Section

DIVISION 2 – SECTION 02020 EROSION CONTROL

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. This section consists of furnishing, installing and maintaining temporary erosion controls and temporary sedimentation controls. Contractor shall remove existing erosion control material from site after all other work is complete.

B. Temporary erosion controls shall include grassing, mulching, watering and reseeding on-site sloped surfaces, providing berms at the top of slopes and providing interceptor ditches at the ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or minimized.

C. Temporary sedimentation controls shall include silt dams, traps barriers and appurtenances at the toe of slopes.

D. Provide erosion control methods in accordance with methods as indicated on the erosion control plan and/or requirements of authorities having jurisdiction. Contractor shall comply with all National Pollutant Discharge Elimination System (NPDES) rules and regulations. Control measures shown on plans are minimum measures. Additional requirements may be imposed, at Contractor's expense, during the course of work.

PART 2 PRODUCTS

2.01 SILT BARRIER MATERIALS

A. Hay bales shall be clean, seed free, cereal hay type, securely bound.

B. Netting shall be 1/2 inch, galvanized steel wire mesh.

C. Filter stone shall be crushed 1 inch stone without excessive fines or dust.

D. Silt barrier shall be Mirofi 100X or approved equal with a water flow capacity of 40 gallons per minute per square foot.

PART 3 EXECUTION

3.01 GENERAL REQUIREMENTS

A. Contractor shall construct sedimentation ponds and control devices prior to clearing and grubbing the site to insure complete silt control. When the silt or debris level is greater than 1 foot above bottom of pond, remove the silt or debris to restore the proper elevation for the bottom of the pond.

B. Silt dams, traps, barriers and appurtenances shall be installed and maintained in place for duration of construction.

C. Hay bales shall be staked with two 2 inch by 2 inch wood stakes or two rebars per bale driven 18 to 24 inches into the ground and finishing flush with the top of the bale.

D. Hay bale, which have deteriorated shall be replaced with new material.

E. Erosion and sedimentation controls shall be maintained in a condition, which will retain unfiltered water.

F. Contractor shall be solely responsible for insuring that no silt or debris leaves the immediate construction site. Any silt or debris that does leave the immediate site shall be cleaned up and the area disturbed shall be returned to its natural state as directed by the Project Manager at the Contractor's expense.

End of Section

DIVISION 2 – SECTION 02200 EARTHWORK

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. A Geotechnical Investigation has been prepared by a foundation consultant; and the result is herein referred to as the Soils Report. The report was prepared for AutoZone's use in foundation and pavement design, and the foundation and pavement designs are based upon the conclusions contained in the report. The data contained in the report should not be construed as being representational of the entire site nor warranty the continuity of the soil condition. AutoZone shall not be responsible for interpretations or conclusions drawn by the Contractor from the report.

B. All work performed under this section shall be done in strict conformance with the requirements of this section or the Soils Reports which ever is the more stringent.

C. The required earthwork to be accomplished is to provide a minimum bearing value equal to the value called for in the Soils Report and / or shown on the drawings, which ever is the more restrictive.

1.02 SUMMARY

A. This Section includes the following:
   1. Preparing of subgrade for building slabs, walks and pavements.
   2. Excavating and backfilling of trenches required for foundations and buried appurtenances.
   3. Excavating and backfilling of trenches required for underground mechanical and electrical utilities and buried appurtenances.
   4. Final grading, together with, placement and preparation of topsoil for lawns.

1.03 DEFINITIONS OF EXCAVATION

A. Excavation consists of removal of materials encountered to subgrade elevations indicated and subsequent disposal of materials removed.

B. Unauthorized excavation consists of removal of materials beyond indicated subgrade elevations or dimensions without specific direction of the Project Manager. Unauthorized excavation, as well as remedial work directed by the Project Manager shall be at Contractor's expense.
   1. Backfill and compact unauthorized excavations as specified for authorized excavations of same classifications unless otherwise directed by Project Manager.
   2. Under footings, foundation bases or retaining walls, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom without altering required top elevation. Lean concrete or self-leveling gravel fill may be used to bring elevations to proper position, when acceptable to the Project Manager.

C. Additional Excavation: When excavation has reached required subgrade elevations notify the testing service that will make an inspection of conditions. If the bearing materials at required sub-grade elevations are unsuitable, testing service and Project Manager will determine what course of action will be required to complete the excavation. Work required beyond the scope of the original requirements will be paid for on the basis of Contract Conditions relative to changes in the work.

D. Sub-grade: The layer of earth immediately below granular base, drainage fills or topsoil materials. This layer will usually require the top 12 inches to be scarified and recompacted.

1.04 QUALITY ASSURANCE

A. Codes and Standards: Perform excavation work in compliance with applicable requirements of authorities having jurisdiction.

B. Testing Service: For Earthwork Testing the Contractor shall make ever effort to use to use the services of the firm that prepared the Geotechnical Report for the project. If unable to reach an agreement, Contractor shall notify the AutoZone Project Manager before engaging another firm. The firm engaged to do earthwork testing shall perform services in accordance with the requirements of this section as well as Section 01410.

1.05 PROJECT CONDITIONS

A. Site Information: Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity between soil borings. It is expressly understood that Owner will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Additional test

borings and other exploratory operations may be made by Contractor, at the Contractor's option; however, no change in the Contract Sum will be authorized for such additional exploration.

B. Existing Utilities: Existing underground utilities are shown on the contract documents in their approximate locations according to the best available information. The Contractor shall be responsible for determining the exact location of the existing utilities during probing or construction. The Contractor shall notify the local Utilities Protection Service and the respective utility companies as shown on the survey contained in the contract documents at least two (2) working days prior to the start of work. If utilities are indicated to remain in place, the Contractor shall provide adequate means of support, protection and maintenance of service during earthwork operations.
C. Use of Explosives: Use of explosives is not permitted unless written permission is obtained from AutoZone and from authorities having jurisdiction.
D. Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with warning lights. Operate warning lights as recommended by authorities having jurisdiction. Protect structures, utilities, sidewalks, pavements and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards caused by earthwork operations.
E. Dust Control: Conduct all operations and maintain the areas of activities including sweeping and sprinkling water on roadways and haul roads so as to prevent creation and dispersion of dust.

PART 2 PRODUCTS

2.01 SOIL MATERIALS

A. Satisfactory soil materials are defined as those complying with classification groups GW, GP, GM, SW, SM, SC, SP, ML and CL. Soils classed ML and CL shall only be used as permitted by the Geotechnical Engineer.
B. Unsatisfactory soil materials are defined as those complying with classification groups OL, MH, CH, OH, GC and PT.
C. Sub-base Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone and natural or crushed sand. Other natural materials shall be as permitted by the Geotechnical Engineer.
D. Drainage Fill: Washed, evenly graded mixture of crushed stone or crush or uncrushed gravel, with 100 percent passing a 1-1/2 inch sieve and not more than 5 percent passing a No. 4 sieve.
E. Fill and Backfill Materials: Satisfactory soil materials free of unsatisfactory soil material, rock or gravel larger than 2 inches in any dimension, debris, waste, frozen materials, vegetation and other deleterious matter.
F. It is the intent of this division to verify the quality of fill materials used at or as a part of this project whose origin was other than the project site (trucked in fill). To safeguard the interest of the AutoZone, the Testing Laboratory shall conduct a survey of the borrow pit and material as called for in Section 01410. In all cases AutoZone reserves the right to reject all fills, or borrow pit material if deemed unacceptable.

PART 3 EXECUTION

3.01 EXCAVATION

A. Excavation is unclassified and includes excavation to subgrade elevations indicated, regardless of character of materials and obstructions encountered. Remove and dispose of existing underground foundations and rubble required to complete the work.

3.02 STABILITY OF EXCAVATIONS

A. Side slope of excavations shall comply with local codes, ordinance and requirements of agencies having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material being excavated. Maintain sides and slopes of excavations in safe condition until completion of backfilling. All slope areas shall not exceed a 2-foot horizontal to 1-foot vertical grade (2:1).
B. Install and maintain materials for shoring and bracing, such as sheet piling, uprights, stringers and cross braces in good serviceable condition. Establish requirements for trench shoring and bracing to comply with local codes and authorities having jurisdiction. Maintain shoring and bracing in excavations regardless of time period excavations will be open. Extend shoring and bracing as excavation progresses.

3.03 DEWATERING

A. Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area. Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings and soil changes detrimental to stability of subgrades and foundations. Provide and maintain all system components necessary to convey water away from excavations.

B. Establish and maintain temporary drainage ditches and other diversions outside excavation limits to convey rainwater and water removed from excavations to collecting or runoff areas. Do not use trench excavations as temporary drainage ditches.

3.04 STORAGE OF EXCAVATED MATERIALS

A. Stockpile excavated materials acceptable for fill and backfill where directed by the Project Manager. Do not place stockpiles near edge of excavations or within drip line of trees indicated to remain. Provide for proper drainage. Dispose of excess material as specified in this Section.

3.05 TRENCH EXCAVATION FOR PIPES AND CONDUIT

A. Excavate trenches to uniform width, sufficiently wide to provide ample working room and a minimum of 6 to 9 inches of clearance on both sides of pipe or conduit.

B. Excavate trenches to depth indicated or required to establish indicated slope and invert elevations and to support bottom of pipe or conduit on undisturbed soil. Beyond building perimeter, keep bottom of trenches sufficiently below finish grade to avoid freeze-ups.

1. Where rock is encountered, carry excavation 6 inches below required elevation and backfill with a 6-inch layer of crushed stone or gravel prior to installation of pipe or conduit.
2. Grade bottom of trenches notching under pipe bell or conduit fittings to provide solid bearing for entire body of pipe or conduit.
3. See Section 15400 for depth requirements of water bearing pipe.
4. Backfill trenches with concrete where trench excavations pass within 18 inches of column or wall footings and which are carried below bottom of such footings or which pass under wall footings. Place concrete to level of bottom of adjacent footing.
5. Do not backfill trenches until tests and inspections have been made and backfilling has been authorized by the Project Manager or the authority having jurisdiction. Use care in backfilling to avoid damage or displacement of pipe system.
6. For pipe or conduit less that 2'-6" below the surface of roadways, provide 4 inch thick concrete base slab support as well as minimum 4 inch concrete encasement (sides and top) prior to backfilling or placement of roadway sub-base. Do not install encasement until completion of testing of piping or conduit.

3.06 COLD WEATHER PROTECTION

A. Protect excavation bottoms against freezing when atmospheric temperature is less that 32 degrees Fahrenheit.

3.07 EXCAVATION FOR PAVEMENTS

A. Cut surface under pavements to comply with cross-sections, elevations and grades as indicated.

3.08 FILL AND BACKFILL

A. Fill: Place soil material in layers to required subgrade elevations, for each area classification listed below, using materials specified in Part 2 of this Section. In excavations, Contractor may use satisfactory excavated or borrow material.

1. Under grassed areas, use satisfactory excavated or borrow material.
2. Under walks and pavements, use aggregate base materials as indicated on the contract documents.
3. Under piping, conduit and equipment, use 3/4-inch maximum granular bedding or per pipe manufacturer's recommendations for a finer granular bedding. Shape excavation bottom to fit bottom 90 degrees of cylinder.

B. Backfill: Backfill excavations as promptly as work permits, but not until completion of the following; including, where applicable, dampproofing, waterproofing and perimeter insulation:

1. Acceptances of construction below finish grade.
2. Inspection, testing, approval and recording locations of underground utilities.
3. Removal of concrete formwork
4. Removal of shoring and bracing and backfilling voids with satisfactory materials. Cut off temporary sheet piling driven below bottom of structures and remove in a manner to prevent settlement of the structure or utilities or leave in place if required.
5. Removal of trash and debris from excavation
6. Permanent or temporary horizontal bracing is in place on horizontally supported walls.

3.09 PLACEMENT AND COMPACTION

A. Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions and deleterious materials from ground surface prior to placement of fills. Plow, strip or break up surface steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.
   1. When existing ground surface has a density less than specified under "Compaction" for particular area classification, break up ground surface, pulverize; moisture-condition to optimum moisture content and compact to required depth and percentage of maximum density.

B. Place fill and backfill materials in layers not more than 9 inches in loose depth for material compacted by heavy compaction equipment and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

C. Before compaction, moisten or aerate each layer as necessary to provide optimum moisture content. Compact each layer to required percentage of maximum dry density or relative dry density for each area classification. Do not place fill or backfill material on surfaces that are muddy, frozen or contain frost or ice.

D. Place fills and backfill materials evenly adjacent to structures, piping or conduit to required elevations. Prevent wedging action of material against structures or displacement of piping or conduit by carrying material uniformly around structure, piping or conduit to approximately same elevation in each lift.

E. Control compaction of soils and fills, providing minimum percentage of density specified for each area classification indicated below, unless a greater requirement is called for in either the Soils Report or on the Drawings. Correct improperly compacted areas or lifts as directed by Project Manager if soil density tests indicate inadequate compaction.
   1. Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density, in accordance with ASTM D 698 "Standard Proctor".
      a. Under structures and building floor slabs: Compact top 12 inches of subgrade and each layer of fill or backfill material at 95 percent maximum density.
      b. Under all paved areas: For concrete compact top 12 inches of subgrade and each layer of fill or backfill material at 95 percent maximum density. For asphalt compact top 12 inches of subgrade and each layer of fill or backfill material at 98 percent maximum density.
      c. Trenches for underground utility lines shall be backfilled with suitable material compacted at 95 percent maximum density.
      d. Under lawns or unpaved areas: Compact the top 6 inches of sub-grade and each layer of fill or backfill material at 90 percent maximum density.
      e. If required compaction is unattainable during the normal course of construction, contact Project Manager for direction and steps to be taken. Do not immediately start undercutting and replacement operations.
   2. Moisture Control: 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 minimum quantity as necessary to prevent free water from appearing on surface during or subsequent to compaction operations. Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density. 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 level.

3.10 GRADING

A. Uniformly grade areas within limits of grading under this Section, including transition areas. Smooth finished surface within specified tolerances, compact with uniform levels or slopes between points where elevations are indicated or between such points and existing grades.

B. Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding. Finish surfaces free from irregular surface changes and as follows:
   1. Lawn or Unpaved Areas: Finish areas to receive 3 inches of topsoil. The finish topsoil grades shall be within not more than ½ inch above or below required elevation.
   2. Walks and Pavements: Shape surface of areas to line, grade and cross-section with finished surface not more than ½ inch above or below required subgrade elevation.

C. Grading of Fill under Building Slab: Grade smooth and even, free of voids, compacted as specified and to indicated elevation. Slope surface for positive drainage to under floor drains. Provide final grades within a tolerance of 1/2 inch when tested with a 10-foot straightedge

3.11 BUILDING SLAB DRAINAGE COURSE

A. Drainage course consists of placement of crushed sand or gravel fill material, in layers of indicated thickness, over subgrade surface to support concrete building slab.

B. Place gravel fill material on prepared subgrade. Place gravel in layers of uniform thickness, conforming to required cross-section and thickness. Maintain optimum moisture content for compacting material during placement operation. When a compacted drainage course is shown to be 6 inches thick or less, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

3.12 PAVEMENT BASE COURSE

A. Pavement base course consists of placement of gravel fill material, in layers of indicated thickness, over subgrade surface to support pavement.

B. Place gravel fill material on prepared subgrade. Place gravel in layers of uniform thickness, conforming to required cross-section and thickness. Maintain optimum moisture content for compacting material during placement operation. When a compacted drainage course is shown to be 6 inches thick or less, place material in equal layers, except no single layer shall be more than 6 inches or less than 3 inches in thickness when compacted.

3.13 FIELD QUALITY CONTROL

A. Quality Control Testing during Construction: Allow testing service to inspect and approve each subgrade and fill layer before further fill, backfill or construction work is performed. See Section 01410 for testing laboratory services and requirements.

3.14 EROSION CONTROL

A. See Section 02020 for erosion control requirements.

3.15 MAINTENANCE

A. Protect newly graded areas from traffic and erosion. Keep free of trash and debris.

B. Repair and re-establish grades in settled, eroded and rutted areas to specified tolerances.

C. Where completed compacted areas are disturbed by subsequent construction operations or adverse weather scarify surface, reshape, and compact to required density prior to further construction at no additional cost to AutoZone.

D. Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact and replace surface treatment. Restore appearance, quality and condition of surface or finish to match adjacent work and eliminate evidence of restoration to greatest extent possible, all at no additional cost to AutoZone.

3.16 DISPOSAL OF EXCESS AND WASTE MATERIAL

A. Remove waste materials, including unacceptable excavated material, trash, debris and dispose of it off the Project Site in a legal and approved disposal area.

End of Section

DIVISION 2 – SECTION 02215 TERMITE CONTROL

(to be used for all wood framed buildings and if required by code)

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Provide certifications that products used comply with U.S. Environmental Protection Agency (EPA) regulations for termiticides. Use only product that bear a federal registration number of the EPA and are approved by the local authority having jurisdiction.

B. Engage a professional pest control operator who is licensed according to regulations of governing authorities to apply soil treatment solution.

C. Do not apply soil treatment solution until excavating, filling and grading operations are complete, except as otherwise required in the construction operations. Do not apply soil treatment to frozen or excessively wet soils or during inclement weather.

1.02 WARRANTY

A. Furnish written warranty executed by Applicator and Contractor, certifying that applied soil termiticide treatment will prevent infestation of subterranean termites. If subterranean termite activity is discovered during warranty period, Contractor will re-treat soil and repair or replace damage caused by termite infestation.

B. Warranty period will be 5 years from the date of Substantial Completion and shall not deprive AutoZone of other rights that may be occuring under other provisions of the Contract Documents. Warranty will be in addition to and run concurrent with other warranties made by Contractor under requirements of the Contract Documents.

PART 2 PRODUCTS

2.01 SOIL TREATMENT SOLUTION

A. Use an emulsible concentrated termiticide that dilutes with water, specially formulated to prevent termite infestation. Fuel oil will not be permitted as a dilutant. Provide a solution consisting of one of the following elements:

1. Chloropyrifos: Dursban-TC, Dow Chemical Co.
2. Permethrin: Dragnet-FT, FMC Corp. or Torpedo, ICI Americas Inc.
3. Cypermethrine: Prevail-FT, FMC Corp. or Demon, ICI Americas Inc.
4. Bifenthrin: Baseline, FMC Corp.

B. Dilute with water to concentration level recommended by manufacturer.

C. Other solutions may be used as recommended by Applicator if approved for intended application by local authorities having jurisdiction. Use only soil treatment solutions that are not harmful to plants and vegetation.

PART 3 EXECUTION

3.01 APPLICATION

A. Remove foreign matter that could decrease treatment effectiveness 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 placing compacted fill under slabs if recommended by toxicant manufacturer.

B. Apply soil treatment solution as follows:

1. Under Slab on Grade Structures: Apply 4 gallons of chemical solution per 10 linear feet to the entire inside perimeter of the foundation wall, around plumbing pipes and conduits which penetrate the foundation wall and / or slab, and around interior column footings.
2. Perimeter of Slab on Grade Structures: Apply 4 gallons of chemical solution per 10 lineal feet for each foot of depth from finished grade to bottom of footing. Along outside edge of building dig a trench 6 to 8 inches wide to a depth not less than 12 inches. Punch holes to the top of the footing at not more than 12 inches on center and apply chemical solution. Mix chemical solution with soil as it is being replaced in trench.
3. At hollow masonry foundations, treat voids at the rate of 2 gallons of chemical solution per 10 linear feet, poured directly into the hollow spaces.

DIVISION 2 – SECTION 02510 ASPHALT PAVING

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. All work done under this Section shall conform to the appropriate specification of the state or local highway Department of Transportation (DOT) under whose jurisdiction this project falls.
B. Submit an asphalt mix design for review and approval for each type of pavement course specified. The mix design shall not be older than 2 years from the date paving work is performed and shall bear some type of marking indicating acceptance by the governing authority having jurisdiction.
C. Material for aggregate base course, hot mix asphalt binder and surfaces courses shall meet or exceed the State DOT material specifications for road materials.
D. The use of "superpave asphalt" for AutoZone parking will be prohibited.
E. Submit material certificates signed by material producer and Contractor, certifying that each material item complies with or exceeds specified requirements.

1.02 SITE CONDITIONS

A. Apply tack coats when air temperature is above 50 degrees F (10 degrees C) and when air temperature has not been below 35 degrees F (1 degree C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.
B. Construct hot-mixed asphalt surface course when air temperature is above 40 degrees F (4 degrees C) and when base is dry. Base course may be placed when air temperature is above 35 degrees F (1 degree C) and rising.
C. Establish and maintain required lines and elevations, including crown and cross-slope for each course of pavement during construction operations.
D. Verify that earthwork subgrade is completed to the correct lines and grade elevations. Do not commence work until conditions are satisfactory and acceptable for pavement construction.

PART 2 PRODUCTS

2.01 MATERIALS

A. Use locally available materials and gradations that exhibit a satisfactory record of previous installations. A maximum of 10 percent recycled asphalt pavement (RAP) can be used.
B. Course Aggregate: Sound, angular crushed stone, crushed gravel or properly cured crushed blast furnace slag, complying with ASTM D 692-88.
C. Fine Aggregate: Sharp-edged natural sand or sand prepared from stone, properly cured blast furnace slag gravel or combinations thereof, complying with ASTM D 1073
D. Asphalt: Conform to DOT Specifications for plant-mix pavements.
E. Tack Coat: Conform to DOT Specifications.
F. Off Site Traffic Marking Paint: Chlorinated rubber-alkyd complying with AASHTO M 248, Type III, and (FS-TT-P-115) or meeting local DOT requirements. Colors will be White or Yellow as required.
G. Parking Lot Paint: See Section 09900 of these Specifications.
H. Asphalt Aggregate Mixture: Provide plant-mixed, hot laid asphalt-aggregate mixture complying with the applicable sections of DOT Standard Specifications and other authorities having jurisdiction.

PART 3 EXECUTION

3.01 INSPECTION

A. Examine the subgrade on which bituminous pavement shall be installed. Notify the Project Manager in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected.

3.02 SURFACE PREPARATION

A. General: Remove loose material from compacted subgrade surface immediately before applying aggregate base course.
B. Tack Coat: Apply to contact surfaces of previously constructed asphalt or Portland cement concrete and surfaces abutting or projecting into hot-mix asphalt pavement. Distribute at rate of 0.03 to 0.08 gallons per square yard of surface.

C. Allow to dry until at proper condition to receive paving. Prevent contamination of tack coat prior to paving.
D. Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean damaged surfaces.

3.03 PLACING MIX

A. General: Place plant-mixed, hot-laid asphalt aggregate mixture in accordance with standard specifications on prepared surface, spread and strike off. Spread mixture at minimum temperature of 225 degrees F (107 degrees C). Place areas inaccessible to equipment by hand. Place each course to required grade, cross-section and compacted thickness. When mixes are transported at temperatures below 50 degrees F or when haul lengths exceed 20 miles, insulate truck beds and provide tarp to cover mix.
B. Pavement Placing: Place in strips not less than 10 feet wide, unless otherwise acceptable to Project Manager. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course.
C. Immediately correct surface irregularities in finish course. Remove excess material from high spots with shovel or lute.
D. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining works. Construct joints to have same texture, density and smoothness as other sections of hot-mix asphalt course. Clean contact surfaces and apply tack coat.

3.04 ROLLING

A. General: Begin rolling when mixture will bear roller weight without excessive displacement, and compact mixture with hand tampers or vibrating plate compactors in areas inaccessible to rollers.
B. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling and repair displaced areas by loosening and filling, if required, with hot material.
C. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been evenly compacted.
D. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and the surface has a smooth, evenly compacted appearance.
E. Patching: Remove and replace defective areas of paving, or areas mixed with foreign materials. Cut out such areas and fill with fresh, hot-mixed asphalt, compacting by rolling to specified surface density and smoothness.
F. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect pavement from all traffic.

3.05 TRAFFIC AND LANE MARKINGS

A. Cleaning: Sweep and clean surface to eliminate loose material and dust. Surface shall be clean and dry, free from loose dirt, grease, oil, etc.
B. Striping: Do not apply traffic and lane marking paint until layout and placement have been verified with the Construction Documents. Do not apply on damp surfaces or when relative humidity is above 85 percent or when air or surface temperatures are below 40 degrees F. If miss marking occurs, correct as directed by Project Manager. Use color of paint as required by authority having jurisdiction.
C. Apply paints with mechanical equipment to produce uniform straight edges. Apply at manufacturers recommended rates to provide minimum 10.0 to 15.0 mils wet thickness. Paint shall not be thinned more than 1/2 gallon to 5 gallons of paint.
D. See Section 09900 for parking lot painting requirements.

3.06 FIELD QUALITY CONTROL

A. An independent testing laboratory will test in-place work for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by the Project Manager.
B. In-place compacted thickness, tested in accordance with ASTM D 3549, will not be acceptable if exceeding following allowable variations:
    1. Asphalt Base Course: Plus or minus 1/2 inch

2. Asphalt Surface Course: Plus or minus 1/4 inch

C. The mixture shall have a density when thoroughly compressed, of not less than 93 percent of the calculated density of a voidless mixture composed of the same materials in like proportions.

D. Test finished surface of each course for smoothness, using a 10 foot straightedge applied parallel with and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness:
   1. Asphalt Base Course Surface: 1/4 inch.
   2. Asphalt wearing Course Surface: 3/16 inch.
   3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.
   4. Areas of ponding or standing water in excess of 1/8 inch will not be acceptable.

End of Section

DIVISION 2 – SECTION 02520 SITE CONCRETE

PART 1 GENERAL

1.01 WORK INCLUDED

A. This section specifies cast-in-place concrete, including formwork, reinforcing, mix design, placement procedures and finishes for concrete curb and gutter, paving, light pole bases, site retaining walls and other miscellaneous concrete.
B. Cast-in-place concrete for building retaining walls, loading docks, floor slab and foundations is specified in Section 03100.
C. Prepare sub-grade and base as specified in other sections.
D. All layout work including setting of elevations shall be from established control points.
E. Unless otherwise shown or specified, the work shall conform to the appropriate standards of the American Concrete Institute (ACI) latest criteria.

1.02 SUBMITTALS

A. Submit manufacturer's product data with application and installation instructions for admixtures, curing compounds, expansion joint fillers and sealant.

PART 2 PRODUCTS

2.01 FORM MATERIALS

A. Forms for Exposed Finished Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel type materials, to provide continuous, straight, smooth exposed surfaces.
B. Forms for Unexposed Concrete: No. 2 common boards of dimensioned lumber of uniform thickness.
C. Form Coatings: Provide commercial formulation form coating compounds with a maximum VOC of 350 mg/l that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatment of concrete surfaces.
D. Form Ties: Factory fabricated, removable, or snap-off metal or glass fiber reinforced plastic form ties designed to resist lateral pressure of fresh concrete on forms and to prevent spalling of concrete on removal.

2.02 REINFORCING MATERIALS

A. Primary / Structural Reinforcing:
   1. Reinforcing steel shall be deformed bars, conforming to ASTM A 615, Grade 60, as shown on drawings.
   2. Steel shall be clean, free from scale and rust, flat and level. Reinforcing steel shall be located at depths and positions indicated on drawings. Provide dowels, accessories, etc. required for completing the work.
B. Secondary / Temperature-Shrinkage Reinforcement:
   1. Collated fibrillated polypropylene (CFP) micro-fibers engineered and designed for use in concrete complying with ASTM C1116, Type III with a minimum fiber bundle length of ¾-inch, added at the time of concrete batching, at the rate of 1.5 pounds per cubic yard of concrete in accordance with the fiber manufacturers instructions.
   2. Waste stream CFP fibers or POY (partially oriented yarn) fibers shall not be used under any conditions.
   3. If conditions require the addition of a high-range (super plasticizer) water reducer, fibrous reinforcement should be added prior to the incorporation of the super plasticizer. This will insure the optimum mixing friction required to properly distribute the fiber.
   4. Contractor shall have the option of using welded wire mesh in lieu of the polypropylene fibers if he so chooses. Mesh used for temperature shrinkage control shall be 6x6 / 10x10 at a minimum or as sized and indicated on the drawings.

2.03 CONCRETE MATERIALS

A. Concrete: Ready mix concrete conforming to ASTM C-94.
B. Portland Cement: ASTM C-150, Type 1, II, or I/II unless another type is called for in Soils Report.
   1. Use same brand of cement throughout project unless otherwise directed by AutoZone Construction Project Manager.

C. Aggregates:
   1. Maximum size of coarse aggregate shall not exceed 1/5 the narrowest dimension between forms; 1/3 the thickness of unreinforced slabs; or 3/4 of the minimum clear spacing between reinforcing bars or 1-1/2 inch. Maximum coarse aggregate size shall be 1 inch for slabs less than 5 inches thick.
   2. Coarse and fine aggregate shall conform to applicable requirements of ASTM C33. Provide aggregates from a single source. Aggregates shall be washed and screened, consist of hard durable particles without adherent coatings and free of deleterious reactivity to alkali in cement. Fine aggregate shall be graded from coarse to fine to produce a minimum percentage of voids.
   3. Use no coal or lignite in concrete that will not be covered by building materials or soil.
   4. Aggregate shall not be alkali reactive, cause pop-outs, “D” cracking, or other disruptions due to moisture gain, freezing or other mechanisms based on tests.
   5. Absorption level of coarse aggregate shall not exceed five percent.

D. Water: Potable or must comply with ASTM C 1602

E. Admixtures: Purpose for admixtures used shall be clearly stated on concrete mix design. Provide admixtures certified by manufacturer to be compatible with other required admixtures. Set control admixtures may be used only when adverse weather conditions are anticipated and require approval of the AutoZone Construction Project Manager.
   1. Air-Entraining Admixture: ASTM C-260, certified by manufacturer to be compatible with other required admixtures.
   2. Fly Ash Pozzolans: ASTM C-618, Class C or F. Carbon content not greater than 3 percent by volume. Use only one type and source throughout the project.
   3. Ground Granulated Blast Furnace Slag: ASTM C 989, Grade 100 or 120. Use only one type and source throughout the project.
   4. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than .05 percent chloride ions.
   5. Water reducers, non chloride, non-corrosive accelerators, and retarders : ASTM C 494
   6. Superplasticizer (high range water reducer): ASTM C494, Type F or G
   7. Evaporation Reducer: Monomolecular film manufactured for application to fresh concrete

F. Liquid Membrane Curing Compound: Complying with ASTM C-309, Type 1, Class A unless other type approved by AutoZone. Moisture loss, when applied at a rate of 200 square feet per gallon shall not be more than 0.055 gr./sq.cm. Material used shall dry clear.

G. Water Repellant / Sealer: Penetrating, breathable, non-yellowing, waterborne silane-siloxane sealer, complying with ASTM C-672, and NCHRP 244. Material used shall dry clear.

H. Bonding Agent: ASTM C1059/C1059M, Type II non-redispersible, acrylic emulsion.

I. Epoxy Bonding Adhesive: ASTM C881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements.

J. Form Releasing Agent: Non-staining.

K. Waterstop: Rubber, minimum 1750 psi tensile strength, minus 50 degrees F to plus 175 degrees F temperature range; 6 inches wide minimum by maximum possible length.

2.04 JOINT MATERIALS

A. Expansion and Construction Joints:
   1. Joint Filler shall be asphalt impregnated cellular fiberboard conforming to ASTM D-1751, or redwood of appropriate width.
   2. Paving cap seal as manufactured by Greenstreak, Inc. St. Louis, Missouri.
      a. Model number 610 for areas of vehicular paving
      b. Model number 626 for transverse joints in sidewalks
      c. Model number 632 for the joint between the sidewalk and the building.

2.05 CONCRETE MIX, DESIGN AND TESTING

A. Design mix to produce normal weight concrete to produce the following properties:
   1. Compressive Strength: 4000 psi minimum at 28 days unless noted otherwise on the structural or civil drawings.
   2. Air Content: 6 percent plus or minus 1 1/2 percent for concrete exposed to freeze / thaw.

3. Slump: 4 inch maximum, verified in plant before adding water-reducing admixture. Slump shall be not more than 8 inches after adding water-reducing admixture.
4. Concrete shall be composed of Portland cement, fine aggregate, coarse aggregate, water and admixtures where applicable. Determine proportions of ingredients in accordance with ACI 318, to provide required strength, slump, resistance to weathering, place ability, durability, and surface hardness for each class of concrete. Provide admixtures as required or appropriate to enhance workability, control set, or improve strength. Design concrete mixes to be workable, and appropriate for each application and type of placement or conveying in the field, to bond readily to reinforcement without segregation or the formation of excessive free water on surfaces.
5. Note any special characteristics of mix which require precautions in mixing, placing, or finishing techniques to achieve finished product specified.

B. The minimum Cementitious Materials Content of the concrete shall be as follows:
1. For Air-Entrained Concrete 611 pounds per cubic yard.
2. For Non Air-Entrained Concrete 564 pounds per cubic yard.
3. Fly ash may be used in cement mixture with a maximum fly ash content equal to 20 percent of cement content by weight.
4. Ground Granulated Blast Furnace Slag (GGBFS) may be used in cement mixtures with a maximum content of "GGBFS" equal to 30 percent of the total cement content by weight.
5. Mixes containing Fly Ash or Slag (GGBFS) shall be adjusted for cold weather

C. In any mix, the maximum water-cementitious materials ratio shall be between 0.45 and 0.50.
D. Concrete shall be proportioned by either the trial batch method or the field experience method.
1. Where the trial batch method is used, make three test cylinders for each trial batch. Break one cylinder at 7 days and two at 28 days to verify strength requirements. Adjust proportions to produce a design mix at least 1200 psi greater than the specified strength.
2. Where the field experience method is used, the required average compressive strength shall be determined in accordance with paragraph 5.3.2 of ACI 318. Documentation that proposed concrete proportions will produce an average compressive strength equal to or greater than required shall consist of at least 10 consecutive tests encompassing a period of time of not less than 45 days and made within the past 18 months.

E. Sampling and testing for field quality control during placement of concrete shall conform to the requirements of Section 01410.
F. Distribute copies of test results to AutoZone, contractor, and structural engineer of record. Non-compliant test reports shall be e-mailed or faxed immediately from the laboratory doing the work with non-compliant items clearly noted.
G. Review and approval of concrete mix design by AutoZone Construction Project Manager, special inspectors, or structural engineer of record is only for general conformance with the project specifications. It is the responsibility of the contractor to provide a design mix that meets the requirements of the specifications.

PART 3 EXECUTION

3.01 GENERAL

A. Maintain access for vehicular and pedestrian traffic as required for other construction activities.
B. Form, install reinforcements, pour, strip, rub, cure and protect concrete walls, bases, curbs, sidewalks, pavements and other concrete structures shown on drawings to size, shape and location required.

3.02 SURFACE PREPARATION

A. Remove loose material from compacted base surface immediately before placing concrete
B. Proof-roll prepared base surface to check for unstable areas and need for additional compaction.

3.03 FORM CONSTRUCTION

A. Forms shall be used wherever necessary to confine the concrete and shape it to the required dimensions. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of concrete and shall have sufficient rigidity to maintain specified tolerances.
B. The design and engineering of the formwork, as well as its construction shall be the responsibility of the Contractor.
C. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. All exposed corners shall have a 3/4-inch by 3/4-inch chamfer unless otherwise noted.

D. Form ties shall leave no corrodible metal closer than 1 inch to the exposed surface of the concrete. Form ties shall leave holes no larger than 1 inch in diameter in concrete surface when removed. Ties shall be of size and weights for pressures developed and installed in accordance with manufacturer's recommendations. Form ties for exterior walls and grade beams shall be leak proof and water seal type.
E. Forms for exposed surfaces shall be coated with non-staining release agent applied before the reinforcing steel is placed.
F. Set forms to grades and lines, rigidly braced and secure. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place for at least 24 hours after placement or until concrete has adequately hardened. Care shall be taken to avoid spalling the concrete surfaces.
G. Check complete formwork for grade and alignment to following tolerances:
    1. Top of forms not more than 1/8 inch in 10 feet.
    2. Vertical face on longitudinal axis not more than 1/4 inch in 10 feet.
H. Clean forms after each use and coat form with release agent as often as required to ensure separation from concrete without damage.

3.04 REINFORCEMENT

A. Reinforcing steel shall be accurately fabricated to the dimensions required or shown and shall conform to standards contained in the ACI Detailing Manual or CRSI Manual of Standard Practice, latest edition. Bars shall be bent cold and shall not be straightened in a manner that will injure the material. Welding as an aid to fabrication or installation will not be permitted unless specifically shown on the drawings.
B. Reinforcing shall be placed so that the proper concrete cover is provided. It shall be the Contractors responsibility to ensure the intended reinforcement location is maintained during concrete placement. Tie bars at intersections with soft steel wire. Do not drive nails into wood forms to support reinforcing. Reinforcing bars partially imbedded in concrete shall not be field bent.
C. Lap splices of reinforcing as called for on drawings. Do no splicing at points of maximum stress. Lap all bars at all corners and abrupt changes in direction within walls and beams. Provide steel dowels between foundations and walls, pilasters, columns and elsewhere, as indicated on drawings or as conditions require.
D. Protect reinforcing steel from excessive rusting or injury. Store on skids or otherwise maintain at least 6 inches above ground. After bars are tied in place take whatever precautions are necessary to protect bars from damage by construction equipment or careless workmen. Pay particular attention to bars projecting out of previously placed concrete. Damaged steel shall be replaced at no cost to AutoZone.
E. For slabs on grade, provide bolsters chairs, spacers, and other devices for spacing or fastening reinforcing bars and welded wire fabric, where base material will not support chair legs, support reinforcing with sand plates or horizontal runners. For exposed to view concrete where legs of supports are in contact with forms, finish supports of legs shall be plastic protected.

3.05 JOINTS

A. Construct expansion, control, and construction joints true-to-line with face perpendicular to surface of concrete. Construct traverse joints at right angles to the centerline unless otherwise indicated.
B. Control Joints: Provide weakened-plane control joints sectioning the paving into areas no larger than 15 foot square and sidewalks no larger than 5 foot square or as shown on drawings. Contraction joints for curbs shall be provided at the same interval as the joints in the adjacent paving. Joints in paving and curbs will be saw cut to a depth equal to 1/4 of the concrete thickness and sealed. Joints in sidewalks will be tooled and left unsealed.
    1. Tooled Joints: Form control joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a jointer.
    2. Sawed Joints: Form control joints using power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action. Soft-Cut system joints shall be installed within 2 hours after final finish. Saw-cut control joints shall be cut within 12 hours after finishing.

C. Construction Joints: Place construction joints at end of placements and at locations where placement operations are stopped for a period of more than 1/2 hour, except where such placements terminate at expansion joints.
D. Expansion Joints: Place expansion joints at all junctures between flatwork and vertical surfaces or fixed objects such as bollards, manholes, storm drains, light pole bases, etc. and at additional locations as follows:
   1. Curbs: 50-foot intervals on straight sections and at spring lines of radii.
   2. Walks: 20-foot intervals along linear length.
   3. Vehicular Pavement: 50-foot intervals along linear length.
E. At both construction and expansion joints install joint fillers in one-piece lengths wherever possible. Where more than one length is required, lace or clip joint filler sections together. Make sure that joint filler is set straight and at an elevation that will allow the top of the cap seal once installed to be slightly below the surrounding surface of the concrete paving. Install the appropriate model Greenstreak cap seal over the joint filler. The top of the cap seal shall be slightly below the adjacent surface of the concrete
F. Sealant: All sawn contraction joints shall be filled with sealant appropriate for the location and usage. All tooled joints and joints with cap seal will not require sealant.

3.06 PRODUCTION OF CONCRETE

A. Ready-mixed concrete shall be batched, mixed and transported in accordance with ASTM C-94. The ready-mixed concrete producer shall furnish duplicate delivery tickets, one for the Contractor and one for the Testing Laboratory's agent, for each batch of concrete. The information provided on the delivery ticket shall include quantities of all materials batched including the amount of free water in the aggregate. The quantity of water that can be added at the site without exceeding the maximum water cement ratio specified shall be noted on the delivery ticket.
B. The independent testing agency shall have access at all times to the batching and mixing plant for sampling of materials and inspection of all work performed for this job.
C. In cold weather, the temperature of the concrete when delivered at the site of the work shall be at least 50 degrees F.
D. In hot weather, the ingredients shall be cooled before mixing. Flake ice or well crushed ice of a size that will melt completely during mixing may be substituted for all or part of the mixing water. When air temperature is between 80 and 90 degrees F., reduce maximum mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature exceeds 90 degrees F. further reduce maximum mixing and delivery time to 60 minutes.

3.07 CONCRETE PLACEMENT

A. General Information and Requirements:
   1. Comply with general requirements for mixing and placing concrete as herein specified.
   2. Do not place concrete until base and forms have been checked for line and grade. Moisten base if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes and other structures until they are at required finish elevation and alignment.
   3. Place concrete in such a manner to prevent segregation of mix, consolidate along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side of forms. Use only square faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels and joint devices.
   4. Transport and place concrete not more than 90 minutes after water has been added to the dry ingredients.
   5. Use bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
   6. Deposit and spread concrete in a continuous operation between transverse joints as far as possible. If interrupted for more than 1/2 hour, place a construction joint.
   7. Tined rakes are prohibited as a means of conveying fibrous reinforced concrete. Come-a-long is the appropriate tool to use.

8. If concrete pumping equipment is required, elevate the ready-mix truck chute approximately 12 to 14 inches above the pump grate in order to improve the movement of CPF fiber-reinforced concrete through the pumping equipment.
9. Automatic machine may be used for curb and gutter placement at Contractor's option. If machine placement is to be used, submit revised mix design and laboratory test results that meet or exceed minimums specified. Machine placement must produce curbs and gutters to required cross-section, lines, grades, finish and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified.

B. Preparation for Placing Concrete
1. The Testing Laboratory, to the extent required by the Specifications, prior to placement of concrete shall have inspected all subgrade surfaces. AutoZone or its designee shall be the sole judge as to the suitability of the bearing material.
2. Before concrete is placed, all debris, water, ice or other material shall be removed from the spaces to be occupied by the concrete. Remove surplus releasing agent from the contact faces of forms and thoroughly clean reinforcement of other coatings. Concrete shall not be placed on frozen ground.
3. Prepare previously placed concrete by cleaning with a steel brush and applying bonding agent in accordance with manufacturer's recommendations.
4. Notify all trades concerned, including AutoZone's Construction Project Manager and the Testing Laboratory sufficiently in advance to permit installation and inspection of all required work by other trades.
5. Before placing concrete, all required imbedded items, including dovetail anchor slots, anchors, inserts, angles, metal frames, fixtures, sleeves, drains, stair nosing, accessory devices for mechanical and electrical installations shall be properly located, accurately positioned and built into the construction and maintained securely in place.
6. Build into construction all items furnished by AutoZone and other trades. Provide all offsets, pockets, slabs, chases and recesses, as job conditions require. Thicken slabs as required to maintain the intended slab thickness at embedded items. Set anchor bolts and embedded plates furnished under the structural steel section of these Specifications.
7. Place and properly support all required reinforcing. Hold bars in beams and slabs to exact location during concrete placement.

C. Conveying
1. Concrete shall be conveyed from mixer to place of final deposit by method, which will prevent separation or loss of material.
2. Equipment for chuting and conveying concrete shall be of such size and design as to insure a practically continuous flow of concrete at the delivery without separation of material.
3. Provide runways or other means for wheeled equipment to convey concrete to point of deposit. Construct runways so that supports will not bear upon reinforcement or fresh concrete.
4. Pumps or pneumatic equipment shall have adequate pumping capacity. Slump loss due to pumping shall not exceed 2 inches. Do not convey concrete through pipes made of aluminum or aluminum alloy. Maintain controls for proportioning, mixing, adjustment of mix and placement in accordance with ACI 301 and ACI 304.2R.

D. Depositing
1. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. No concrete shall have a free fall of over three feet from truck, mixer, buggies, chutes or tremies. The concreting shall be carried on at such a rate that the concrete is at all times plastic and flows readily into the spaces between bars. Concrete that has partially hardened, or been contaminated by foreign materials, shall not be deposited in the work, nor shall retempered concrete be used.
2. When concreting is started, it shall be carried on as a continuous operation until the placing of the section is completed. Do not allow cold joints to occur.
3. Protect adjacent surfaces from concrete drippings, spillage or splashes. Hardened or partially hardened splashes or accumulations of concrete on forms or reinforcement shall be removed before the work proceeds. Clean all damaged surfaces immediately.
4. All concrete shall be thoroughly consolidated by mechanical vibrators during the placing operation and shall be thoroughly worked around the reinforcement and embedded fixtures and into the corners of the forms. Mechanical vibrators shall be applied directly to the concrete and used only

under experienced supervision. Vibrators shall be carried on continuously with the placing of concrete. Keep a minimum of two vibrators on the job during concreting operations. Consolidation of concrete shall be in accordance with ACI 309.

5. Do not over vibrate concrete or use vibrators to transport concrete within forms. Insert vibrators vertically at frequent intervals. Do not drag vibrators through concrete. Do not insert vibrators into lower courses that have begun to set.
6. All conveyances shall be thoroughly cleaned at frequent intervals during the placing of concrete, and before beginning a new run of concrete. All hardened concrete and foreign materials shall be removed from the surfaces.
7. Maintain controls for proportioning, mixing, adjustment of mix and placement; use pumping equipment in accordance with ACI 301 and 304.2R.
8. Do not drop concrete directly into standing water. Use a tremie with the outlet near the bottom of the place of deposit. Contractor shall obtain approval of AutoZone project manager in writing prior to placing any concrete into standing water.

E. Paving Slabs and Sidewalks

1. Place granular subbase if required over subgrade to thickness shown on drawings and consolidate material. Bring material to optimum moisture content. The subgrade shall be free of frost before concrete placing begins.
2. Edge forms, if required, and intermediate screed strips shall be set accurately to produce the designated elevations and contours of the finished surface, and shall be sufficiently strong to support vibrating screeds or roller pipe screeds. The concrete surface shall be aligned to the contours of screed strips by the use of strike-off templates or acceptable compacting type screeds.
3. Mixing and placing shall be carefully coordinated with finishing. Concrete shall not be placed on the granular sub base or forms more rapidly than it can be spread, straight edged and darbied or bull floated. These operations must be performed before bleeding water has an opportunity to collect on the surface.
4. Concrete in slabs shall be thoroughly consolidated. Internal vibration shall be used along the bulkheads of slabs on grade. Consolidation of slabs shall be obtained with vibrating screeds, roller pipe screeds, internal vibrators or other approved means. To obtain good surfaces and avoid cold joints, the size of finishing crews shall be planned with due regard for the effects of concrete temperature and atmospheric conditions on the rate of hardening of the concrete.
5. All finishes must be adequate in all respects to receive material to be applied to it, true to line and free of defects or blemishes. No driers, dry cement, nor cement-sand mixture shall be used in connection with any finish surfaces to absorb water, stiffen mix or for any other purpose.
6. All paving, sidewalks, loading dock slabs and exterior stairs shall receive a light broom finish.
7. Areas which are called out, to receive a light broom finish shall be given a light traverse texture by drawing a broom across the surface, and will not be trowelled.
8. Precautions to protect fresh concrete from developing plastic shrinkage cracks must be taken in advance of concrete placement where evaporation rate due to any combination of temperature, humidity, and wind velocity is expected to approach 0.2 lbs./sq.ft./hr. as determined by ACI 305 Figure 2.1.5. Acceptable precautions to reduce the rate of evaporation include the use of wind breaks, monomolecular film, evaporation retarders, fog spray, covering with polyethylene sheeting, or wet cover.

3.08 COLD WEATHER PLACING

A. Protect all concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with requirements of ACI 306 and as herein specified.

B. When the air temperature has fallen to or may be expected to fall below 40 degrees F, provide adequate means to maintain the temperature in the area where concrete is being placed, at between 50 and 70 degrees F for at least 7 days after placing. Provide temporary housings or coverings including tarpaulins or plastic film. Maintain the heat and protection, if necessary, to insure that the ambient temperature does not fall more than 30 degrees F in the 24 hours following the 7-day period. Avoid rapid dry-out of concrete due to overheating and avoid thermal shock due to sudden cooling or heating.

C. When air temperature has fallen or is expected to fall below 40 degrees F, uniformly heat all water and aggregates before mixing as required to obtain a concrete mixture temperature of not less than 55 degrees F and not more than 85 degrees F at point of placement.
D. Do not use frozen materials containing ice or snow. Do not place concrete on frozen subgrade or subgrade containing frozen materials. Ascertain that form, reinforcing steel and adjacent concrete surfaces are entirely free of frost, snow and ice before placing concrete.
E. Do not use salt or other materials containing antifreeze agents or chemical accelerators or set control admixtures unless approved by AutoZone Construction Project Manager.

3.09 HOT WEATHER PLACING

A. When hot weather exists that would seriously impair the quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
B. Cool ingredients before mixing to maintain concrete temperature at time of placement below 80 degrees F when the temperature is rising and below 85 degrees F when the temperature is falling. Mixing water may be chilled, or chopped ice may be used to control the concrete temperature provided the water equivalent of the ice is calculated in the total amount of mixing water.
C. Cover reinforcing steel with water soaked burlap if it becomes too hot, so that the steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
D. Wet forms thoroughly before placing concrete.
E. Do not place concrete at a temperature so as to cause difficulty from loss of slump, flash-set, or cold joints.
F. Do not use set-control admixtures unless approved by the AutoZone Construction Project Manager in Mix Design.
G. Obtain Project Manager's approval of other methods and materials proposed for use prior to actually commencing the work.
H. Precautions to protect fresh concrete from developing plastic shrinkage cracks must be taken in advance of concrete placement where evaporation rate due to any combination of temperature, humidity, and wind velocity is expected to approach 0.2 lbs./sq.ft./hr. as determined by ACI 305 Figure 2.1.5. Acceptable precautions to reduce the rate of evaporation include the use of wind breaks, monomolecular film, evaporation retarders, fog spray, covering with polyethylene sheeting, or wet cover.

3.10 CONCRETE FINISHING

A. General Information and Requirements:
    1. Concrete with fibermesh reinforcing will appear to be slightly stiffer than plain concrete, because the fibers act in a cohesive manner and bind the mix together. However, the workability of the mix will remain, do not add excess water.
    2. Fibers do not float to the surface once they are distributed in the concrete. Fibers may appear on or near the surface simply because they have been three dimensionally distributed.
    3. A fibermesh slab will bleed less and slower than a wire mesh-reinforced slab. Do not get on the slab too early for finishing.
    4. For a broom or textured finish, broom in one direction only (perpendicular from the adjacent building wall). Fibers that may appear on the surface will wear off quickly under light traffic.
B. Flat Work:
    1. After strike-off and consolidating concrete, smooth surface by screeding and floating. Use hand method only where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.
    2. After floating, test surface for trueness with a 10 foot straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.
    3. Work edges of slabs and formed joints with an edging tool and round to 1/2 inch radius, unless otherwise indicated. Eliminate tool marks on concrete surface.
    4. After completion of floating and troweling, when excess moisture or surface sheen has disappeared, complete surface finishing.
    5. Concrete pavement, sidewalks, flow channels, flumes, curbs and other similar exterior slabs shall have a non-slip finish by scoring the surface with a fine hair broom, perpendicular to the line of traffic. Provide a fine line texture acceptable to the AutoZone Construction Project Manager.
C. Formed Surfaces:

1. Do not remove forms until concrete has hardened sufficiently to support its own weight and imposed construction loads, but in no case sooner than 24 hours after concrete has been placed.
2. After removal of forms all honeycombed and other defective concrete shall be removed down to sound concrete. If chipping is necessary the edges shall be perpendicular to the surface or slightly undercut. No feathering shall be permitted. The area to be patched as well as the area at least 6 inches wide surrounding it shall be dampened to prevent the absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately one part cement to one part fine sand passing a No. 300 mesh sieve, mixed to the consistency of thick cream, and then brushed into the surface.
3. Concrete surfaces not exposed to view shall be finished with a rough form finish and all surfaces exposed to view shall be finished with a smooth rubbed finish.
4. For a rough form finish, tie holes and defects shall be patched and fins exceeding ¼ inch in height shall be chipped or rubbed off. Otherwise, surfaces may be left with the texture imparted by the forms.
5. For a smooth rubbed finish, the form facing material shall produce a smooth, hard, uniform texture on the concrete. The arrangement of the facing material shall be orderly and symmetrical, with the number of seams kept to the practical minimum. Tie holes and defects shall be patched and all fins shall be removed by rubbing.
6. Upon completion of the work, retaining walls, wing walls, light pole bases, bollards and other surfaces exposed to view shall be given a rubbed finish. Immediately upon removal of the forms, the surfaces to be rubbed shall be pointed up, thoroughly wetted and then rubbed with a No. 20 carborundum brick and water so as to produce a true, even and smooth surface. When necessary to fill pinholes, and upon areas which have been reconstructed, rubbing shall be done by carborundum brick and a thin cement grout composed of 1 part of cement and 2 parts of fine washed silicone sand, all of which shall pass a No. 20 sieve. The surface finished with grout shall be carefully scraped with a steel edge so as to remove all surplus grout, after which it shall be given a final rub with a wood float until all skin and form marks are removed. No wash composed of cement, sand and water shall be used in this process.
7. Remove wood forms from under floors, ramps, steps and similar places such as temporary openings so no material will be left to rot or be infested by termites.

3.11 CURING and PROTECTION

A. Protect and cure all finished cast in place concrete work. Begin immediately after placement; protect concrete from premature drying, excessively hot or cold temperatures and mechanical damage. Cure in accordance with ACI 308. Use membrane-forming curing and sealing compound or approved continuously moist-curing method for not less than 7 days, and in accordance with ACI 301 procedures. If used, apply curing compound as soon as final finishing operations are complete(within 2 hours). Apply curing compound uniformly in continuous operation by power sprayer or roller according to manufacturer's written instructions, but as a minimum, apply two coats perpendicular to one another. Recoat areas subject to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period. After curing period has elapsed remove non-dissipating curing compounds without damaging concrete surfaces by method recommended by curing compound manufacturer.

B. Cold weather curing shall provide protection from freezing, polyethylene sheets covered with hay or straw, or curing blankets shall be used in accordance with ACI 306R procedures. If pavement is built in the fall and is to be put into service before it has 30 days of drying (above 40 degrees F) after curing, a water repellant / sealer shall be applied. The material used shall allow the escape of water vapor from the pavement, while preventing the intrusion of deicing salts into the concrete. Material used shall be applied in strict accordance with the manufacturers' instructions.

C. When concrete curing occurs during hot weather, extra precautions must be taken to prevent rapid drying and minimize evaporation. For additional information and requirements refer to ACI 305R.

D. When rain is imminent or occurs during concrete placement, operations should be stopped, and all steps necessary to protect the hardening concrete shall be taken. Contractor shall completely cover all surfaces with plastic sheeting that may be damaged, and shall take precautions to prevent any water from washing across the concrete surfaces. Provide weights to keep sheeting from blowing away.

DIVISION 2 – SECTION 02900 LANDSCAPE

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. This section includes the following:
   1. Trees
   2. Shrubs
   3. Ground Covers
   4. Plants
   5. Lawns
   6. Topsoil and Soil Amendments
   7. Fertilizers and Mulches
   8. Stakes, Guys and Edging

B. The following sections contain requirements that relate to this section:
   1. Section 02010 Site Clearing
   2. Section 02200 Earthwork

1.01 QUALITY ASSURANCE

A. Engage an experienced installer who has completed landscaping work similar in material, design and extent indicated for this project and with a record of successful landscape establishment.

B. Provide quality, size, genus, species and variety of trees and shrubs indicated, complying with applicable requirements of "American Standard for Nursery Stock".

C. Measure trees and shrubs with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size and 12 inches above ground for larger sizes.

1.02 DELIVERY, STORAGE AND HANDLING

A. Deliver packaged materials in containers showing weight, analysis and name of manufacturer. Protect materials from deterioration during delivery and while stored at site.

B. Deliver seed in original, sealed labeled and undamaged containers.

C. Harvest, deliver, store and handle sod according to the requirements of the American Sod Producers Association's (ASPA) specifications for Turf grass Sod Materials and Transplanting / Installing.

D. Deliver freshly dug trees and shrubs. Do not prune before delivery. Protect bark, branches and root system from sunscald, drying, sweating, whipping and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy natural shape. Provide protective covering during delivery and do not drop trees or shrubs at any time.

E. Handle balled and burlapped stock by the root ball.

F. Deliver trees, shrubs, ground covers and plants after preparations for planting have been completed and install plant material immediately. If planting is delayed more than 6 hours after delivery, set plant materials in shade, keep roots moist, and protect from weather and mechanical damage.
   1. Set balled stock on ground and cover ball with soil, peat moss, sawdust or other acceptable material.
   2. Do not remove container-grown stock from containers before time of planting.
   3. Water root system of trees and shrubs stored on site as often as necessary with a fine-mist spray to maintain root system in a moist condition.

1.03 PROJECT CONDITIONS

A. Determine location of above grade and underground utilities and perform work in a manner which will avoid damage. Hand excavate as required. Maintain grade stakes until removal is mutually agreed upon by parties concerned.

B. When conditions detrimental to plant growth are encountered, such as rubble fill, adverse drainage conditions or obstructions, notify Project Manager before planting.

1.04 COORDINATION AND SCHEDULING

A. Coordinate installation of planting materials during normal planting seasons for each type of plant material required.

B. If timing of construction will not permit installation of required plant materials, provide Owner with a fixed cost and time schedule for future installation.

1.05 OFF-SITE REQUIREMENTS

A. Contractor shall include work in right-of-way or other off-site areas if required by authorities having jurisdiction whether specifically shown on drawings or not. If no work is specifically required then Contractor shall remove all weeds, trash and debris from adjacent right-of-way and reseed all bare spots.

1.06 MAINTENANCE

A. Maintain all landscape plant material until Final Acceptance by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports and resetting to proper grades or vertical position as required, establishing healthy viable plantings. Spray as required to keep free of insects and disease. Restore or replace damaged tree wrappings

B. Maintain lawns until Final Acceptance, by watering, fertilizing, weeding, mowing, trimming, replanting and other operations. Roll, regrade and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.
   1. Water lawn at the minimum rate of 1 inch per week.

C. Mow lawns as soon as there is enough top growth to cut with mower so that no more than 40 percent of grass leaf growth is removed during initial or subsequent mowing. Do not mow when grass is wet.

D. Apply fertilizer to lawn after first mowing and when grass is dry. Use fertilizer that will provide actual nitrogen of at least 1 pound per 1000 square feet of lawn area.

1.07 WARRANTY

A. Warrant all living planting materials for a period of one year after the date of Final Acceptance. Contractor shall warrant against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect or abuse by AutoZone, abnormal weather conditions unusual for warranty period, or incidents that are beyond Contractor's control.

B. Remove and replace dead planting materials immediately unless required to plant in the succeeding planting season.

C. Replace planting materials that are more than 25 percent dead or in an unhealthy condition at end of warranty period.

D. A limit of one replacement of each plant material will be required, except for losses or replacements due to failure to comply with requirements.

PART 2 PRODUCTS

2.01 TREE AND SHRUB MATERIAL

A. Furnish nursery-grown trees and shrubs with healthy root systems, which have been grown under climatic conditions similar to those of the project location. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae and defects such as knots, sun scald, injuries, abrasions and disfigurement. All trees shall be delivered balled and burlapped.

B. Provide trees and shrubs of sizes and grades called for on drawings. Larger sizes may be used if acceptable to Project Manager.

C. Where multiple trees or shrubs of the same type are required they shall be closely match in size, spread and branch structure.

D. Label each tree and shrub with a securely attached waterproof tag bearing legible designation of botanical and common name.

E. Single stem trees shall have straight trunk, well-balanced crown and intact leader. Branching height shall be 1/3 to 1/2 of tree height. Multi stem trees shall have two or more main stems and follow the same requirements as single stem trees.

F. Shrubs up to 5-gallon size may be container stock; above 5-gallon size shall be ball and burlapped.

2.02 GROUND COVERS AND PLANTS

A. Provide ground covers and plants established and well rooted in removable containers or integral peat pots and with not less than the minimum number and lengths of runners required for the pot size indicated.

2.03 GRASS MATERIAL

A. All grasses utilized shall be of types that are slow growing, drought resistant, require low water consumption and commonly found in the region of the project.
B. Grass seed shall be fresh, clean, dry, new crop seed complying with the Association of Official Seed Analysis for purity and germination tolerances. Seed shall be mixed to proportion that will insure full coverage for the grass type utilized.
C. Sod shall be certified turf grass sod complying with ASPA specifications for machine cut thickness, size, strength, moisture content, mowed height and free of weeds and all undesirable matter. Provide viable sod of uniform density, color, texture, strongly rooted and capable of vigorous growth and development when planted of the grass type utilized.

2.04 TOPSOIL

A. Topsoil shall have a pH range of 5.5 to 7.0 and a minimum of 4 percent organic material, be free of stones 1-1/2 inches or larger in any dimension and other extraneous materials harmful to plant growth.
B. Reuse surface soil stockpiled on the site, clean soil of roots, plants, stones, lumps of clay and other material harmful to plant growth. Verify suitability of surface soil to produce a topsoil meeting requirements and amend where necessary.

2.05 SOIL AMENDMENTS

A. Lime: Class T, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent, with a minimum 99 percent passing a No. 8 sieve and a minimum 75 percent passing a No. 60 sieve.
B. Aluminum Sulfate: Commercial grade, unadulterated.
C. Sand: Clean washed, natural or manufactured sand free of toxic materials.
D. Perlite: Horticultural perlite, soil amendment grade.
E. Peat Humus: Finely divided or granular texture, with a pH range of 6.0 to 7.5, composed of partially decomposed moss peat (other than sphagnum), peat humus or reed-sedge peat.
F. Sawdust or Ground-Bark Humus: Decomposed, nitrogen treated, of uniform texture, free of chips, stones, sticks, soil or toxic materials. When site treated, mix with at least 0.15 pounds of ammonium nitrate or 0.25 pounds of ammonium sulfate per cubic foot of loose sawdust or ground bark.
G. Manure: Well rotted, unleached stable or cattle manure containing not more than 25 percent by volume of straw, sawdust or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed and materials harmful to plant growth.
H. Herbicides: EPA registered and approved, of type recommended by manufacturer for application intended.
I. Water: Potable.

2.06 FERTILIZER

A. Bone meal: Commercial, raw, finely ground; minimum of 4 percent nitrogen and 20 percent phosphoric acid.
B. Commercial Fertilizer: Complete fertilizer of neutral character, with some elements derived from organic sources and containing following percentages of available plant nutrients:
    1. For trees and shrubs, provide fertilizer with not less than 5 percent total nitrogen, 10 percent phosphoric acid and 5 percent soluble potash.
    2. For lawns, provide fertilizer with percentage of nitrogen required to provide not less than 1 pound of actual nitrogen per 1,000 square feet of lawn area and not less than 4 percent phosphoric acid and 2 percent potassium. Provide nitrogen in a form that will be available to lawn during initial period of growth; at least 50 percent of nitrogen to be organic form.

2.07 MULCHES

A. Organic Mulch: Shredded hardwood, free from deleterious materials, and suitable for use as a top dressing of trees and shrubs.
B. Fiber Mulch: Biodegradable dyed wood cellulose fiber, nontoxic, free of plant growth-inhibitors germination-inhibitors, with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
C. Asphalt Emulsion Tackifier: Grade SS-1 ASTM D-977, nontoxic and free of plant growth-inhibitors.
D. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber mulch manufacturer for slurry application, nontoxic and free of plant growth-inhibitors.

2.08 WEED CONTROL BARRIERS

A. Polypropylene or polyester fabric, with a minimum weight of 3 ounces per squares yard.

2.09 EROSION CONTROL MATERIALS

A. Biodegradable twisted jute or spun-coir mesh, with 50 to 65 percent open area and a minimum weight of 0.92 pounds per square yard. Include manufacturer's recommended steel wire 6 inch long staples.

2.10 STAKES AND GUYS

A. Upright and Guy Stakes, rough-sawn, sound, new hardwood, redwood or pressure preservative treated softwood, free of knots, holes, cross grain and other defects, 2 by 2 inches by length required for application, pointed at one end.
B. Guy and Tie Wire, Class 1 galvanized steel wire, 2 strand twisted, and 0.106 inch in diameter.
C. Hose Chafing Guard, reinforce rubber or plastic hose at least 1/2 inch in diameter, black, cut to lengths required to protect tree trunks from damage.
D. Flags may be standard surveyor's plastic flagging tape, white, 6 inches long.

2.11 LANDSCAPE EDGINGS

A. Standard profile extruded aluminum edging, 1/8 by 4 inches, 6061-T6 alloy, fabricated in interlocking sections with loops stamped from face of sections approximately 24 inches apart to receive stakes. Stakes, 6061-T6-alloy aluminum, 1 1/2 inches wide by 12 inches long, designed to lock 1/2 inch below the top of the edging. Finish of edging and stakes standard natural aluminum.

2.12 MISCELLANEOUS MATERIALS

A. Antidesiccant: Water insoluble emulsion, permeable moisture retarder, film forming for trees and shrubs. Deliver in original, sealed and fully labeled containers.
B. Trunk-Wrap Tape: Two layers of crinkled paper cemented together with bituminous material, 4 inches wide minimum, with a stretch factor of 33 percent.

PART 3 EXECUTION

3.01 GENERAL

A. Examine areas to receive landscaping for compliance with requirements and for conditions affecting performance of work of this section. Do not proceed with installation until unsatisfactory conditions have been corrected.
B. All dimensions shall be field verified prior to placing any material, report all discrepancies to Owner. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, and secure Project Manager's acceptance before start of planting work. Make minor adjustments as may be required.

3.02 PLANTING SOIL PREPARATION

A. Before mixing; clean topsoil of roots, plants, sods, stones, clay lumps and other extraneous materials harmful to plant growth.
B. Mix soil amendments and fertilizers with topsoil at rates specified by manufacturers for the specific location being prepared. Delay mixing fertilizer if planting does not follow placing of planting soil within a few days.
    1. Minimum planting soil mixture requirements will be 25 percent humus; 25 percent compost or manure; and 50 percent topsoil.
C. For tree and shrub pits, mix planting soils before backfilling and stockpile at site.
D. For planting beds, mix planting soil either prior to planting or apply on surface and mix thoroughly before planting. Mix lime with dry soil prior to mixing fertilizer. Prevent lime from contacting roots of acid-tolerant plants.

3.03 LAWN PLANTING PREPARATION

A. Limit subgrade preparation to areas that will be planted in the immediate future.
B. Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1 1/2 inches in any dimension as well as sticks, roots, rubbish and other extraneous materials.

C. Spread planting soil mixture to a minimum depth of 3 inches, accounting for the thickness of sod finished grade required, light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen.
D. Grade lawn and grass areas to a smooth, even surface with loose uniformly fine texture. Roll and rake, remove ridges and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future. Remove trash, debris, stones larger than 1 1/2 inches in any dimension and other objects that may interfere with planting or maintenance operations.
E. Moisten prepared lawn areas before planting when soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
F. Restore prepared areas if eroded or otherwise disturbed after fine grading and before planting.

3.04 GROUND COVER AND PLANT BED PREPARATION

A. Loosen subgrade of planting bed areas to a minimum depth of 6 inches. Remove stones larger than 1 1/2 inches in any dimension as well as sticks, roots, rubbish and other extraneous materials.
B. Spread planting soil mixture in layers approximately 1/2 the thickness of the total required to a minimum depth of 6 inches, taking into account the finished grade required, light rolling and natural settlement. Work into top of loosened subgrade to create a transition layer and then place remainder of planting soil mixture. Do not spread if planting soil or subgrade is frozen.

3.05 EXCAVATION FOR TREES AND SHRUBS

A. Excavate tree and shrub pits with vertical sides and with bottom of excavation slightly raised at center to assist drainage. Loosen hard subsoil in bottom of excavation.
    1. For balled and burlapped trees and shrubs excavate approximately 2 times as wide as ball diameter and equal to ball depth plus 6 inches to allow for a setting layer of planting soil.
    2. For container grown trees and shrubs excavate approximately 1 1/2 times as wide as container and equal to container depth plus 6 inches to allow for a setting layer of planting soil.
    3. Where heavy clay or hard pan soils exist increase width of excavations to 3 times as wide as ball diameter and 2 1/2 times as wide as container.
B. Notify Project Manager if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
C. Verify proper drainage prior to planting by filling pit with water. If drainage does not occur within a 24-hour period, auger a 12-inch diameter hole 6 foot deep through hard pan and fill hole with crushed rock. Slope bottom of pit to drain.
D. Pits excavated before planting shall be protected for public safety with appropriate barriers.

3.06 PLANTING TREES AND SHRUBS

A. Set balled and burlapped stock plumb and in center of pit with top of ball raised slightly above adjacent finish grade. Orient branch structure toward public view (street or parking lot) for fullest appearance and symmetrical form.
    1. Place stock on setting layer of compacted planting soil.
    2. Remove burlap and wire baskets from the top of ball and partially from sides, but do not remove from under ball. Remove pallets, if any, before setting. Do not use planting stock if ball is cracked or broken before planting operation.
    3. Place backfill around ball in layers, tamping to settle backfill and eliminate voids and air pockets. When backfill is half complete, water thoroughly before placing any more soil, after final layer of backfill has been placed repeat watering until no more is absorbed.
B. Set container grown stock plumb and in center of pit with top of ball raised slightly above adjacent finish grade. Orient branch structure toward public view (street or parking lot) for fullest appearance and symmetrical form.
    1. Carefully remove container so root ball will not be damaged.
    2. Place stock on setting layer of compacted planting soil.
    3. Place backfill around ball in layers, tamping to settle backfill and eliminate voids and air pockets. When backfill is half complete, water thoroughly before placing any more soil, after final layer of backfill has been placed repeat watering until no more is absorbed.
C. Dish and tamp top of backfill to form a 3 inch mound around the rim of the pit. Do not cover top of root ball with backfill.

D. All trees and shrubs shall be planted in individual pits spaced as indicated on drawings. Shrubs shall not be planted in continuous beds.
E. Wrap trees of 2 inch caliper and larger with trunk-wrap tape. Start at base of trunk and spiral cover trunk to height of first branches. Overlap wrap, exposing half the width, and securely attach without causing girdling. Inspect tree for injury, improper pruning, and insect infestation and take corrective measures required before wrapping.

3.07 TREE AND SHRUB PRUNING

A. Prune, thin and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by Project Manager, do not cut tree leaders; remove only injured and dead branches. Prune shrubs to retain natural character. Shrubs sizes indicated are size after pruning.

3.08 GUYING AND STAKING

A. Each tree shall be staked with two stakes immediately following its planting, watering and determination that it will settle to proper grade. Plants shall stand plumb after staking unless otherwise specified.
B. Stakes shall be of sufficient length to allow for a minimum of 8 feet to be left exposed above ground after driving stake 24 inches into ground.
C. Where trees are along walks or pavement, align stakes parallel to walk or pavement. Where trees stand in open spaces align stakes parallel with direction of prevailing wind. All stakes are to be consistent within each group.
D. For multi-trunk trees use three stakes set in a triangular arrangement.
E. Wire twist braces shall be installed perpendicular to the trunk of the tree and shall run from the stake loop around trunk and then back to stake. Provide hose chaffing guard for the portion looped around trunk. The uppermost pair of braces shall be installed 6 inches below the top of the stake and the second pair installed 3 foot - 3 inches below the top pair. Anchor wire to stakes and staple.

3.09 PLANTING GROUND COVER AND PLANTS

A. Space ground cover and plants as indicated on drawings.
B. Dig holes large enough to allow spreading of roots and backfilling with 2 inch depth of planting soil. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants, water thoroughly after planting, taking care not to cover plant crown with wet soil.

3.10 WEED BARRIER FABRIC AND MULCHING

A. Mulch backfilled surfaces of pits, planted areas and other areas indicated.
B. Install weed control barrier prior to mulching. Completely cover area to be mulched lapping edges of fabric a minimum of 6 inches.
C. Organic mulch thickness shall be a minimum of 2 inches and shall be level with adjacent finish grades.

3.11 SEEDING NEW LAWNS

A. Sow seeds with a spreader or a seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other. Do not use wet seed or seed that is moldy or otherwise damaged in transit or storage.
B. Sow seed in the proportions appropriate for the season and job specific conditions so as to produce a lawn with full and complete coverage.
C. Rake seed lightly into top 1/8 inch of topsoil, roll lightly and water with fine spray.
D. Protect seeded slopes exceeding 1:3 against erosion with erosion-control blankets installed and stapled according to manufacturer's recommendations.
E. Protect seeded areas with slopes less than 1:6 against erosion by spreading straw mulch after completion of seeding operations. Spread uniformly at a minimum rate of 2 tons per acre to form a continuous blanket 1-1/2 inches loose depth over seeded areas. Spread by hand, blower or other suitable equipment. Anchor straw mulch by spraying with asphalt-emulsion tackifier at the rate of 10 to 13 gallons per 1000 square feet. Take precautions to prevent damage or staining of structures or other plantings adjacent to mulched areas, immediately clean damaged or stained areas.

3.12 HYDRO SEEDING NEW LAWNS

A. Mix seed fertilizer and fiber mulch in water, using equipment specifically designed for hydro seed application. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.
   1. Mix slurry with non-asphaltic tackifier.
   2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply mulch at the minimum rate of 1500 pounds per acre dry weight.

3.13 SODDING NEW LAWNS

A. Lay sod within 24 hours of stripping. Do not lay sod if dormant or if ground is frozen.
B. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets and to form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass. Lay sod across angles of slopes exceeding 1:3.
C. Saturate sod with fine water spray within 2 hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below the sod.

3.14 INSTALLATION OF EDGINGS

A. Install aluminum edging between lawn areas and all trees, shrubs, ground covers and plants. Edgings shall be installed according to manufacturer's recommendations. Anchor with aluminum stakes space approximately 24 inches apart, driven below the top elevation of edging.

3.15 INSTALLATION OF MISCELLANEOUS MATERIALS

A. Apply antidesiccant using power spray to provide an adequate film over trunk, branches, stems, twigs and foliage when deciduous trees or shrubs are moved in full leaf. Spray with antidesiccant at nursery before moving and again 2 weeks after planting.

3.16 CLEANUP AND PROTECTION

A. During landscaping keep pavements clean and work areas in an orderly condition.
B. Protect landscape from damage due to landscape operations, operations by other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed.

3.17 DISPOSAL OF SURPLUS AND WASTE MATERIAL

A. Remove and legally dispose off the Project Site all surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and other debris

End of Section

DIVISION 2 – SECTION 02910 LANDSCAPE IRRIGATION

(this section not required unless called for on drawings)

PART 1 GENERAL

1.01 SUMMARY OF WORK

A. This section includes the following:
   1. Irrigation Piping, Valves and Emitters
B. The following sections contain requirements that relate to this section:
   1. Section 02010 Site Clearing
   2. Section 02200 Earthwork

1.02 IRRIGATION SYSTEM

A. Install a complete, electric solenoid controlled underground irrigation system to cover all landscape areas in a manner to meet requirements of authorities having jurisdiction.
B. Controller to be installed in the closet with the alarm and telephone equipment.
C. Provide sleeves where irrigation piping and wiring crosses or passes under concrete paving and walks extend at least 12 inches beyond edge of pavement.
D. Provide pop-up sprinkler heads for lawn areas and drip system emitters for trees, shrubs and plants.
E. All valves to be located in valve boxes with easy access to all parts of the valve.
F. Backflow preventer to be in compliance with local authority have jurisdiction over project.
G. Accurately record on reproducible drawing actual locations of piping system, backflow preventer, controller, wiring, sleeves, gate valves, quick couplers and automatic control valves.

1.03 SUBMITTALS

A. Submit to AutoZone a complete irrigation plan showing the location and size of piping, connection to water supply, valves, emitters, backflow preventor and any other devices required. Submit same drawing to City authority having jurisdiction if required for permitting. Plan should include all background information on AutoZone's landscape plan furnish at time of bid.
B. Submit maintenance instructions recommending procedures to be established by Owner for maintenance of landscape and irrigation during the entire year. Submittal to include irrigation system operating instructions and manufacturers parts catalog.
C. Submit schedule indicating length of time each valve is required to be open to provide a adequate amount of water for all four seasons.

PART 2 PRODUCTS

2.01 IRRIGATION SYSTEM

A. Pipe: Poly-vinyl-chloride (PVC) schedule 40 pressure rated upstream from controls, to downstream laterals; solvent-weld sockets. Minimum pipe sizes, mains 1 inch diameter and branches ¾ inch.
B. Fittings: Type, size and style to match pipe.
C. Solvent Cement: Type for PVC pipe and fittings.
D. Sleeve Material: Schedule 40, PVC pipe, 4 inches in diameter by required length.
E. Ball Valves: Brass construction, non-rising stem, inside screw with threaded ends.
F. Valve Box and Cover: Aluminum or plastic sized for application intended, with lockable covers.
G. Y-Strainer with 200 Mesh Screen: Attach downstream from valve on all lines with drip emitters.
H. Pressure Regulator: Attach downstream from valve on all lines with drip emitters.
I. Backflow Preventer: Commercial, meeting all requirements of local authority having jurisdiction.
J. Controller: "Rainbird" model ESP-Me, no substitutions.
K. Wire: Color-coded, 14 gauge or larger, single conductor solid copper with a minimum 1/16 inch insulative covering of ICC-100 compound, UL approved for direct burial. Wire inside the store to be placed in conduit.
L. Sprinkler Heads: Pop-up type, sized to adequately cover the area required without over spraying the adjacent area. Heads shall be flush with the ground when not in use.
M. Flex Tubing: 3/4 inch PVC flexible tubing with 1/4 inch PVC flexible tubing runouts to emitters.
N. Emitters: 4 gallon per hour for trees and 1 gallon per hour for shrubs.

PART 3 EXECUTION

3.01 INSTALLATION OF IRRIGATION SYSTEM

A. Irrigation contractor shall be licensed in the locality have jurisdiction over project. Verify that required utilities are available, in proper location, ready for use and that field conditions are acceptable and are ready to receive work. Notify AutoZone of any discrepancies; the beginning of installation shall signify acceptance of existing conditions.

B. Layout and stake locations of system components to avoid plants and structures. Review layout requirements with other affected work. Coordinate locations of sleeves under paving to accommodate system.

C. All main lines shall be placed a minimum of 18 inches below finished grade and all laterals and flexible tubing shall be placed a minimum of 12 inches below finished grade. All trenches for piping and control wiring shall be a minimum of 8 inches wide free of debris, materials or obstructions that may damage or interfere with pipe or wire.

D. Install pipe, flexible tubing, 1/4-inch emitter tubing, valves, controls and outlets in accordance with manufacturer's instructions and recommendations. Provide for thermal movement of components in system. Use threaded nipples for risers to each lawn sprinkler outlet to facilitate easy replacement. After piping is installed but before backfilling commences, open valves and flush system with a full head of water; also test system for leakage; main piping to maintain 150psi pressure for one hour.

E. Install backflow preventer in location and manner to satisfy all local codes and authorities have jurisdiction. Provide in ground vault or above ground cover as required.

F. All valves shall be installed in valve boxes with easy access to all parts of the valve. Install pea gravel to a depth of 6 inches across the bottom of each valve box to promote drainage.

G. Install wye-strainer and pressure regulator on each flexible tubing drip line. Each drip line shall be continuous with no splices and have a flush cap at its end. Lines shall not exceed 200 feet in length. Emitter heads shall be set at finish grade elevations prior to the application of mulch and be located at outside edge of rootball unless directed otherwise.

H. Install controller and control wiring in accordance with manufacturer's instructions and wiring diagrams. Provide 10-inch expansion coil at each valve to which controls are connected and at 100-foot intervals. Bury wire beside pipe. Any field splices must be approved by Project Manager, and be placed in a circular valve box and connected with a snap-tite connector as per manufacturer's recommendations.

I. Once all required components have been installed and tested, commence backfilling operations. Backfill in 6 inch lifts with clean earth free of all rocks, debris or other foreign matter. Compact each lift to eliminate voids and air pockets. Protect piping from displacement. Continue backfilling and compacting until adjacent subgrade is achieved.

J. Set controller to achieve time cycles required. Instruct AutoZone's personnel in operation and maintenance of system, including adjusting of sprinkler heads and replacement of emitters. Use operation and maintenance manuals as basis for demonstration.

3.02 CLEANUP AND PROTECTION

A. During irrigation installation keep pavement clean and work areas in an orderly condition.

B. Protect plant material from damage due to irrigation operations, operations by other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed.

3.03 DISPOSAL OF SURPLUS AND WASTE MATERIAL

A. Remove and legally dispose off the Project Site all surplus soil and waste material, including excess subsoil, unsuitable soil, trash, excess irrigation supplies or components and other debris.

End of Section

DIVISION 3 – SECTION 03100 CAST IN PLACE CONCRETE

PART 1 GENERAL

1.01 WORK INCLUDED

A. This section specifies cast-in-place concrete, including formwork, reinforcing, mix design, placement procedures and finishes for retaining walls, grade beams, footings, foundations, pilasters, building slabs, loading dock walls and slabs. All other concrete shall be as specified under Sitework Section 02520.
B. Installation of anchor bolts for steel columns, posts and other anchored work as may be required.
C. Prepare subgrade and base as specified in other sections.
D. All layout work including setting of elevations shall be from established control points.
E. Unless otherwise shown or specified, the work shall conform to the appropriate standards of the American Concrete Institute (ACI).

1.02 SUBMITTALS

A. Submit manufacturer's product data with application and installation instructions for admixtures, curing compounds, expansion joint fillers, and sealant if requested by AutoZone Construction Project Manager.

1.03 ALLOWABLE TOLERANCES

A. Interior floor slab shall conform to the following ACI F - number requirements:
   1. Specified overall value FF25/FL20
   2. Minimum local value FF18/FL13
B. Walls, Beams and columns as follows:
   1. Exposed - plus or minus 1/8 inch in 10 feet.
   2. Concealed - plus or minus 1/4 inch in 10 feet.
C. Floor flatness and levelness tolerances shall be conducted per ASTM E1155 with a "Dipstick" Floor Profiler manufactured by Face Construction Technologies, Norfolk, VA or equal. The Contractor shall make floor tolerance measurements within 48 hours after the completion of the final troweling operation using a suitable flatness-measuring device. Results of all floor tolerance test shall be submitted to Owner within 48 hours after data collection.
D. Remedy for out-of-tolerance work: All random Traffic Floor sections measuring at or above both of the specified overall F - Numbers shall be accepted for the tolerance compliance as constructed. All random Traffic Floor sections measuring below either or both of the specified minimum Local F - Numbers shall be replaced.

PART 2 PRODUCTS

2.01 FORM MATERIALS

A. Forms for Exposed Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel type materials, to provide continuous, straight, smooth exposed surfaces.
B. Forms for Unexposed Concrete: No. 2 common boards of dimension lumber of uniform thickness.
C. Form Coatings: Commercial formulation, coating compounds with a maximum VOC of 350 mg / liter that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatment of concrete surfaces.
D. Form Ties: Black iron snap ties with a minimum 1-inch breakback

2.02 REINFORCING MATERIALS

A. Primary Reinforcing / Structural Reinforcing:
   1. Reinforcing steel shall be deformed bars, conforming to ASTM A 615, Grade 60, as shown on drawings.
   2. Building slab reinforcing shall be welded wire fabric, in sheet form of size and weight as shown on drawings.
   3. Steel shall be clean, free from scale and rust, flat and level. Reinforcing steel shall be located at depths and positions indicated on drawings. Provide dowels, accessories, etc. required for completing the work.
B. Secondary / Temperature-Shrinkage Reinforcement:

1. Collated fibrillated polypropylene (CFP) fibers with a minimum fiber bundle length of ¾-inch, added at the time of concrete batching, at the rate of 1.5 pounds per cubic yard of concrete in accordance with the fiber manufacturers instructions.
2. Waste stream CFP fibers or POY (partially oriented yarn) fibers shall not be used under any conditions.
3. If conditions require the addition of a high-range (super plasticizer) water reducer, fibrous reinforcement should be added prior to the incorporation of the super plasticizer. This will insure the optimum mixing friction required to properly distribute the fiber.
4. Contractor shall have the option of using welded wire mesh in lieu of polypropylene fibers if he so chooses. Mesh used for temperature shrinkage control shall be 6x6 / 10x10 at a minimum or as sized and indicated on the drawings.

2.03 CONCRETE MATERIALS

A. Concrete: Ready mix concrete conforming to ASTM C-94.
B. Portland Cement: ASTM C-150, Type 1, Type II and I/II unless another type is called for in Soils Report.
   1. Use same brand of cement throughout project unless otherwise directed by AutoZone Construction Project Manager.
C. Aggregates:
   1. Maximum size of coarse aggregate shall not exceed 1/5 the narrowest dimension between forms; 1/3 the thickness of unreinforced slabs; or 3/4 of the minimum clear spacing between reinforcing bars or 1-1/2 inch. Maximum coarse aggregate size shall be 1 inch for slabs less than 5 inches thick.
   2. Coarse and fine aggregate shall conform to applicable requirements of ASTM C33. Provide aggregates from a single source. Aggregates shall be washed and screened, consist of hard durable particles without adherent coatings and free of deleterious reactivity to alkali in cement. Fine aggregate shall be graded from coarse to fine to produce a minimum percentage of voids.
   3. Use no coal or lignite in concrete that will not be covered by building materials or soil.
   4. Aggregate shall not be alkali reactive, cause pop-outs, “D” cracking, or other disruptions due to moisture gain, freezing, or other mechanisms based on tests.
   5. Absorption level of coarse aggregate shall not exceed five percent.
D. Water: Potable or must comply with ASTM C 1602
E. Admixtures: Purpose for admixture use shall be clearly stated on the concrete mix design. Provide admixtures certified by manufacturer to be compatible with other required admixtures. Set control admixtures may be used only when adverse weather conditions are anticipated and require approval of the AutoZone Construction Project Manager.
   1. Air-Entraining Admixture: Certified by manufacturer to be compatible with other required admixtures and conforming to ASTM C-260.
   2. Fly Ash Pozzolans: ASTM C-618, Class C or F. Carbon content not greater than 3 percent by volume. Use only one type and source throughout the project.
   3. Ground Granulated Blast Furnace Slag: ASTM C 989 Grade 100 or 120. Use only one type and source throughout the project.
   4. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than .05 percent chloride ions.
   5. Water reducers, non chloride, non-corrosive accelerators, and retarders : ASTM C 494.
   6. Superplasticizer (high range water reducer): ASTM C494, Type F or G
   7. Evaporation Reducer: Monomolecular film manufactured for application to fresh concrete
F. Liquid Membrane Curing Compound: Complying with ASTM C-309, Type 1, Class A unless other type approved by Owner. Moisture loss, when applied at a rate of 200 square feet per gallon shall not be more than 0.055 gr./sq.cm. Material used shall dry clear. . Use strippable curing compound on slabs receiving subsequent finishes. Compound must be compatible with sealers, hardeners, mastics, adhesives, grouts, paints and final finishes over concrete surfaces.
G. Water Repellant / Sealer: Penetrating, breathable, non-yellowing, waterborne silane-siloxane sealer, complying with ASTM C-672, and NCHRP 244. Material used shall dry clear.
H. Bonding Compound: Acrylic based rewettable type.
I. Vapor Barrier: 10 mil clear polyethylene film complying with curren recommendations of the ACI.
J. Form Releasing Agent: Non-staining.
K. Waterstop: Rubber, minimum 1750 psi tensile strength, minus 50 degrees F. to plus 175 degrees F. temperature range; 6 inch wide minimum by maximum possible length.

2.04 JOINT FILLER MATERIALS

A. Expansion and Construction Joints: Asphalt impregnated cellular fiberboard conforming to ASTM D-1751.
B. Semi-rigid Joint Filler: Two-component, semi-rigid, 100 percent solids, with a minimum shore hardness of 80 per ASTM D2240.

2.05 CONCRETE MIX, DESIGN AND TESTING

A. Design mix to produce normal weight concrete to produce the following properties:
   1. Compressive Strength: 3000 psi minimum at 28 days as indicated on the drawings unless noted otherwise on the structural or civil drawings.
   2. Air Content: 6 percent plus or minus 1 1/2 percent for concrete exposed to freeze / thaw. For concrete not exposed to freeze / thaw or that will receive a trowelled finish, do not add air entraining agents.
   3. Slump: 4 inch maximum verified at plant before adding water-reducing admixture. Slump shall be not more than 8 inches after adding water-reducing admixture.
   4. Concrete shall be composed of Portland cement, fine aggregate, coarse aggregate, water and admixtures where applicable. Determine proportions of ingredients in accordance with ACI 318, to provide required strength, slump, and resistance to weathering, place ability, durability, and surface hardness for each class of concrete. Provide admixtures as required or appropriate to enhance workability, control set, or improve strength. Design concrete mixes to be workable, and appropriate for each application and type of placement or conveying in the field, to bond readily to reinforcement without segregation or the formation of excessive free water on surfaces.
   5. Note any special characteristics of mix which require precautions in mixing, placing, or finishing techniques to achieve finished product specified.
B. The minimum Cementitious Materials Content of the concrete shall be as follows:
   1. For Air-Entrained Concrete 517 pounds per cubic yard.
   2. For Non Air-Entrained Concrete 470 pounds per cubic yard.
   3. Fly ash may be used in cement mixture with a maximum fly ash content equal to 20 percent of cement content by weight.
   4. Ground Granulated Blast Furnace Slag (GGBFS) may be used in cement mixtures with a maximum content of “GGBFS” equal to 30 percent of the total cement content by weight.
   5. Mixes containing Fly Ash or Slag (GGBFS) shall be adjusted for cold weather.
C. In any mix, the maximum water-cementitious materials ratio shall be between 0.45 and 0.50.
D. Concrete shall be proportioned by either the trial batch method or the field experience method.
   1. Where the trial batch method is used, make three test cylinders for each trial batch. Break one cylinder at 7 days and two at 28 days to verify strength requirements. Adjust the mix proportions to produce a design that is at least 1200 psi greater than the specified strength.
   2. Where the field experience method is used, the required average compressive strength shall be determined in accordance with paragraph 5.3.2 of ACI 318. Contractor shall furnish documentation that the proposed concrete proportions will produce an average compressive strength equal to or greater than required. Documentation shall consist of at least 10 consecutive tests encompassing a period of time of not less than 45 days and made within the last 18 months.
E. Sampling and testing for field quality control during placement of concrete shall conform to the requirements of Section 01410.
F. Distribute copies of test results to AutoZone, contractor, and structural engineer of record. Non-compliant test reports shall be e-mailed or faxed immediately from the laboratory doing the work with non-compliant items clearly noted.
G. Review and approval of concrete mix design by AutoZone Construction Project Manager, special inspectors, or structural engineer of record is only for general conformance with the project specifications. It is the responsibility of the contractor to provide a design mix that meets the requirements of the specifications.
H. Fiber reinforced test specimens prepared for quality control material acceptance shall be vibrated externally per recommendations of ACI Committee 544.

PART 3 EXECUTION

3.01 GENERAL

A. Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Form, install reinforcements, pour, strip, rub, cure and protect concrete walls, footings, foundations and building slab shown on drawings to size, shape and location required.

3.02 SURFACE PREPARATION

A. Remove loose material from previously compacted base surface immediately before placing concrete.
B. Proof-roll prepared base surface to check for unstable areas and need for additional compaction.

3.03 FORM CONSTRUCTION

A. Forms shall be used wherever necessary to confine the concrete and shape it to the required dimensions. Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of concrete and shall have sufficient rigidity to maintain specified tolerances.
B. The design and engineering of the formwork, as well as its construction shall be the responsibility of the Contractor.
C. Forms shall be sufficiently tight to prevent loss of mortar from the concrete. All exposed corners shall have a 3/4-inch by 3/4-inch chamfer unless otherwise noted.
D. Form ties shall leave no corrodible metal closer than 1 inch to the exposed surface of the concrete. Form ties shall leave holes no larger than 1 inch in diameter in concrete surface when removed. Ties shall be of size and weights for pressures developed and installed in accordance with manufacturer's recommendations. Form ties for exterior walls and grade beams shall be leak proof and water seal type.
E. Forms for exposed surfaces shall be coated with non-staining release agent applied before the reinforcing steel is placed.
F. Set forms to grades and lines, rigidly braced and secure. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place for at least 24 hours after placement or until concrete has adequately hardened. Care shall be taken to avoid spalling the concrete surfaces.
G. Check complete formwork for grade and alignment to following tolerances:
    1. Top of forms not more than 1/8 inch in 10 feet.
    2. Vertical face on longitudinal axis not more than 1/4 inch in 10 feet.
H. Clean forms after each use and coat form with release agent as often as required to ensure separation from concrete without damage.

3.04 REINFORCEMENT

A. Reinforcing steel shall be accurately fabricated to the dimensions required or shown and shall conform to standards contained in the ACI Detailing Manual - 1980(SP-66) or CRSI Manual of Standard Practice, latest edition. Bars shall be bent cold and shall not be straightened in a manner that will injure the material. Welding as an aid to fabrication or installation will not be permitted unless specifically shown on the drawings.
B. Reinforcing shall be placed so that the minimum concrete cover is provided. It shall be the Contractors responsibility to ensure the intended reinforcement location is maintained during concrete placement. Tie bars at intersections with soft steel wire. Do not drive nails into wood forms to support reinforcing. Reinforcing bars partially imbedded in concrete shall not be field bent.
C. Lap splices of reinforcing as called for on drawings. Do no splicing at points of maximum stress. Lap all bars at all corners and abrupt changes in direction within walls and beams. Provide steel dowels between foundations and walls, pilasters, columns and elsewhere, as indicated on drawings or as conditions require.
D. Protect reinforcing steel from excessive rusting or injury. Store on skids or otherwise maintain at least 6 inches above ground. After bars are tied in place take whatever precautions are necessary to protect bars from damage by construction equipment or careless workmen. Pay particular attention to bars projecting out of previously placed concrete. Damaged steel shall be replaced at no cost to AutoZone.
E. For slabs on grade, provide bolsters chairs, spacers, and other devices for spacing or fastening reinforcing bars and welded wire fabric, where base material will not support chair legs, support reinforcing with sand plates or horizontal runners. For exposed to view concrete where legs of supports are in contact with forms, finish supports of legs shall be plastic protected.

3.05 JOINTS

A. Construct expansion, control and construction joints true-to-line with face perpendicular to surface of concrete. Construct traverse joints at right angles to the centerline unless otherwise indicated.

B. Control Joints: Provide weakened-plane control joints sectioning the building slab into areas 24 times the thickness of the slab but in no event larger than 15 foot square or as shown on drawings. Joints will be cut to a depth equal to 1/4 of the concrete thickness and left unsealed.
   1. Sawn Joints: Form joints using power saws equipped with shatterproof abrasive or diamond rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by cutting action. Soft-Cut system joints shall be installed within 2 hours after final finish. Saw-cut control joints shall be cut within 12 hours after finishing.

C. Construction Joints: Construction joints shall be either keyed or doweled and shall occur at end of placements and at locations where placement operations are stopped for a period of more than 1/2 hour, except where such placements terminate at expansion joints. The building floor slab shall not contain any construction joints.

D. Expansion Joints: Place expansion joints at all junctures between flatwork and vertical surfaces or fixed objects such as columns or bollards.

E. At both construction and expansion joints install joint fillers in one-piece lengths wherever possible. Where more than one length is required, lace or clip joint filler sections together. Joint fillers shall be placed so that top edge of filler is not less than 1/2 inch or more than 1 inch below finished surface of concrete and shall extend the full depth of the joint.

F. Sealant: Install sealant, appropriate for the location and usage, in the following joints:
   1. Construction / expansion joints in foundation walls.
   2. Joints around structural columns.

3.06 PRODUCTION OF CONCRETE

A. Ready-mixed concrete shall be batched, mixed and transported in accordance with ASTM C-94. The ready-mixed concrete producer shall furnish duplicate delivery tickets, one for the Contractor and one for the Testing Laboratory's agent, for each batch of concrete. The information provided on the delivery ticket shall include quantities of all materials batched including the amount of free water in the aggregate. The quantity of water that can be added at the site without exceeding the maximum water cement ratio specified shall be noted on the delivery ticket.

B. The independent testing agency shall have access at all times to the batching and mixing plant for sampling of materials and inspection of all work performed for this job.

C. In cold weather, the temperature of the concrete when delivered at the site of the work shall be at least 50 degrees F.

D. In hot weather, the ingredients shall be cooled before mixing. Flake ice or well crushed ice of a size that will melt completely during mixing may be substituted for all or part of the mixing water. When air temperature is between 80 and 90 degrees F., reduce maximum mixing and delivery time from 1-1/2 hours to 75 minutes, and when air temperature exceeds 90 degrees F. further reduce maximum mixing and delivery time to 60 minutes.

3.07 CONCRETE PLACEMENT

A. Preparation for Placing Concrete
   1. The Testing Laboratory, to the extent required by the Specifications, prior to placement of concrete shall have inspected all subgrade surfaces. AutoZone or its designee shall be the sole judge as to the suitability of the bearing material.
   2. Before concrete is placed, all debris, water, ice or other material shall be removed from the spaces to be occupied by the concrete. Remove surplus releasing agent from the contact faces of forms and thoroughly clean reinforcement of other coatings. Concrete shall not be placed on frozen ground.
   3. Prepare previously placed concrete by cleaning with a steel brush and applying bonding agent in accordance with manufacturer's recommendations.
   4. Notify all trades concerned, including AutoZone's Construction Project Manager and the Testing Laboratory sufficiently in advance to permit installation of all required work by other trades.
   5. Before placing concrete, all required imbedded items, including dovetail anchor slots, anchors, inserts, angles, metal frames, fixtures, sleeves, drains, stair nosing, accessory devices for mechanical and electrical installations shall be properly located, accurately positioned and built into the construction and maintained securely in place.
   6. Build into construction all items furnished by AutoZone and other trades. Provide all offsets, pockets, slabs, chases and recesses, as job conditions require. Thicken slabs as required to maintain the

intended slab thickness at embedded items. Set anchor bolts and embedded plates furnished under the structural steel section of these Specifications.

7. Place and properly support all required reinforcing. Hold bars in beams and slabs to exact location during concrete placement.
8. Place vapor barrier sheeting, if required, with longest dimension parallel with direction of pour. Lap joints 6 inches minimum and seal with appropriate tape. Do not disturb or damage vapor barrier while placing reinforcing or concrete. If damage occurs, repair before concrete covers area.

B. Conveying

1. Concrete shall be conveyed from mixer to place of final deposit by method, which will prevent separation or loss of material.
2. Equipment for chuting and conveying concrete shall be of such size and design as to insure a practically continuous flow of concrete at the delivery without separation of material.
3. Provide runways or other means for wheeled equipment to convey concrete to point of deposit. Construct runways so that supports will not bear upon reinforcement or fresh concrete.
4. Pumps or pneumatic equipment shall have adequate pumping capacity. Slump loss due to pumping shall not exceed 2 inches. Do not convey concrete through pipes made of aluminum or aluminum alloy. Maintain controls for proportioning, mixing, adjustment of mix and placement in accordance with ACI 301 and ACI 304.2R.

C. Depositing

1. Concrete shall be deposited as nearly as practicable in its final position to avoid segregation due to rehandling or flowing. No concrete shall have a free fall of over three feet from truck, mixer, buggies, chutes or tremies. The concreting shall be carried on at such a rate that the concrete is at all times plastic and flows readily into the spaces between bars. Concrete that has partially hardened, or been contaminated by foreign materials, shall not be deposited in the work, nor shall retempered concrete be used.
2. When concreting is started, it shall be carried on as a continuous operation until the placing of the section is completed. Do not allow cold joints to occur.
3. Protect adjacent surfaces from concrete drippings, spillage or splashes. Hardened or partially hardened splashes or accumulations of concrete on forms or reinforcement shall be removed before the work proceeds. Clean all damaged surfaces immediately.
4. All concrete shall be thoroughly consolidated by mechanical vibrators during the placing operation and shall be thoroughly worked around the reinforcement and embedded fixtures and into the corners of the forms. Mechanical vibrators shall be applied directly to the concrete and used only under experienced supervision. Vibrators shall be carried on continuously with the placing of concrete. Keep a minimum of two vibrators on the job during concreting operations.
5. Do not over vibrate concrete or use vibrators to transport concrete within forms. Insert vibrators vertically at frequent intervals. Do not drag vibrators through concrete. Do not insert vibrators into lower courses that have begun to set.
6. All conveyances shall be thoroughly cleaned at frequent intervals during the placing of concrete, and before beginning a new run of concrete. All hardened concrete and foreign materials shall be removed from the surfaces.
7. Maintain controls for proportioning, mixing, adjustment of mix and placement using pumping equipment in accordance with ACI 301 and 304.2R.
8. Do not drop concrete directly into standing water. Use a tremie with the outlet near the bottom of the place of deposit. Contractor shall obtain approval of AutoZone project manager in writing prior to placing any concrete into standing water.

D. Building Slab

1. Place granular subbase if required over subgrade to thickness shown on drawings and consolidate material. Bring material to optimum moisture content. The subgrade shall be free of frost before concrete placing begins. If the temperature inside a building where concrete is to be placed is below freezing it shall be raised and maintained above 50 degrees F. long enough to remove all frost from the subgrade. Place vapor barrier sheeting over the subbase material with longest dimension parallel with direction of pour. Lap joints 6 inches minimum and seal with appropriate tape. Do not disturb or damage vapor barrier while placing reinforcing or concrete. If damage occurs, repair before concrete covers area.

2. Edge forms, if required, and intermediate screed strips shall be set accurately to produce the designated elevations and contours of the finished surface, and shall be sufficiently strong to support vibrating screeds or roller pipe screeds. The concrete surface shall be aligned to the contours of screed strips by the use of strike-off templates or acceptable compacting type screeds.
3. Mixing and placing shall be carefully coordinated with finishing. Concrete shall not be placed on the granular sub base or forms more rapidly than it can be spread, straightedged and darbied or bull floated. These operations must be performed before bleeding water has an opportunity to collect on the surface.
4. Concrete in slabs shall be thoroughly consolidated. Internal vibration shall be used along the bulkheads of slabs on grade. Consolidation of slabs shall be obtained with vibrating screeds, roller pipe screeds, internal vibrators or other approved means. To obtain good surfaces and avoid cold joints, the size of finishing crews shall be planned with due regard for the effects of concrete temperature and atmospheric conditions on the rate of hardening of the concrete.
5. All finishes must be adequate in all respects to receive material to be applied to it, true to line and free of defects or blemishes. No driers, dry cement, nor cement-sand mixture shall be used in connection with any finish surfaces to absorb water, stiffen mix or for any other purpose.
6. All loading dock slabs and exterior stairs shall receive a light broom finish; all interior-building slabs shall receive a troweled finish.
7. After the concrete has been placed, consolidated, struck off and leveled, the concrete shall not be worked further until ready for floating. Floating with a hand float or with a bladed power trowel equipped with float shoes, or with a power disk float shall begin when the water sheen has disappeared and when surface has stiffened sufficiently to permit the operation. During or after the first floating, planeness of surface shall be checked with a 10 foot straightedge applied at not less than two different spots filled during this procedure, to produce a surface within a 1/4 inch in 10 foot tolerance throughout. The slab shall then be refloated immediately to a uniform sandy texture. The slab shall next be power troweled and finally hand troweled. The first trowelling after power floating shall produce a smooth surface which is relatively free of defects but which may still show some trowel marks. Additional trowelling shall be done by hand after the surface has hardened sufficiently. The final trowelling shall be done when a ringing sound is produced as the trowel is moved over the surface. The surface shall be thoroughly consolidated by the hand troweling operations. The finished surface shall be essentially free of trowel marks, uniform in texture and appearance and shall meet or exceed the floor flatness requirements specified in paragraph 1.03 above.
8. Areas which are called out, to receive a light broom finish shall be given a light traverse texture by drawing a broom across the surface, and will not be trowelled.
9. Precautions to protect fresh concrete from developing plastic shrinkage cracks must be taken in advance of concrete placement where evaporation rate due to any combination of temperature, humidity, and wind velocity is expected to approach 0.2 lbs./sq.ft./hr. as determined by ACI 305 Figure 2.1.5. Acceptable precautions to reduce the rate of evaporation include the use of wind breaks, monomolecular film, evaporation retarders, fog spray, covering with polyethylene sheeting, or wet cover.

3.08 COLD WEATHER PLACING

A. Protect all concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with requirements of ACI 306 and as herein specified.
B. When the air temperature has fallen to or may be expected to fall below 40 degrees F, provide adequate means to maintain the temperature in the area where concrete is being placed, at between 50 and 70 degrees F for at least 7 days after placing. Provide temporary housings or coverings including tarpaulins or plastic film. Maintain the heat and protection, if necessary, to insure that the ambient temperature does not fall more than 30 degrees F in the 24 hours following the initial 7-days period. Avoid rapid dry out of concrete due to overheating and avoid thermal shock due to sudden cooling or heating.
C. When air temperature has fallen or is expected to fall below 40 degrees F, uniformly heat all water and aggregates before mixing as required to obtain a concrete mixture temperature of not less than 55 degrees F and not more than 85 degrees F at point of placement.
D. Do not use frozen materials containing ice or snow. Do not place concrete on frozen subgrade or subgrade containing frozen materials. Ascertain that form, reinforcing steel and adjacent concrete surfaces are entirely free of frost, snow and ice before placing concrete.

E. Do not use salt or other materials containing antifreeze agents or chemical accelerators or set control admixtures unless approved by AutoZone Construction Project Manager.

3.09 HOT WEATHER PLACING

A. When hot weather exists that would seriously impair the quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.
B. Cool ingredients before mixing to maintain concrete temperature at time of placement below 80 degrees F when the temperature is rising and below 85 degrees F when the temperature is falling. Mixing water may be chilled, or chopped ice may be used to control the concrete temperature provided the water equivalent of the ice is calculated in the total amount of mixing water.
C. Cover reinforcing steel with water soaked burlap if it becomes too hot, so that the steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.
D. Wet forms thoroughly before placing concrete.
E. Do not place concrete at a temperature so as to cause difficulty from loss of slump, flash-set, or cold joints.
F. Do not use set-control admixtures unless approved by the AutoZone Construction Project Manager in Mix Design.
G. Obtain Project Manager's approval of other methods and materials proposed for use prior to actually commencing the work.
H. Precautions to protect fresh concrete from developing plastic shrinkage cracks must be taken in advance of concrete placement where evaporation rate due to any combination of temperature, humidity, and wind velocity is expected to approach 0.2 lbs./sq.ft./hr. as determined by ACI 305 Figure 2.1.5. Acceptable precautions to reduce the rate of evaporation include the use of wind breaks, monomolecular film, evaporation retarders, fog spray, covering with polyethylene sheeting, or wet cover.

3.10 CONCRETE FINISHING OF FORMED SURFACES

A. Do not remove forms for 24 hours after concrete has been placed. After removal of forms all honeycombed and other defective concrete shall be removed down to sound concrete. If chipping is necessary the edges shall be perpendicular to the surface or slightly undercut. No feathering will be permitted. The area to be patched and an area at least 6 inches wide surrounding it shall be dampened to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately one part cement to one part fine sand passing a No. 300 mesh sieve, mixed to the consistency of thick cream, and then well brushed into the surface.
B. Concrete surfaces not exposed to view shall be finished with a rough form finish and all surfaces exposed to view shall be finish with a smooth rubbed finish.
C. For a rough form finish, tie holes and defects shall be patched and fins exceeding 1/4 inch in height shall be chipped or rubbed off. Otherwise, surfaces may be left with the texture imparted by forms.
D. For a smooth rubbed finish, the form facing material shall produce a smooth, hard, uniform texture on the concrete. The arrangement of the facing material shall be orderly and symmetrical, with the number of seams kept to the practical minimum. Tie holes and defects shall be patched and all fins shall be removed by rubbing.
E. Immediately upon removal of the forms, the surfaces to be rubbed shall be pointed up, thoroughly wetted and then rubbed with a No. 20 carborundum brick and water so as to produce a true, even and smooth surface. When necessary to fill pinholes, and upon areas which have been reconstructed, rubbing shall be done by carborundum brick and a thin cement grout composed of one part of cement and two parts of fine washed silicone sand, all of which shall pass a No. 20 sieve. The surface finished with grout shall be carefully scraped with a steel edge so as to remove all surplus grout, after which it shall be given a final rub with a wood float until all skin and form marks shall be removed. No "wash" composed of cement and water, or cement, sand and water shall be used in this process.

3.11 CURING

A. Protect and cure all finished cast in place concrete work. Begin immediately after placement; protect concrete from premature drying, excessively hot or cold temperatures and mechanical damage. Cure in accordance with ACI 308. Use membrane-forming curing and sealing compound or approved continuously moist-curing method for not less than 7 days, and in accordance with ACI 301 procedures. If used, apply curing compound as soon as final finishing operations are complete(within 2 hours). Apply curing compound uniformly in continuous operation by power sprayer or roller according to

manufacturer's written instructions, but as a minimum, apply two coats perpendicular to one another. Recoat areas subject to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period. After curing period has elapsed remove non-dissipating curing compounds without damaging concrete surfaces by method recommended by curing compound manufacturer.

B. All formed concrete work subject to lateral loading (retaining walls) shall not receive such loads until 28 days of cure time unless approved by AutoZone Construction Project Manager.
C. Contractor shall be responsible for verifying that curing compound is compatible with and will have no detrimental effect on adhesives and final finishes specified over concrete surfaces.
D. Refer to Specifications Section 03150 for curing and sealing of surfaces to receive Penetrating Liquid Sealer.

3.12 REPAIR, PROTECTION AND CLEAN-UP

A. Repair or replace broken or defective concrete as directed by AutoZone Construction Project Manager.
B. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures, and maintain, without drying, at a relatively constant temperature for the period necessary for hydration of the cement and proper hardening of the concrete.
C. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.
D. Sweep concrete pavement and wash free of stains, discolorations, dirt and other foreign material just prior to final inspection.
E. Upon completion and as directed by AutoZone Construction Project Manager, remove all excess material, debris, forms and equipment occasioned by the work.

End of Section

DIVISION 3 – SECTION 03150 PENETRATING SEALER

PART 1 GENERAL

1.01 PRECAUTIONS

A. Protect material from freezing. If frozen thaw and agitate before using. Do not apply when temperature is below 35 degrees F. or above 135 degrees F.
B. Apply with low-pressure sprayer only, do not use airless sprayers.
C. Avoid contact with glass, aluminum, or finished surfaces. Where contact occurs, immediately wipe with a damp cloth or flush with water. When applying near windows mask the glass.
D. Surfaces being treated will become slippery during application. Exercise care and caution to avoid falls and injury.
E. Do not apply to areas previously treated with curing or sealing agents unless these coatings have been removed by chemical or mechanical means.

PART 2 PRODUCTS

2.01 PRODUCT DESCRIPTION

A. Ashford Formula is a colorless, transparent liquid that penetrates concrete, protecting, preserving, and strengthening it permanently by chemically reacting with the concrete.
B. Do not substitute for this product.

PART 3 EXECUTION

3.01 AREA OF INSTALLATION

A. Install Ashford Formula over all interior concrete surfaces not scheduled to receive vinyl composition floor tile. Ashford Formula may extend over the areas to receive floor tile without penalty.

3.02 INSTALLATION ON FRESHLY FINISHED CONCRETE

A. Freshly finished concrete surfaces require no special surface preparation if the Ashford Formula is to be applied immediately after the finishing operation as a curing agent.
B. Saw cutting may be done before or after the Ashford Formula is applied depending on the immediate need for curing. It is critical in either case that the dust or slurry from cutting be immediately and thoroughly removed from the slab surface.
C. Immediately following the trowelling operation, and as soon as the slab is safe enough to walk on, saturate the surface with Ashford Formula at approximately 200 square feet per gallon using a low pressure, high volume sprayer. Ashford Formula is a penetrant, not a membrane; enough material needs to be on the surface to allow the Ashford to thoroughly soak in. As a guideline, there should be enough Ashford on the floor to “fill-in” a footprint within several seconds of taking a step. This is often referred to as a “flood coat” or “wet coat”. Once a wet coat has been achieved, work Ashford Formula into the concrete surface with soft-bristled brooms. This will break surface tension and aid penetration.
D. Keep the surface wet with Ashford for a minimum of 30 minutes, and then wait for the Ashford to become slippery and gel-like under foot. In extremely cool, windless conditions, Ashford can take up to an hour or longer to become slippery. In hot, windy conditions, Ashford may become slippery and gel like in as little as 15 minutes, if this occurs, lightly mist surface with water which will resolubilize the Ashford so that it is no longer slippery or gel-like.
E. During the initial 30 minutes, no spot or area on the slab should be allowed to become dry. Avoid dry areas by either brooming excess Ashford over the more absorbent spots or by putting down more Ashford. Pay particular attention to porous areas and slab edges, as these areas tend to dry out more quickly.
F. After the slab has been wet with Ashford for a minimum of 30 minutes, and the Ashford becomes slippery, lightly mist the surface with water. This can be done either with a low pressure sprayer or a hose and nozzle (nozzle must be adjusted to create a mist). Agitate with a broom to aid penetration and wait for Ashford to become slippery or gel-like a second time.
G. After Ashford become slippery a second time, thoroughly flush the surface with water. During the flushing process, agitate the floor with brooms to help loosen and remove excess Ashford Formula from the surface.
H. Squeegee the slab thoroughly by pushing the water ahead of the squeegee and off the slab edge. Once completed the floor should look like bare concrete with nothing on it. During the squeegee process, there

may be some slippery patches. This is an indication that excess Ashford is still on the surface. These areas should be re-flushed and squeegeed again until the entire surface dry and free from slippery patches.

3.03 DRYING TIME

A. The surface may be used as soon as the application is complete and the surface is again dry to the touch. This will occur usually in 1 to 3 hours after squeegeeing.

3.04 COVERING

A. On new concrete, allow a minimum of 30 days for the floor to cure before covering with flooring material.

3.05 EXISTING CONCRETE FLOORS

A. Do not install Ashford Formula over existing concrete floors without first consulting with a qualified Ashford representative. Existing floors require entirely different procedures than do freshly placed floors. In some cases the floor may need to be stripped. In other cases it may need to be thoroughly cleaned or neutralized. For the name of a qualified technical representative, call:

Curecrete Distribution, Inc.
1203 West Spring Creek Place
Springville, Utah 84663
Telephone (800) 998-5664
Monday - Friday 8am to 5pm Mountain Time Zone

End of Section

DIVISION 4 – SECTION 04200 UNIT MASONRY

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This section includes both load bearing reinforced concrete unit masonry as well as veneered unit masonry along with the installation of the follow products, which are specified in other sections:
   1. Embedded Anchors and Plates
   2. Steel Lintels and Miscellaneous Steel Frames
   3. Hollow Metal Door Frames
   4. Wood Nailers and Blocking
   5. Sealant in Masonry Construction Joints

B. Consult drawings to determine which elements of this section are applicable to the specific project.

1.02 SYSTEM PERFORMANCE AND REFERENCES

A. Provide unit masonry that develops a minimum compressive strength (f'm) of 1500 psi.

B. Comply with all applicable requirements of the following masonry references:
   1. American Concrete Institute No.530 - Building Code Requirements for Masonry Structures
   2. American Concrete Institute No.530.1R - Specifications for Masonry Structures
   3. International Masonry Industry All-Weather Council - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction

1.03 QUALITY ASSURANCE

A. Obtain exposed masonry units of uniform texture and color, or a uniform blend within the ranges accepted for these characteristics, from one manufacturer for each different product required for each continuous surface or visually related surfaces.

B. Special inspections and testing required by AutoZone and the governing building code will be paid by the Contractor and performed by an independent testing laboratory. Testing shall conform to the requirements of Section 01410.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver masonry materials to project site in undamaged condition, store masonry units along with accessories off the ground, under cover to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion and other causes.

1.05 PROJECT CONDITIONS

A. Do not use masonry cement in seismic zones 2 or higher as defined by any national building code or seismic design / performance category D or higher as defined by the International Building Code.

B. All mortar used to bond masonry shall be type S, do not use type N, M, or O.

C. During erection, cover tops of walls, projections and sills with waterproof sheeting at end of each day's work. Extend cover a minimum of 24 inches down both sides and hold cover securely in place. Maintain cover until wall is permanently protected.

D. Do not apply uniform roof loads for at least 12 hours and concentrated loads for at least 3 days after building masonry walls or columns.

E. Prevent grout, mortar and soil from staining the face of masonry to be left exposed or painted or other embedded or attached items. Remove immediately any grout, mortar and soil that comes in contact with masonry units, embeds or attached items.

F. Do not lay masonry units that are wet or frozen; remove and replace masonry damaged by freezing conditions. Comply with reference unit masonry standards for cold weather construction and the following:

G. Comply with reference unit masonry standard for hot weather construction as well as the following:
   1. When the ambient air temperature exceed 100 degrees F or 90 degrees F with a wind velocity greater than 8 mph, do not spread mortar bed more than 4 feet ahead of masonry and set masonry units within one minute of spreading mortar.

WORK DAY TEMPERATURE	CONSTRUCTION REQUIREMENT	PROTECTION REQUIREMENT
Above 40 F	Normal masonry procedures	Cover walls with plastic at end of work day to prevent water entering masonry.
32 F to 40 F	Heat mixing water to produce mortar temperatures between 40 F - 120 F	Cover walls and materials with plastic or canvas to prevent wetting and freezing
25 F to 32 F	Heat mixing water to produce mortar temperatures between 40 F - 120 F. Mortar on boards should be maintained above 40 F.	With wind velocities over 15 mph provide windbreaks during the work day and cover walls and materials at the end of the work to prevent wetting and freezing.
20 F to 25 F	Heat mixing water and sand to produce mortar temperatures between 40 F - 120 F. Mortar on boards should be maintained above 40 F.	With wind velocities over 15 mph provide windbreaks during the work day and cover walls and materials at the end of the work to prevent wetting and freezing. Maintain masonry above freezing for 16 hours using auxiliary heat or insulated blankets.
0 F and below to 20 F	Heat mixing water and sand to produce mortar temperatures between 40 F - 120 F. Mortar on boards should be maintained above 40 F.	Provide enclosures and supply sufficient heat to maintain masonry enclosure above 32 F for a minimum of 24 hours.

H. When conditions exist that are different from those outlined above the Project Manager may approve alternative methods and practices for the placement of masonry.

PART 2 PRODUCTS

2.01 MORTAR

A. Portland Cement, Type 1, shall meet the requirements of ASTM C150.
B. Masonry Cement, Type II, shall meet the requirements of ASTM C91.
C. Sand shall meet the requirements of ASTM C144
D. Water shall be potable, from local utility supply.
E. Mortar shall be Type S, and shall consist of 1 part Cement, to 3 parts sand, and shall develop a minimum strength of 1800 psi, and shall conform to the requirements of ASTM C270.
F. Grout Mix, Non-shrink, Type S, 1 part Portland cement, 2 1/4 parts sand, and shall develop a minimum strength of 2000 psi, and shall conform to the requirements of ASTM C476.

2.02 CONCRETE MASONRY UNITS

A. Hollow load bearing concrete masonry units shall conform to ASTM C90 latest edition and as follows:
   1. Minimum average compressive strength of 1900 psi.
   2. Light weight units weighing less than 105 pounds per cubic foot.
   3. Manufactured to specified dimensions of 3/8 inch less than nominal widths by nominal heights by nominal lengths indicated on drawings. Nominal face dimensions for full size units are 8 inch height by 16 inch length. Thickness as indicated on drawings.
   4. Exposed faces shall be manufacturer's standard gray color and texture for the type of unit specified.
B. Type of concrete masonry units required will be smooth face, unless noted otherwise on the drawings, provide units with both finished faces and ends of each type as required to construct outside corners.
C. Provide bond beam units with appropriate face finish as required by drawings.

2.03 BRICK MASONRY UNITS

A. Brick masonry units used as a veneer shall conform to ASTM C-216, grade SW, Type FBS and shall have a compressive strength of not less than 12,000 psi.
B. All brick units for the project shall be extruded shapes and shall come from the same manufacturer.
C. Brick sizes and colors shall be as indicated on drawings

2.04 STEEL BAR REINFORCING

A. Vertical and Bond Beams: Billet steel complying with ASTM A615 Grade 60 deformed, unless noted otherwise. Steel bars sizes as shown on the drawings.
B. Vertical bars shall be held in position at top and bottom and at interval not exceeding 200 diameters of the bar, additionally bars shall be in place prior to grouting.

2.05 JOINT REINFORCEMENT

A. Joint reinforcement for concrete masonry units shall be galvanized carbon steel, class 3, and truss design, welded wire units prefabricated with deformed continuous side rods and plain cross rods into straight lengths of not less than 10 feet, with prefabricated corner and tee units. Wire size shall be 9 gage minimum.
B. If prefabricated corners are not available, Contractor may field form corners by cutting on side of a straight section and bending to suit the wall condition.
C. Joint reinforcement where horizontal mortar joints do not align in composite, cavity or insulated walls, or where interior wythe is to be constructed before exterior wythe shall be truss type Adjusto Flex Mesh Model number AF-V or AF-H, as required, as manufactured by Hohmann & Barnard, Inc. or approved equal.

2.06 ANCHORS

A. Anchors for attaching masonry veneers to non masonry surfaces shall be galvanized triangle wire veneer anchor sized for the thickness of the masonry units being used. The ties shall be made from 12 gage wire and the screw hole for attachment shall be 5/16 inch diameter and shall be equal to those manufactured by Heckmann Building Products or Dur-O-Wall, Inc..

2.07 CONTROL JOINTS

A. Pre-formed high grade rapid control joint rubber slot seal, D/A 2001, 2-1/8 inches by 1-11/16 inches, as manufactured by Dur-O-Wall, Inc.
B. Where composite walls are constructed extend control joint through both Wythes.

2.08 EMBEDDED FLASHING MATERIALS for VENEERED INSTALLATIONS

A. Embedded flashing shall be copper fabric laminate consisting of a copper sheet weighing 3 ounces per square foot, bonded with asphalt between two layers of glass fiber cloth.
B. Adhesive for flashing shall be of type recommended by manufacturer of flashing material for use indicated.
C. Weep holes shall be round medium density polyethylene tubing, 3/8 inch outside diameter.

PART 3 EXECUTION

3.01 GENERAL

A. Comply with referenced unit masonry standard and other requirements indicated applicable to each type of installation included in Project.
B. Build single Wythe walls to the actual thickness of the masonry units, using units of nominal thickness indicated.
C. Cut masonry units with motor-driven saws to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full size units without cutting where possible.
D. Provide temporary bracing for walls, lintels and other masonry work during erection. Maintain in place until roof framing and other structural elements are complete and provide permanent bracing. Bracing of masonry walls is a means and method of construction and is the sole responsibility of the General Contractor and the masonry sub-contractor. As a minimum, provide bracing in accordance with the

Mason Contractor's Association of America's "Standard Practice for Bracing Masonry Walls Under Construction".

E. Grout all cells solid in all walls from top of footing to finished floor line whether reinforced or not.

3.02 MORTAR AND GROUT MIXING

A. Machine mix dry materials thoroughly for approximately 2 minutes. Add optimum amount of water gradually and mix for an additional 3 minutes, total mixing time, 5 minutes minimum. Hand mixing of mortar may be permitted for work requiring small batches with Owner's approval.
B. Mortar for grouting shall be mixed with the required amount of water to achieve pouring consistency. Continuously stir to prevent separation of materials.
C. Do not use admixtures, antifreeze compounds, or accelerators unless approved by Owner.
D. Place mortars in final position within 2.5 hours after mixing. Place grout into position within 1.5 hours after mixing."
E. Pointing mortar shall be of as dry a consistency as will produce a mortar sufficiently plastic to be worked into the joints.

3.03 LAYING MASONRY WALLS

A. Lay out walls in advance for accurate spacing of surface bond patterns with uniform joint widths and for accurate location of openings, movement-type joints, returns and offsets. Avoid the use of less than half size units at corners, jambs and where possible at other locations.
B. Lay up walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with other construction.
C. Lay masonry in running bond pattern with vertical joint in each course centered on units in courses above and below unless otherwise indicated.
D. Lay concealed masonry with all units in a Wythe in running bond. Bond and interlock each course of each Wythe at corners. Do not use units with less than nominal 4-inch horizontal face dimensions at corners or jambs.
E. In each course, rack back one half unit length for one half running bond, do not tooth. Clean exposed surfaces of set masonry and remove loose masonry units and mortar prior to laying fresh masonry.
F. As construction progresses, build in items specified under this and other Sections of the Specifications. Fill in solidly with masonry around built in items.
    1. Fill spaces between hollow metal frames and masonry solidly with mortar unless otherwise indicated.
    2. Where built in items are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod grout into core.
G. Install knock out bond beam masonry units at bearing elevations of steel bar joists, top of wall and at other locations called for on drawings. Units shall have faces to match adjacent courses or as called for on drawings.

3.04 MORTAR BEDDING AND JOINTING

A. Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells, bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters and where adjacent to cells or cavities to be filled with grout.
B. Tool all exposed joints slightly concave.
C. Joints at all locations to receive a plaster or EFS finish shall be struck flush rather than tooled.

3.05 GROUTING

A. Fully grout cavities, pilasters and vertical cells of concrete masonry containing steel reinforcement. Fully grout bond beams and lintels, including head joints. Fully grout all cells in retaining walls and all cells below grade in all walls. In addition, fully grout cavities and cells as directed by the Contract Documents.
B. Provide cleanouts when required by the grouting procedures. Cleanout openings shall be provided at all cells to be filled at each pour of grout where such pour is in excess of five feet. Cleanouts shall be sealed after inspections and before grouting.
C. Any overhanging mortar or other obstructions or debris shall be removed from the inside of cell walls.

D. Stop grout 1-1/2 inches below top of masonry when grout is to stopped for one hour or more. All horizontal steel shall be fully embedded in grout.
E. Consolidate pours exceeding 12 inches in height by mechanical vibration and reconsolidate by mechanical vibration after initial water loss and settlement has occurred.
F. Walls shall be constructed using a low lift grouting method with heights not to exceed five feet.

3.06 HORIZONTAL JOINT REINFORCEMENT

A. Install continuous horizontal joint reinforcement not less than 16 inches on center vertically (every other block course), reduce spacing to 8 inches on center vertically below grade and in parapets. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8 inch on exterior side of wall. Lap all joints a minimum of 8 inches. In seismic zones 3 and 4 and seismic design category D as categorized by the International Building Code, horizontal joint reinforcement shall be replaced with horizontal bond beams spaced not less than 48 inches on center vertically, or as indicated on drawings. Horizontal joint reinforcing may be required in addition to bond beam reiforcing for multiple wythe construction.
B. Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.
C. Provide continuity at corners and wall intersections, by use of prefabricated “L” and “T” sections except at control and expansion joints. Cut and bend reinforcement as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures, and other special conditions.
D. Reinforce masonry openings up to one foot in width, by placing horizontal joint reinforcement in the first two courses immediately above and below the head and sill of the opening. Extend reinforcing a minimum of 2 feet beyond the jambs of the opening.
E. Install horizontal steel bar reinforcing, sizes as shown on drawings, in all “U” shaped masonry bond beams and all other locations where indicated on drawings.

3.07 VERTICAL REINFORCEMENT

A. Install vertical steel bar reinforcing, sizes as shown on drawings, each side of all openings, control joints, and spaced or positioned in walls, columns and pilasters, or otherwise as shown on drawings. Vertical reinforcing shall be held in place by means of bar positioners.
B. Reinforcing bars shall be spliced a minimum of 48 bar diameters or 30 inches which ever is greater, unless noted otherwise on structural documents.

3.08 ANCHORING VENEERED MASONRY TO STRUCTURAL MEMBERS

A. Provide an open space not less than 1 inch in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
B. Anchor masonry to structural members with triangle anchors embedded in masonry joints and attached to structure.
C. Space anchors as required, but not more than 16 inches on center vertically and 32 inches on center horizontally.

3.09 CONTROL JOINTS

A. Install special shapes designed for control joints. Install bond breaker strips at joint. Keep head joint free and clear of mortar. Fill joint with elastomeric sealant.

3.10 LINTELS

A. Provide masonry lintels where shown and wherever openings are greater than 12 inches in width in all block bearing walls and structural steel lintels for all opening greater than 12 inches in width in masonry veneer walls.
B. Masonry lintels shall be specially formed “U” shaped bond beam units with reinforcement bars placed as indicated and filled with grout. Masonry and steel lintels shall have a minimum bearing of 8 inches at each jamb unless otherwise indicated.
C. At service door opening, extend lintel bearing to 2 feet beyond each jamb and grout solid all cells in the three courses above the lintel to facilitate the installation of the roll-up door.
D. Install loose steel lintels and miscellaneous steel frames where indicated.

E. Construct temporary formwork and shores to support reinforced masonry elements during construction. Do not remove forms and shores until reinforced masonry members have hardened sufficiently to carry their own weight and other temporary loads that may be placed on them during construction.

3.11 FLASHING / WEEP HOLES FOR VENEERED WALLS

A. Install embedded flashing and weep holes in masonry at shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall, and where indicated.
B. Prepare masonry surfaces so that they are smooth and free from projections that could puncture flashing. Place thru-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing with sealant as recommended by flashing manufacturer before covering with mortar.
C. Extend flashing from exterior face of the veneer through the outer Wythe and turn up and embed into the next horizontal joint of the backing masonry; or if backing is solid turn up a minimum of 4 inches and seal against vertical surface. Ensure the air space between the veneer and the backing is free and clear of mortar from top to bottom of wall.
D. At heads and sills, extend flashing as specified above unless otherwise indicated but turn up ends not less than 2 inches to form a pan.
E. Cut off flashing flush with face of wall after masonry wall construction is completed.
F. Install weep holes in the head joints in exterior Wythe and in the first course of masonry immediately above embedded flashing. Space weep holes 32 inches on center.

3.12 REPAIRING, POINTING AND CLEANING

A. Remove and replace masonry units that are loose, chipped, broken, stained or otherwise damaged or if units do not match adjoining units. Install new units to match adjoining units in fresh mortar or grout, point joints to eliminate evidence of replacement.
B. During the tooling of joints, enlarge any voids or holes, and completely fill with mortar. Point up all joints including corners, openings and adjacent construction to provide a neat, uniform appearance ready for the application of sealant.
C. After mortar is thoroughly set and cured, clean exposed masonry as follows:
    1. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.
    2. Protect adjacent non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film or waterproof masking tape.
    3. Wet wall surfaces with water prior to application of cleaners; remove cleaners promptly by rinsing thoroughly with clear water.
    4. Clean concrete masonry by means of cleaning method indicated in NCMA TEK 45 applicable to type of stain present on exposed surfaces.

End of Section

DIVISION 4 – SECTION 04300 ADHEARED THIN STONE VENEER

PART 1 GENERAL

1.01 SCOPE OF WORK

A. This section includes requirements for both manufactured as well as natural stone veneer products along with the installation of other items, which are specified in other sections:
    1. Embedded Anchors and Plates
    2. Steel Lintels
    3. Sealant in Stone Veneer Construction Joints
B. Consult drawings to determine which elements of this section are applicable to the specific project.

1.02 SYSTEM REFERENCES

A. ANSI A118.4 – Specifications for Latex-Portland Cement Mortar
B. ANSI A118.15 – Specifications for Premium Latex-Portland Cement Mortar
C. ASTM C 847 – Standard Specification for Metal Lath
D. ASTM C 1063 – Standard Specification for Installation of Lath
E. ASTM D 226 – Standard Specification for Asphalt-Saturated Felt Used for Waterproofing
F. AC-38 – Acceptance Criteria for Weather Resistive Barriers

1.03 QUALITY ASSURANCE

A. Obtain stone veneer products of a uniform blend within the ranges accepted for the pattern called for on the drawings, from one manufacturer or supplier.
B. Special inspections and testing required by AutoZone and the governing building code will be paid by the Contractor and performed by an independent testing laboratory. Testing shall conform to the requirements of Section 01410.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver stone veneer materials to project site in undamaged condition, store all products along with mortar and accessories off the ground, under cover to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion and other causes.

1.05 PROJECT CONDITIONS

A. Do not use manufactured stone veneer products where the project location will be subject to freeze / thaw conditions, use natural stone veneer products only for those locations.

1.06 SURFACE PREPARATION

A. If installing stone veneer products over any substrate other than new unpainted, untreated concrete masonry units, a water resistant barrier along with metal lath and a scratch coat will be required to cover the substrate prior to installing the stone veneer.

PART 2 PRODUCTS

2.01 MORTAR

A. Portland Cement, Type 1, shall meet the requirements of ASTM C150.
B. Sand shall meet the requirements of ASTM C144
C. Water shall be potable, from local utility supply.
D. Mortar shall be Type S, and shall consist of 1 part Cement, to 3 parts sand, and shall develop a minimum strength of 1800 psi, and shall conform to the requirements of ASTM C270.
E. Mortar for freeze / thaw applications shall be polymer-modified mortar conforming to ANSI A118.4 or ANSI 118.15 requirements.
F. Joint Filler, Non-shrink, Type S, 1 part Portland cement, 2 1/4 parts sand, and shall develop a minimum strength of 2000 psi, and shall conform to the requirements of ASTM C476.

2.02 STONE VENEER

A. Manufactured stone veneer equal to Coronado Stone Products:

B. Natural thin stone veneer equal to that produced by Quarry Mill, Sturgeon Bay, WI.
C. All stone veneer products used shall include matching corner pieces.
D. Stone pattern shall be as called for on the drawings.

2.03 STEEL ANGLE SUPPORTS

A. Any stone veneer greater than two inches (2") in depth shall be supported on a steel angle, the size of which must be able to support 2/3 of the depth of the member being supported.
B. Attach steel angles to the substrate with appropriate anchors as called for by the drawings.

2.04 CONTROL JOINTS

A. Where control joints occur in the concrete masonry unit substrate wall provide a control joint in the stone veneer. Control joint material to be either furnished by veneer supplier or constructed in the field by installer, joint sealant to be as specified elsewhere in this Specification.

2.05 EMBEDDED FLASHING MATERIALS for VENEERED INSTALLATIONS

A. Embedded flashing shall be copper fabric laminate consisting of a copper sheet weighing 3 ounces per square foot, bonded with asphalt between two layers of glass fiber cloth.
B. Adhesive for flashing shall be of type recommended by manufacturer of flashing material for use indicated.
C. Weep holes shall be round medium density polyethylene tubing, 3/8 inch outside diameter.

PART 3 EXECUTION

3.01 GENERAL

A. Comply with referenced standards, stone veneer supplier's printed installation instructions and other requirements indicated applicable to the installation.
B. Cut stone veneer with hand held grinder with a diamond cutting wheel, stone nippers, wet saw with a diamond blade or hammer and chisel to provide clean, sharp, unchipped edges. Cut units as required to provide continuous pattern and to fit adjoining construction. Use full size units without cutting where possible. Cut edges of manufactured stone veneer shall be hidden or covered with joint filler.
C. Start all stone veneered walls with base flashing and a weep screed. Install the weep screed four inches (4") above finished grade or two inches (2") above paved surface.

3.02 MORTAR AND GROUT MIXING

A. Machine mix dry materials thoroughly for approximately 2 minutes. Add optimum amount of water gradually and mix for an additional 3 minutes, total mixing time, 5 minutes minimum. Hand mixing of mortar may be permitted for work requiring small batches with AutoZone Project Manager approval.
B. Mortar for joint filler shall be mixed with the required amount of water to achieve pouring consistency. Continuously stir to prevent separation of materials.
C. Do not use admixtures, antifreeze compounds, or accelerators unless approved by AutoZone Project Manager.
D. Place mortars in final position within 2.5 hours after mixing. Place joint filler into position within 1.5 hours after mixing."

3.03 LAYING STONE VENEER

A. Lay out walls in advance, select an equal ratio of pieces from each box or pallet of veneer to insure a consistent and blended final result. Corner pieces should always be installed first before beginning with the field pieces.
B. At the start of the work each day, sponge or hose down the entire surface of the wall to keep the moisture from the wet mortar being absorbed by the wall. Remoisten the work area with a fog spray or wet brush every hour. Work area should be damp but not wet.
C. For manufactured stone veneer, work mortar into the stone from multiple directions to break surface tension and aid adhesion. Evenly distribute mortar 1/2" thick across the back surface of the veneer. Push stone firmly into place while wiggling the stone slightly to set the bond.
D. For natural stone veneer, apply mortar 3/8" to 3/4" to directly to the backup wall with firm pressure on the trowel. Keep the work area limited to 10 square feet so the mortar on the wall will not set before the stones are placed. Just before placing the stone cover 100% of the back of the stone with 1/2" of mortar. Once stone has been firmly pressed into the mortar bed, gently tap the stone with a soft mallet to set it in place.

Do not disturb or tap the stone after it has been set. The resulting total mortar thickness behind the stone should be between 3/8" and 1 1/4". Absorptive stones like sandstone and some limestones will require brushing the back of the stone with water to make it damp before applying mortar. Do not pre-wet stones with an absorption rate of less than 1%.

3.04 JOINTS

A. Joint width should be uniform and in no case should they exceed 1/2" in width.
B. Avoid continuous vertical mortar joints that cross more than four (4) rows of veneer.
C. After the stone is in place and has set for 24 hours, fill joints with joint filler using a pointing tool or a grout bag.
D. Tool all exposed joints slightly concave.

3.05 CONTROL JOINTS

A. Install special shapes designed for control joints. Fill joint with elastomeric sealant.

3.06 LINTELS

A. Provide lintels where shown and wherever openings are greater than 12 inches in width in stone veneered walls.
B. Install loose steel lintels and miscellaneous steel frames where indicated.

3.07 FLASHING / WEEP HOLES FOR VENEERED WALLS

A. Install embedded flashing and weep holes in stone veneer at shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall, and where indicated.
B. Prepare surfaces so that they are smooth and free from projections that could puncture flashing. Place thru-wall flashing on sloping bed of mortar and cover with mortar. Seal penetrations in flashing with sealant as recommended by flashing manufacturer before covering with mortar.
C. Extend flashing from exterior face of the veneer through the outer Wythe and turn up and embed into the next horizontal joint of the backing masonry; or if backing is solid turn up a minimum of 4 inches and seal against vertical surface. Ensure the air space between the veneer and the backing is free and clear of mortar from top to bottom of wall.
D. At heads and sills, extend flashing as specified above unless otherwise indicated but turn up ends not less than 2 inches to form a pan.
E. Cut off flashing flush with face of wall after masonry wall construction is completed.
F. Install weep holes in the head joints of veneer and in the first course of veneer immediately above embedded flashing. Space weep holes 32 inches on center.

3.08 REPAIRING, POINTING AND CLEANING

A. Remove and replace stone veneer units that are loose, chipped, broken, stained or otherwise damaged. Install new units to match adjoining units in fresh mortar or grout, point joints to eliminate evidence of replacement.
B. During the tooling of joints, enlarge any voids or holes, and completely fill with mortar. Point up all joints including corners, openings and adjacent construction to provide a neat, uniform appearance ready for the application of sealant.
C. After mortar is thoroughly set and cured, clean exposed stone veneer as follows:
    1. Remove mortar particles by hand using a soft bristle brush and water.
    2. Do not use chemical or acid washes, pressure washers, wire brushes or any other harsh methods of cleaning.

End of Section

DIVISION 5 – SECTION 05120 STRUCTURAL STEEL

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Include all labor, materials and appliances, and perform all operations in connection with the installation of the structural steel and all related work, in strict accordance with the drawings and as specified herein. Work includes:
   1. All structural steel including columns, beams, girders, column base and cap plates, joist and beam bearing plates, angles and channels.
   2. Design of structural steel connections.
   3. Framing for all openings in metal deck.
   4. Connection angles, bolts and electrodes for welding work.
   5. Anchor bolts and embedded plates and angles.
   6. Connections for steel joist girders and steel joist to structural steel.
   7. Connections of masonry to structural steel columns and beams.
   8. Field touch-up of shop painting.
   9. All other items required for completing the work of this section.

B. Related work which is specified in other sections
   1. Steel joists and joist girders.
   2. Metal decking.
   3. Cold formed metal framing
   4. Metal fabrications.

1.02 REFERENCES

A. American Institute of Steel Construction (AISC): Specification for the Design, Fabrication and Erection of Structural Steel for Buildings.
   1. AISC Code of Standard Practice for Steel Buildings and Bridges (March 18, 2005)
   2. AISC Specifications for Structural Steel Buildings (March 9, 2005).
   3. AISC Specifications for Structural Joints using ASTM A325 or A490 Bolts (June 30, 2004).

B. American Society for Testing and Materials (ASTM)
   1. ASTM A-36 Specifications for Structural Steel
   2. ASTM A-123 Specifications for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   3. ASTM A-307 Specifications for Structural Bolts and Studs 60,000 psi Tensile
   4. ASTM A-325 Specifications for Structural Bolts, Heat Treated, 120/105 psi Minimum Tensile.
   5. ASTM A-500 Specifications for Cold-Formed Welded and Seamless Carbon Steel Tubing.
   6. ASTM A-501 Specifications for Hot-Formed Welded and Seamless Carbon Steel Tubing.
   7. ASTM A-572/A-992 Specifications for High-Strength, Low Alloy Columbian-Vanadium Structural Steel.

C. American Welding Society (AWS)
   1. AWS (D1.1) Structural Welding Code - Steel.
   2. AWS (D1.3) Structural Welding Code - Sheet Steel.

1.03 SUBMITTALS

A. Fabricator may send with the first delivery a full set of shop drawings for Contractor's use.
B. Items requiring field measuring shall have all dimensions verified in the field before fabrication.
C. All structural steel shall be detailed fabricated and erected in accordance with the AISC Code of Standard Practice, except as modified herein.
D. Shop drawings if required should include the following information:
   1. Details of cuts, connections, camber holes and other pertinent data.
   2. Welds will be indicated by standard AWS symbols and show size, length and type of each weld.
   3. Erection drawings will reference erection marks to shop detail drawing numbers.
   4. Directions for installation of anchor bolts and other anchorage
   5. Type of fasteners will be clearly shown for all members.
E. Fabricator's engineer shall be responsible for the design, and adequacy of for all connections. Erection drawings and shop details will clearly show the design loads of each connection design by the fabricator.

All shop drawings shall be signed and sealed by the fabricator's engineer with the engineer's seal in the state in which the project is located.

F. AutoZone's review of any submittals is only for review of general conformance with the design concept. In no case shall this review or any subsequent approval, if given, relieve the contractor of the responsibility for the installation adequacy and safety of all connections, correctness of fit, general or detailed dimensions, quality or quantity of materials, or any other conditions, functions, performance or guarantees required.

1.04 QUALITY ASSURANCE

A. Contractor shall employ an independent testing laboratory to perform special inspection and testing. Testing shall conform to the requirements of Section 01410.

PART 2 PRODUCTS

2.01 MATERIALS

A. W Shape columns and beams: ASTM A-36/A-572/A-992, Fy = 50 ksi.
B. Other steel shapes bars and plates: ASTM A-36, Fy = 36 ksi.
C. Structural tubing: ASTM A-500, Grade B, Fy = 46 ksi.
D. Anchor bolts: ASTM A-307 or ASTM F1554, Grade 55, typical unless noted otherwise.
E. Bolts: ASTM A-325 or A-490.
F. Welding electrodes: Series E-70 for arc welding.
G. Headed stud anchors: ASTM A-108, Grades 1010 to 1020, 50 ksi.
H. Galvanizing: All item exposed to weather or earth shall be hot-dip galvanized to comply with ASTM A-123 or A-153, Class B.
I. Paint (Shop Coat): Fabricator's standard rust inhibitive metal primer. Paint shall be compatible with finish coat.

PART 3 EXECUTION

3.01 DESIGN OF CONNECTIONS

A. Unless noted otherwise, shop connections may be either bolted or welded and field connections shall be bolted. The fabricator is responsible for the design of all connections not fully detailed on the drawings. Connections not fully detailed on the structural drawings are schematic and are only intended to show the relationship of members connected. Connection details indicated on the drawings shall be incorporated into the fabricator's connection design.
B. Unless noted otherwise, connections shall be designed as "simple framing" connections (unrestrained, free-ended), to support the loads indicated on the drawings, with the ends of beams and girders connected for shear only, and free to rotate with some inelastic, but self-limiting deformation of connection parts, under gravity load. Bolted connections shall be designed as bearing type connections using the values for bearing type connections with threads included in the shear plane. A minimum of two bolts per connection must be used.
C. Single plate connections shall be designed in accordance with the design procedure given in AISC "Engineering for Steel Construction".
D. The fabricator is responsible for verifying the tension capacity of axially loaded members after a section is reduced for bolt holes. Member size may be increased or connection plates added as required.

3.02 FABRICATION

A. Fabricate and assemble structural assemblies in shop to greatest extent possible and as indicated on final shop drawings. Provide camber in structural members where indicated.
B. Properly mark and match-mark materials for field assembly. Fabricate for delivery sequence, which will expedite erection and minimize field handling of materials.
C. Structural steel fabricator must coordinate details, provide connections and punch holes for other trades as shown on structural, architectural, mechanical and electrical drawings.
D. Shop splicing of material will not be permitted.
E. All surfaces of steel to be painted shall be cleaned and primed according to Steel Structures Painting Council Specifications SSPC-SP-3-63, and given one shop coat applied at a rate to produce a minimum dry film thickness of 1.0 mil.
F. In cases where material shown or specified is not readily available, proposed substitutions must be submitted for review by AutoZone. All proposed substitutions shall be clearly noted as such on final shop

drawings. All substituted material must be of equivalent section to that specified and any additional cost due to increased weight shall be borne by Contractor. Substitutions shall not interfere with architectural, mechanical or electrical requirements.

G. Steel shall be delivered as required in accordance with approved schedule.

3.03 ERECTION

A. The steel structure may be a non self-supporting steel frame, dependent upon diaphragm action of metal roof deck and attachment to masonry walls for stability and for resistance to wind and seismic forces. Provide all temporary supports required for stability and for resistance to wind and seismic forces until these elements are complete and are capable of providing this support.

B. Furnish to other contractors all required anchor bolts, embedded plates and other incidental items of structural steel required to be built into concrete or masonry. Furnish templates and location plans for installing these items.

C. Thoroughly examine and check the placement of anchor bolts and any supports on which the structural steel work is any way dependent and notify Contractor and AutoZone in writing of any defects which would affect the satisfactory completion of this work. The starting of structural steel erection shall imply acceptance of the underlying surfaces.

D. Set and shim all base plates to the elevations shown on drawings.

E. All work shall be carefully and accurately assembled to carry out the design as shown. Erect the steel in order of sequence and schedule as previously arranged with Contractor.

F. Use care in handling and erection to insure that steel shall not be twisted, bent or otherwise damaged and should any difficulty be encountered, it shall immediately be reported to AutoZone's Project Manager. No cutting of structural shapes will be done in field without written consent of AutoZone.

G. Furnish all erection equipment, power, planking, bracing, guys, bolts, shims, etc. necessary in executing this part of the work.

H. Welders shall be certified by an independent testing and inspection service. Tests for uncertified welders shall be at the expense of this contractor.

I. Misfits, due to shop or drafting errors, will be corrected or replaced in field at fabricator's expense.

J. All steel shall be erected square, plumb and true to lines and levels. Any measures required to correct out of plumb steel columns, etc., will be at this contractor's expense.

K. Field touch-up painting shall be done with the same type of paint as the shop coat. Touch-up shall include erection damage, cleaning and painting of field connections or welds, and areas adjacent to welds not primed.

L. Coat all steel surfaces exposed to earth, with two heavy coats of asphaltic paint. Coating shall be applied to within one inch of exposed surface above grade.

End of Section

DIVISION 5 – SECTION 05210 STEEL JOISTS & DECK

(AutoZone Furnished Contractor Installed)

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Include all labor, materials and appliances, and perform all operations in connection with the installation of the steel joists, metal deck and all related work, in strict accordance with the drawings and as specified herein. Work includes:
   1. Open web steel joists, with extended ends, and bearing plates.
   2. Joist girders and continuity angles for joist girders.
   3. Bridging and connection angles for bridging at sidewalls.
   4. Side wall anchors.
   5. Steel roof deck and accessories.
   6. The framing of openings up to 10 inches by 10 inches.
   7. Welding, fastening and accessories for attachment of deck.

B. Steel roof deck and #12 Tek screw fasteners (if indicated on the drawings) along with #10 side lap fasteners will be furnished by AutoZone under provisions of Section 01010. At time of receipt of material Contractor shall verify quantity of fasteners delivered, compare to requirements of shop drawings, notify AutoZone Project Manager of any shortages. If no notice given then additional fasteners required will be at Contractor expense. If the Drawings do not specifically allow #12 Tek screws as a fastening option, or if Contractor desires to use an alternative indicated fastener, then Contractor shall furnish all required fasteners.

C. The following items will be furnished by AutoZone under provisions of Section 01010.
   1. Short Span Joists
   2. Long Span Joists
   3. Joists Substitutes
   4. Joist Girders
   5. Joist Bridging (horizontal welded, horizontal bolted, welded-X, and bolted-X)
   6. Bridging Anchors
   7. Bottom Chord Braces (BCB's – girders to joists only)
   8. Bolts connecting AutoZone furnished steel to AutoZone furnished steel (e.g. joists to girders and bolted bridging)
   9. Metal Deck
   10. Attachment Screws and Side Lap Screws for the Deck

1.02 REFERENCES

A. American Society for Testing and Materials (ASTM)
   1. ASTM A-36 Specifications for Structural Steel
   2. ASTM A-242 Specifications for High Strength Low Alloy Structural Steel.
   3. ASTM A-572 Specifications for Low-Alloy, Columbium-Vanadium Structural Steel.

B. American Welding Society (AWS)
   1. AWS (D1.1) Structural Welding Code - Steel.

C. Steel Joist Institute (SJI)
   1. SJI – Standard Specifications for Open Web Steel Joists, K-Series and LH-Series.
   2. SJI - Standard Specifications for Joist Girders

D. Steel Structures Painting Council (SSPC)

E. American Iron and Steel Institute (AISI)
   1. Specifications for the Design of Cold-Formed Steel Structural Members.

F. American Society for Testing and Materials (ASTM)
   1. ASTM A-366 Specifications for Steel, Carbon, Cold-Rolled Sheet, Commercial Quality

G. American Welding Society (AWS)
   1. AWS (D1.1 and D1.3) Structural Welding Code – Steel and Sheet Steel.

H. Steel Deck Institute (SDI)
   1. Design Manual for Composite Decks, Form Decks, Roof Decks.

I. Steel Structures Painting Council (SSPC)

1.03 QUALITY ASSURANCE

A. Qualify welding operators in accordance with AWS Standard Qualification Procedures. Provide certification that welders employed in work have satisfactorily passed AWS qualification test within previous 12 months. If recertification of welders is required it shall be provided without additional cost to AutoZone.

1.04 SHOP DRAWINGS

A. AutoZone's steel joist and deck supplier shall furnish to Contractor shop and erection drawings for the steel joists, joist girders and bridging and fastener schedule for the steel roof deck.

1.05 DELIVERY, STORAGE AND HANDLING

A. Contractor shall pay particular attention to the storage and handling of both the bar joists and the galvanized metal deck in order to avoid damage-causing rust. Both joists and metal decking must be stored off the ground with one end elevated to provide drainage and shall be protected from the weather with a water proof covering that is ventilated to avoid condensation.

PART 2 PRODUCTS

2.01 MATERIALS

A. Open web joists members:
   1. SJI type K.
   2. SJI type LH Long span.
   3. SJI Joist Girders
B. Bridging: ASTM A-36, A-242 or A-570.
C. Paint: SSPC, primer and finished coats to be applied in a dip tank; color to be AutoZone Orange. SSPC 20, touch-up primer for galvanized surfaces.
D. Steel roof deck: ASTM A-446, Grade C, 33,000 psi, 1.5 inch Type B wide rib, galvanized, with gauge as called for on the drawings.
E. Fasteners: The following fasteners will come with the deck if indicated on the drawings.
   1. Screw fasteners will be self-drilling, self-tapping, No.12 HWH Teks by Buildex or equivalent.
   2. Side lap fasteners will be self-drilling screws, No.10-16/1, by Buildex or equivalent.

2.02 ACCESSORIES

A. Furnish anchors and fasteners required for installation and attachment of joists, joist girders and bridging.
B. Welding materials: AWS D1.1.

2.03 FABRICATION

A. Steel joists and joist girders shall be fabricated in accordance with SJI Standard Specifications including headers and other supplementary framing. Top and bottom chord extensions will be provided where indicated on drawings.
B. Joists, joist girders and accessories will be prepared and shop painted with both primer and finished coat. Touch-up paint will be furnished and this contractor will be responsible for restoring material damaged during the erection process.
C. Fabrication of joist and joist girders is subject to inspection and testing at the Owner's discretion.
D. Steel roof deck shall be galvanized sheet steel, gauge as shown on the drawings, 1-1/2 inches high, fluted profile to SDI wide rib, multiple span, and lapped.
E. Fabricate metal decking in accordance with the SDI Design Manual for Composite Decks, Form Decks, Roof Decks and AISI to accommodate maximum working stress of 20,000 psi and maximum span deflection of span / 240.
F. Fabricate roof sump pans, if required, of 14 gauge sheet steel, flat bottom, sloped sides, recessed 1-1/2 inches below roof deck surface, bearing flange 3 inches wide, watertight.

PART 3 EXECUTION

3.01 JOIST ERECTION

A. Erect steel joists, joist girders and bridging in accordance with approved shop drawings and SJI Standard Specifications.

B. Joists and joist girders shall bear on supports in accordance with approved shop drawings and SJI Standard Specifications. During erection, provide temporary bracing as required by joist manufacturer for induced loads and stresses on joists and joist girders.
C. Limit sweep (horizontal displacement from a straight-line end to end) of joist to span length / 180 or a maximum of 2 inches.
D. Coordinate placement of anchorage in concrete and masonry construction for making connections to joists and joist girders and for securing bearing plates.
E. Connect or field weld joist seat to placed bearing plates after alignment and positioning for installation of bridging. Do not permit erection of decking until joists are braced and bridged. All joists shall be welded to bearing plates or supporting joist girders or steel beams in addition to temporary bolting required for stability during erection.
F. Do not field cut or alter joists or joist girders.
G. Remove all dirt, oil, foreign materials from joists and joist girders prior to deck installation.
H. Touch up all areas damaged during erection with matching paint.

3.02 METAL DECK INSTALLATION

A. Erect metal decking and connect to structure in accordance with SDI requirements. Coordinate attachment sequence and procedures with placing of units as shown on shop drawings.
B. On steel support members provide 1-1/2 inch minimum bearing.
C. Align decking on structural supports.
D. Lap properly nested decking sheets at supports only.
E. Provide temporary shoring, as required, during application of dead loads to maintain decking level to avoid damage. Do not leave placed sheets unattached at the end of the day.
F. Do not install any dull, oxidized or rusted metal decking. Contact the AutoZone's Project Manager for instructions.
G. Provide welding, fasteners and side lap connectors of size, spacing and location as indicated on design and shop drawings.
H. Do not alter or cut deck without AutoZone's approval. Trimming at edges and cutting of openings for roof top units will be permitted
I. Provide and install steel angle frame around all ancillary openings such as roof drains, exhaust fans, etc.
J. Position roof sump pans, if required, with flange bearing on top surface of deck. Weld at each deck flute.
K. Touch up all areas damaged during erection with matching paint.

End of Section

DIVISION 5 – SECTION 05400 COLD FORMED FRAMING

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Include all labor, materials and appliances, and perform all operations in connection with the installation of the cold formed metal framing and all related work, in strict accordance with the drawings and as specified herein.
B. For masonry bearing wall prototype stores the work includes:
   1. Cold-formed steel stud exterior framing, 6" 16 gauge, 0.0568 inch thick, at entrance canopy.
   2. Cold-formed steel stud interior framing, 3 5/8" 16 gauge, 0.0568 inch thick, at toilet room walls.
   3. Cold-formed steel ceiling joist framing, 6" 16 gauge, 0.0568 inch thick, at toilet room ceiling.
C. For all other projects, including the 38w prototype, consult drawings for sizes and gauge of all elements.
D. All cold-formed steel shall be galvanized with a class G-90 coating.

1.02 REFERENCES

A. American Iron and Steel Institute (AISI)
   1. Specifications for the Design of Cold-Formed Steel Structural Members.
B. American Society for Testing and Materials (ASTM)
   1. ASTM A-446 Specifications for Steel, Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, Structural Quality.
   2. ASTM A-525 Specifications for General Requirements for Sheet Steel, Zinc Coated (Galvanized) by the Hot-Dip Process.
C. ASTM C-954 Specifications for Steel Drill Screws
D. ASTM C-955 Specifications for Load Bearing (Transverse and Axial) Steel Studs, Runner (Track), and Bracing or Bridging for Screw Application of Gypsum Board and Metal Plaster Bases.
E. American Welding Society (AWS)
   1. AWS (D1.3) Structural Welding Code - Sheet Steel.
F. Steel Structures Painting Council (SSPC)
   1. SSPC - Paint 20 Type 1 - Zinc Rich Primers - Inorganic.

1.03 QUALITY ASSURANCE

A. Qualify welding operators in accordance with AWS Standard Qualification Procedures. Provide certification that welders employed in work have satisfactorily passed AWS qualification test within previous 12 months. If recertification of welders is required it shall be provided without additional cost to AutoZone.

1.04 DELIVERY, STORAGE AND HANDLING

A. Metal framing must be stored off the ground with one end elevated to provide drainage and shall be protected from the weather with a waterproof covering that is ventilated to avoid condensation.
B. Protect metal framing from corrosion, deformation and other damage during delivery, storage and handling.

PART 2 PRODUCTS

2.01 MATERIALS

A. Load bearing studs and ceiling joists: ASTM A-446, Grade D, minimum yield 50,000 psi and ASTM C-955; galvanized sheet steel, channel shaped, punched for utility access, sizes and spacing as indicated on drawings.
B. Floor tracks and top and bottom caps: ASTM A-446, Grade D, minimum yield 50,000 psi and ASTM C-955; galvanized sheet steel, channel shaped, solid web, tight fit, depth and gauge to match studs and joists.
C. Fasteners:
   1. Framing to framing and framing to attachment angles: ASTM C-954, 5/8 inch, Type S-12 low profile head, corrosion resistant, self-drilling, self-tapping, steel screws.
   2. Floor track anchor: Low velocity powder actuated Dome Head Nail with 1-inch embedment.
   3. Furring to concrete or masonry walls: Hex head sleeve anchors, minimum 1/4 inch diameter and minimum 1-1/8 inch embedment.

D. Paint: SSPC 20, touch-up primer for galvanized surfaces.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine existing conditions and adjacent areas where products will be installed and verify that conditions conform to product manufacturer's requirements. Verify that building framing components are ready to receive work. Verify that rough-in utilities are in-place and located where required. Do not proceed until unsatisfactory conditions have been corrected. Beginning of erection indicates acceptance of existing conditions.

3.02 INSTALLATION - WALL FRAMING

A. Install studs and fasteners in accordance with manufacturers published instructions.
B. Metal stud spacing shall be 16 inches on center, maximum.
C. Align stud web openings horizontally.
D. Construct corners using minimum three studs.
E. Place studs as indicated on drawings. Erect studs one piece, full length. Splicing of studs will not be permitted.
F. Install headers at partition openings using load-bearing cee-joists.
G. Install intermediate studs above and below openings to match wall stud spacing.
H. Install double studs adjacent to both sides of door openings.
I. Wall stud bridging shall be installed in such a manner to prevent stud rotation.
J. Install framing between studs for attachment of mechanical and electrical items. Install wood blocking for support of plumbing fixtures, toilet partitions, toilet accessories and hardware. Attach wood blocking between studs with screws.
K. Fasten framing in accordance with manufacturer's published instructions and schedule below, unless otherwise indicated on drawings.

Floor Track to Concrete	One anchor 24 inches o.c.
Wall Stud to Floor Track	One screw each side at each flange
Stud Web to Stud Web	Two screws
Plates and Straps to Studs	Two screws per stud
Runner to Header or Top Track	One screw every 16 inches, max 6 inches from end
Welded Connections	As indicated on drawings

L. Touch-up field welds and damaged galvanized surfaces with primer.

3.03 INSTALLATION - JOISTS

A. Install joists and fasteners in accordance with manufacturers published instructions.
B. Install joists in direction of shortest span, parallel and level, with lateral bracing and bridging. Joists shall be one piece, full length. Splicing of joists will not be permitted.
C. Joists shall align over wall studs wherever possible, but in no case will spacing exceed 16 inches on center. If joists do not align over vertical studs, install horizontal load distribution member utilizing cee joists.
D. Install perimeter joist runner track sized to match joists. Attach runner track to header or top track of wall framing per above schedule.
E. Attach joist ends to joist runner track with minimum of one screw each side at each flange.

3.04 INSTALLATION – CANOPY FRAMING

A. Install continuous steel angle by welding to joists and/or beams where indicated on the drawings. Welds shall be a minimum of 3/8" by 2" in length and on 12"centers.
B. Install 6" 16 ga. studs vertically 16" on center horizontally by welding to the continuous angles top and bottom. Welds shall be placed on both sides of the stud full height of the angle.
C. Install diagonal bracing where shown on the drawings.

3.05 COORDINATION

A. Coordinate erection of all cold formed metal framing with other trades to avoid conflicts in the overall construction schedule and interference with their work.

End of Section

DIVISION 5 – SECTION 05500 METAL FABRICATION

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Include all labor, materials and appliances, and perform all operations in connection with the installation of the metal fabrications and all related work, in strict accordance with the drawings and as specified herein. Work includes:
   1. Shop fabricated ferrous metal items, prime painted.
   2. See Schedule of Items at the end of this Section.
      a. Provide as scheduled and as indicated on drawings.
      b. Include anchorage and attachments necessary for installation.
      c. Schedule lists basic items and systems, include related items necessary to complete work.

1.02 REFERENCES

A. American Iron and Steel Institute (AISI)
   1. Specifications for the Design of Cold-Formed Steel Structural Members.
B. American Society for Testing and Materials (ASTM)
   1. ASTM A-36 Specifications for Structural Steel
   2. ASTM A-53 Specifications for Pipe, Steel, Black and Hot-Dipped, Zinc Coated Welded and Seamless.
   3. ASTM A-307 Specifications for Structural Bolts and Studs 60,000 psi Tensile
   4. ASTM A-325 Specifications for Structural Bolts, Heat Treated, 120/105 psi Minimum Tensile.
   5. ASTM A-446 Specifications for Steel, Sheet, Zinc Coated (Galvanized) by the Hot-Dip Process, Structural Quality.
   6. ASTM A-500 Specifications for Cold-Formed Welded and Seamless Carbon Steel Tubing.
C. American Welding Society (AWS)
   1. AWS (D1.1 and D1.3) Structural Welding Code – Steel and Sheet Steel.
D. Steel Structures Painting Council (SSPC)
   1. SSPC - Paint 20 Type II - Zinc Rich Primers - Organic.
   2. SSPC - Paint 25 - Red Iron Oxide, Zinc Oxide, Raw Linseed Oil and Alkyd Primer.

1.03 QUALITY ASSURANCE

A. Qualify welding operators in accordance with AWS Standard Qualification Procedures. Provide certification that welders employed in work have satisfactorily passed AWS qualification test within previous 12 months. If recertification of welders is required it shall be provided without additional cost to AutoZone.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel plates and shapes: ASTM A-36
B. Steel pipe: ASTM A-53.
C. Bolts, nuts and washers: ASTM A-307 and A-325.
D. Galvanized steel shapes (if required): ASTM A-446, Structural Quality, and Class G-90.
E. Steel tube: ASTM A-500, Grade B.
F. Welding materials: AWS D1.1 and AWS D1.3, type required for material being welded.
G. Primers:
   1. Shop application and field touch-up: SSPC 25
   2. Galvanized surfaces, field touch-up: SSPC 20
   3. Color: Match color of joists or purlins.
H. Concrete inserts: Cast steel or malleable bolts, washers, and shims, galvanized.

2.02 FABRICATION

A. Verify dimensions on site prior to shop fabrication.
B. Fabricate items with joints tightly fitted and secure.
C. Fit and shop assemble in largest practical sections for delivery to site.

D. Grind exposed welds flush and smooth with adjacent surface. Ease exposed edges to small uniform radius. Make exposed joints butt tight, flush and hairline.
E. Locate exposed mechanical fastenings unobtrusively, consistent with design of structure, flush countersink screws or bolts, except where specifically noted otherwise.
F. Supply components required for anchorage of metal fabrications. Fabricate anchorage and related components of same material and finish as metal fabrication, except where noted otherwise.
G. Finishing:
    1. Clean surface of rust, scale, grease and foreign matter prior to finishing.
    2. Do not prime surfaces in direct contact bond with concrete or where field welding is required.
    3. Prime paint items scheduled with one coat; touch-up with same primer.

PART 3 EXECUTION

3.01 GENERAL

A. Clean and strip site primed steel to bare metal where site welding is required.
B. Make provisions for erection loads with temporary bracing, keep work aligned.
C. Install items plumb and level, accurately fitted, free from distortion or defects.
D. Use grout specified in Section 04200 for setting metal fabrications.
E. Field weld in accordance with AWS D1.1 or D1.3 as applicable. After installation, grind sight exposed field welds smooth, touch-up welds, and scratched or damaged surfaces with primer.

3.02 SCHEDULE OF ITEMS

A. Prototypical Items:
    1. Lintels
    2. Steel pipe guards
    3. Dumpster gate posts and dumpster gate support (cladding not included)
    4. Roof hatch ladder
    5. Steel pipe bollards
    6. Bearing plates
    7. HVAC and roof hatch frames
    8. Structural tube columns, base and cap plates
    9. Perimeter angles for roof deck attachment and support
    10. X-Strapping for steel framed buildings
    11. All other angles required by the structural drawings and not specifically furnished under Section05210 of these specifications
B. Non-Prototypical Items:
    1. Loading dock angles and channels
    2. Steel handrails, brackets and supports
    3. Miscellaneous framing and support members

End of Section

DIVISION 6 – SECTION 06100 CARPENTRY

PART 1 GENERAL

1.01 WORK INCLUDED

A. Work may include any or all of the following, check drawings to determine scope of work required:
   1. Wood framing
   2. Blocking, backing, nailers, sleepers and wood grounds required for securing other work
   3. Wood furring
   4. Sheathing
   5. Rough hardware and connectors
   6. Installation of special connectors, seats, plates, anchors and hangars furnished by other trades

1.02 QUALITY ASSURANCE

A. Wood Product Quality Standards:
   1. Lumber standards: Comply with the latest edition of Product Standards PS 20-05, American Softwood Lumber Standards and West Coast Lumber Inspection Bureau (WCLIB).
   2. Plywood standard: Comply with the latest edition of Product Standard PS 1, Construction and Industrial Plywood.
   3. Pressure treated material: American Wood Preservers Bureau Standards (AWPB)
   4. Factory mark each piece of lumber and plywood with type, grade, mill and grading agency, and for treated material, retention values of treatment and end use for which product is suitable.
   5. Conform to current edition of International Building Code (IBC), Chapter 23 along with California Code of Regulations, Title 24 or any other specific code or ordinance that may be applicable to the specific project.

B. Do not use power driven fasteners unless approved by the Structural Engineer.

1.03 PRODUCT HANDLING

A. Keep materials under cover and dry. Protect against exposure to weather and contact with damp or wet surfaces. Stack lumber as well as plywood or other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.

1.04 PROJECT CONDITIONS

A. Fit carpentry work to other work; scribe and cope as required for accurate fit. Correlate location of furring, nailers, blocking, grounds and similar supports to allow attachment of other work. Cooperate with other trades to prevent the duplication of rough hardware furnished.

PART 2 PRODUCTS

2.01 LUMBER AND MATERIALS

A. Framing Lumber:
   1. Specified lumber dimensions are nominal, provide actual sizes as required by PS 20.
   2. Surfacing – Dressed lumber surface four sides (S4S), seasoned with 19 percent maximum moisture content at time of dressing and shipment for sizes 2 inches or less in nominal thickness.
   3. Species – Stress grade and wood species as noted on Structural Drawings.

B. Nailer at Roof: No. 2 or better.

C. Blocking: Utility grade or better.

D. Fasteners: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers, and anchoring devices. Provide metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended nails. Where rough carpentry is exposed to weather, in ground contact, or in areas of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating.

E. Roof Hatch Access Platform: ¾-inch C-D interior APA plywood with exterior glue

F. Structural Sheathing: Structural 1, C-B exterior APA plywood, or oriented strand board (OSB), thickness as indicated on drawings.

G. Plywood Backing Panels: For mounting telephone equipment and on walls behind fixtures, fire-retardant plywood C-D plugged interior with exterior glue not less than 15/32-inch thick.
H. Wall plywood used to back E.I.F.S. canopy exterior on cold rolled framing, or to support wall signage on metal buildings, and for the back side of canopy parapet wall, C-D exterior APA plywood, minimum of 15/32 inch thick or as indicated on the drawings.

2.02 PRESERVATIVE TREATMENT (PT)

A. Preservative treatment for lumber shall conform to AWPA Standards U1 and T1:
   1. Use water-borne salt preservatives for painted, stained or exposed natural wood products in both above ground and ground contact applications.
   2. Do not use creosote.
   3. Whenever necessary to cut, notch, or drill treated lumber, paint new surfaces thoroughly with two saturating coats of the preservative material used in the treatment of the lumber.
   4. Do not treat Douglas Fir Coast Region with ACC or CCA.
   5. Redry items after treatment to maximum moisture content of 19 percent, and stamp “dry”.
B. Use preservative treatment lumber (PT) as follows:
   1. Lumber in contact with concrete or masonry.
   2. Lumber in contact with roofing, flashing, or waterproofing.
   3. Fence posts.
   4. Fence boards and lumber within 18 inches of finished grade.
   5. All lumber exposed to the elements.

2.03 FIRE RETARDING TREATMENT

A. Fire retardant treatment for plywood shall conform to AWPA Standards C27 and as follows:
   1. Flame spread rating of less than 25 in accordance with ASTM E-84, NFPA 255, or UL 723.
   2. Redry items after treatment to maximum moisture content of 15 percent.
B. Use fire retardant treated plywood (FT) as follows:
   1. All locations

2.04 PRE-ENGINEERED WOOD TRUSSES

A. Pre-engineered wood trusses shall be designed and produced by an authorized “Gang-Nail” truss manufacturer or approved equal. Engineering drawings and design calculations shall bear the seal of a professional engineer registered in the state in which the project is located and shall be submitted to the original building design engineer for review prior to fabrication. The truss fabricator shall supply all hardware and fasteners required for joining timber members.

PART 3 EXECUTION

3.01 GENERAL

A. Accurately locate members to line and dimension. Ensure full contact of timbers framed together. Ensure let-in members in full contact on two surfaces.
B. Securely attach work to substrate by anchoring and fastening as shown and as required by recognized standards.
C. Provide all supports, guys and braces required to stabilize structure during construction.
D. Refer to details and tables on drawings for specific nailing requirements. In the absence of specific instructions, use 16d nails for two inch thick material and 8d for one inch thick material. Drill nail holes 75 percent of nail diameter where splitting occurs, and for 20d and larger nails. Replace split or otherwise damaged structural members. Machine applied nailing shall be allowed provided satisfactory installation is demonstrated on the job and the acceptance of the structural engineer obtained prior to the use of machine applied nails.
E. Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement
F. Provide and install all bolts extending through two or more wood members. Drill bolt holes 1/32 inch larger than bolt diameter, with members held in place true to line. Ensure full engagement of nut, but projection of bolt beyond shall not exceed one bolt diameter. Tighten bolts when installed and again immediately before concealing with further construction, or upon completion of work. Provide malleable iron or steel plate washers under the head and nuts of bolts where bearing on wood.

G. Screws shall be of sizes and types as indicated on drawings. They shall be zinc plated and be of sufficient strength to cause failure in the wood rather than the screw itself.
H. Do not cut, notch or bore framing members for passage of pipes or conduits except as detailed on drawings. Reinforce all framing members damaged by cutting.

3.02 SILLS AND PLATES

A. Wood plates, sills and sleepers which rest on concrete slabs or masonry foundations shall be made of No.2 pressure treated wood. For all structural walls, anchor sill plates to slabs or foundations per the requirements and details contained within the drawings. For all non-structural walls, space anchors 4 foot on center maximum and not less than 1 foot away from the end of the wall. All walls 2 foot and longer shall have at least 2 anchors.

3.03 STUD WALLS AND PARTITIONS

A. Provide studs in continuous lengths without splices.
B. Provide single bottom plate and double top plate, stagger joints 4 feet in top plates.
C. Frame corners and intersections with three studs or as detailed on drawings.
D. Frame openings in non-structural walls with double studs each side and double headers placed on edge resting on cripple studs. Truss or block over headers. For openings in structural walls see drawings for specific requirements and framing details.
E. Provide continuous horizontal blocking row at mid-height of single story partitions over 8 feet high and at midpoint of multi-story partitions, using 2 inch thick members of the same width as the wall or partition.
F. Cut-in blocks wherever necessary for bracing or backing for applied finish or fixtures. Cut-in 2 inch solid blocking between studs at all horizontal joints in non-structural plywood wall sheathing.
G. Provide continuous perimeter backing at ceiling plane for longitudinal forces of wall secured suspended ceiling or lighting systems.

3.04 WOOD TRUSSES

A. Trusses shall be engineered for all live, dead, and uplift loads listed in the drawings along with any other specific requirements so noted.
B. All trusses must bear directly above a wall stud or studs.
C. All trusses must be securely braced during erection and permanently as required by the truss manufacturer.

3.05 ROOF AND CEILING FRAMING

A. Lay joists and rafters with crowning edge up and with full end bearing.
B. Frame for openings, hatches, vents, etc. as required.
C. Install 2x3 cross bridging at 10 feet maximum at joists over 8 inches in depth, and 2x3 cross bridging or 2 inch solid blocking between roof rafters and ceiling joists. Approved metal cross bridging nailed using all nail holes may be used in lieu of the woos bridging. Do not nail bottom of cross bridging at roof rafters until after the installation of roof sheathing.
D. Install plywood roof sheathing or wood decking over roof rafters as indicated on drawings. Thickness and nailing requirements shall be as indicated on structural drawings.
E. Provide special framing where shown for eaves, overhangs, dormers, towers and similar conditions, if any are indicated on drawings.

End of Section

DIVISION 6 – SECTION 06200 PLASTIC SLEEVES

PART 1 GENERAL

1.01 GENERAL INFORMATION

A. Contractor shall be furnish and install plastic sleeves for all pipe guards.

B. Vendor contact for this product will be:

Chris Parenti
Ideal Shield LLC
2555 Clark Street P.O.Box 09210
Detroit, MI 48209-1355
Tel. 313-842-7290 Fax 313-842-7860

C. Sleeves shall be warranted against fading or color change for a period of five years from the date of substantial completion. Sleeves not meeting this requirement shall be replaced at no cost to AutoZone.

D. The minimum lead time on delivery of plastic sleeves will be two weeks and Contractor shall place order in a timely fashion to ensure construction schedule is not adversely impacted.

PART 2 PRODUCTS

2.01 PLASTIC SLEEVES

A. Sleeves shall have a dome top and be made from Lo-Density Thermoplastic Polyethylene with ultra violet and anti-static additives. Nominal wall thickness will be 0.250 inch. Color for all sleeves will be red.

B. Each sleeve shall be shop cut to length prior to being shipped to the job site. Contractor shall be responsible for giving accurate dimensions to Ideal Shield at the time of order placement. Sleeve height will be from top of surrounding pavement to the top of the exposed pipe.

C. Sleeves shall be sized to fit over a standard 6 inch diameter steel pipe.

PART 3 EXECUTION

3.01 INSTALLATION

A. Ensure the steel pipe cores are set true, correctly aligned and well anchored in below grade concrete encasement.

B. Fill cores with concrete and strike level across the top of the pipe.

C. Install foam tape at the top and bottom of each pipe in accordance with sleeve manufacturer's printed instructions.

D. Install sleeve over pipe following manufacturer's printed instructions

E. If sleeve is still loose on the pipe core install two self tapping screws through the sleeve into the pipe 1 inch above the surface of the surrounding pavement.

End of Section

DIVISION 7 – SECTION 07100 BELOW GRADE WATERPROOFING

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Install waterproofing materials when finished grade will be above finished floor; or when adjacent grades or drainage may place water or run-off against the exterior wall, which could affect the overall integrity of the store's environment.
B. Apply waterproofing materials when substrates are dry and air temperatures are above 40 degrees F., for applications below 40 degrees F. consult material manufacturer.
C. Do not apply waterproofing materials to wet or damp surfaces or surfaces treated with curing and parting compounds unless they have been completely removed chemically or mechanically.
D. Waterproofing materials are not intended as an exposed or wearing surface and will require the installation of a protector board prior to backfilling.
E. Prior to commencement of waterproofing insure all surface water is diverted away from wall and foundation surfaces.

PART 2 PRODUCTS

2.01 MATERIALS

A. Waterproofing shall be HLM 5000T as manufactured by Sonneborn, which is a cold trowel applied, membrane system, consisting of a single component, moisture curing, bitumen modified polyurethane.
B. Protector Board shall be 1/2 inch thick, closed cell foam insulation board.
C. Parge coat for concrete block walls shall be Sonoblock as manufactured by Sonneborn.
D. Sealant for joints over 1/8 inch in width shall be Sonolastic as manufactured by Sonneborn.

PART 3 EXECUTION

3.01 INSTALLATION

A. Concrete walls to be waterproofed must be properly water cured at least 14 days, all curing compounds must be removed prior to application of waterproofing.
B. Concrete block walls to be waterproofed shall first receive a cementitious parge coat of Sonoblock, applied at the rate of 400 square feet per bag. Parge coat should dry at least 7 days before applying waterproofing.
C. Before applying final membrane, all joints, cracks and openings around protrusions must be sealed by caulking or pre-striping with a preliminary coating of the waterproofing and allowed to dry overnight.
D. Seal all joints over 1/8 inch in width a Sonolastic sealant and prevent waterproofing membrane from adhering to the joint sealant.
E. Trowel apply waterproofing membrane in accordance manufacturer's printed instructions and to achieve a minimum 55 wet mil thickness
F. After membrane has cured, install protector board over membrane prior to backfilling against wall.

End of Section

DIVISION 7 – SECTION 07200 BUILDING INSULATION

07200 BUILDING INSULATION

PART 1 GENERAL
1.01 GENERAL REQUIREMENTS

A. Contractor to furnish all wall insulation from one manufacturer.
B. Protect insulation from contact with moisture.

PART 2 PRODUCTS
2.02 MATERIALS

A. Fiberglass batts, kraft paper faced, 3-1/2" inches thick with an R-Value of 13.0 and 6-1/4 inches thick with an R-Value of 19.0.
B. Acceptable manufacturers:
   1. Johns Manville
   2. Owens-Corning
   3. CertainTeed

PART 3 EXECUTION
3.02 INSTALLATION

A. Install fiberglass batts where indicated on drawings and in accordance with manufacturer's instructions, paying specific attention to the required location of vapor barrier. Install batts between metal studs on exterior walls, including area above the storefront. Insure complete and tight fit from floor to underside of roof deck.
B. Position insulation so that it will remain securely in place until the gypsum wallboard is installed, and so that the kraft paper face will be in contact with the backside of the gypsum wallboard, when the wallboard is installed.
C. In projects with suspended ceilings install 6-1/4" fiberglass batts above the ceiling grid with the vapor barrier facing the back side of the ceiling tile. Insure full coverage over the entire area of the ceiling with no gaps or spaces between pieces of insulation.

End of Section

DIVISION 7 – SECTION 07220 ROOF INSULATION

07220 ROOF INSULATION

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. The roof insulation installation over steel deck shall conform to Factory Mutual 4450, material shall carry a Class 1 fire rating and be installed in accordance with the requirements for a Factory Mutual I-90 wind classification, as well as the requirements of Underwriters Laboratory Construction Number 120 (TGKX.120).

B. Keep insulation completely dry before, during and after installation. Do not apply insulation to wet substrate and do not leave insulation exposed to weather. No more insulation should be applied than can be completely covered with the finished roofing membrane on the same day.

C. Roof insulation must be compatible with the chosen roofing membrane manufacturer recommendations. It shall be the roofing contractor's responsibility to verify the insulation installation specified herein will be compatible and acceptable to the membrane manufacturer. Notify Owner of any problems encountered.

D. The insulation shall develop a minimum "long term thermal resistance" (LTTR) value of 30 and be installed in two layers of equal thickness, and either mechanically fastened to the steel deck or attached with full contact adhesive to wood deck. Additional layers of tapered insulation used to construct crickets and reverse slopes, shall be installed in such a manner as to be compatible with both the membrane manufacturer's and Factory Mutual's recommendations. LTTR values associated with tapered insulation shall be in addition to the minimum value of 30 which is required over the entire roof area.

PART 2 PRODUCTS

2.01 MATERIALS

A. The thermal roof insulation shall be rigid, closed cell, polyisocyanurate foam faced with a universal, black, fiberglass reinforced mat on both sides. Thickness shall be uniform over the entire roof area and shall produce a minimum long term thermal resistance value (R-Value) of 30 and have a minimum compressive strength of 20 psi. Overall sheet sizes of the insulation shall be 48 inches in width by 96 inches in length.

B. Material utilized to create tapered layers required to form crickets and reverse slopes shall be either manufactured of the same material as the base layer or perlite depending on the roof membrane. Tapered layers shall have a minimum slope of ¼ inch per foot.

C. Separator for built-up roofing membrane only shall be ½ inch thick perlite board.

D. Fasteners shall be galvanized screw type (not black) with metal cap plate as approved by Factory Mutual for the above specified installation.

E. Adhesive for attaching insulation to wood deck shall be as required by the insulation board manufacturer.

F. Polyisocyanurate insulation board:
   1. Atlas Roofing Corporation
   2. Firestone
   3. GAF Materials
   4. Johns Manville

PART 3 EXECUTION

3.01 INSTALLATION ON STEEL DECK

A. Apply bottom layer boards with long joints parallel to and with full bearing on metal deck flutes, stagger short joints. Long joints shall center on deck flutes and minimum bearing shall be 2 inches.

B. Offset the second layer of insulation from the one below by a minimum of 6 inches in both directions, so that no joint in the second layer is directly above a joint in the first layer.

C. Secure each unit of insulation in both layers with at least one (1) fastener per 3 square feet (minimum of 11 fasteners per 4 foot by 8 foot board and 6 fasteners per 4 foot by 4 foot board) located as specifically recommended by the manufacturer and in accordance with Factory Mutual Requirements for an I-90 wind classification. On top of the two uniform layers of insulation mechanically fasten tapered insulation for crickets and reverse flows as indicated on drawings in accordance with Factory Mutual and membrane manufacturer's requirements.

D. For built-up roof membranes, on top of the mechanically fastened insulation, mop in required uniform thickness as well as tapered perlite boards with asphalt bitumen at a rate of 3 gallons per square. Offset top layer joints at least 6 inches from bottom layer. Walk in boards to obtain maximum adhesive contact. Seal all penetrations and joints of insulation to prevent asphalt drips.
E. Provide 4" cant strips where built-up roofing will abut vertical surfaces such as parapet walls and roof curbs. Secure cants with solid hot asphalt mopping. Do not use cant strips with PVC roofing.
F. If fire separation is required, install with construction adhesive, either perlite or gypsum boards with long joints parallel to and with full bearing on metal deck flutes, stagger short joints. Long joints shall center on deck flutes and minimum bearing shall be 2 inches. Offset the insulation layer installed so that joints do not align and anchor through the fire separation layer to the deck.

3.02 INSTALLATION ON WOOD DECK

A. Examine roof deck for suitability to receive insulation. Verify that substrate is dry, clean and free of foreign material that will damage insulation or impede installation.
B. Verify that roof drains, scuppers, roof curbs, nailers, equipment supports, vents and other roof accessories are secured properly and installed in conformance with Contract Documents.
C. Verify that deck is structurally sound to support installers, material and equipment without damaging or deforming work. Start of installation indicates installer accepts conditions of existing deck surfaces.
D. Install insulation using approved adhesives in accordance with insulation manufacturer's latest written instructions and as required by governing codes and Factory Mutual.
E. Install insulation with end joints staggered to avoid having insulation joints coinciding with joints in deck. In multi-layer installations, offset the second layer of insulation from the one below by a minimum of 6 inches in both directions so that no joint in the second layer is directly above a joint in the first layer.
F. If fire separation is required, install either perlite or gypsum boards with construction adhesive direct to the deck. Insure that joints in perlite or gypsum board are offset from joints in deck. Offset the first insulation layer installed so that joints do not align with the fire separation layer.

3.03 PROTECTION

A. Remove excess materials, trash debris, equipment and parts from the work.
B. Remove, repair, or replace damaged or stained items caused by roofing work.

End of Section

DIVISION 7 – SECTION 07240 EXTERIOR INSULATION AND FINISH

PART 1 GENERAL

1.01 SYSTEM DESCRIPTION

A. The exterior insulation and finish system (E.I.F.S.) consists of adhesive, insulation board, reinforcing mesh, base coat and finish.
B. All materials shall be installed in accordance with system manufacturer's published instructions

1.02 QUALITY ASSURANCE

A. The system shall be one that is recognized and approved by the local governing agency. The contractor shall furnish manufacturer's test reports if requested by AutoZone.
B. The system shall have been tested for fire performance in accordance with ASTM E-119, and ULC-S101. The contractor shall furnish manufacturer's test reports if requested by AutoZone.
C. The system manufacturer shall have been in business continuously for a minimum of ten years, and the manufacturer's approved installers shall install the system.

1.03 JOB CONDITIONS

A. Store all materials protected from weather and direct sunlight at temperatures above 40 degrees F.
B. The ambient air and wall temperature shall be 40 degrees F. minimum and shall remain so for at least 24 hours after installation. Consult system manufacturer for requirements regarding installations where temperatures are less than 40 degrees F.

1.04 WARRANTY

A. The system manufacturer through its approved installer shall furnish Owner with a written five year replacement / repair guarantee against the following occurrences:
    1. Delamination
    2. Color fading of finish coat
    3. System component material failure

PART 2 PRODUCTS

2.01 MATERIALS

A. Adhesive: 100 percent, copolymer emulsion adhesive that is waterproof and vapor permeable.
B. Insulation Board: Aged, expanded polystyrene, 1 pound per cubic foot, 1 inch thick minimum, conforming to ASTM C-578, type IV.
C. Reinforcing Fabric: A woven open weave glass fiber mesh, to be alkaline resistant coated, and have a weight of at least 20 grams per square yard.
D. Base-Coat: A 20 percent Portland cement and 80 percent acrylic polymer-based premixed grout.
E. Finish: Redi-mixed 100 percent acrylic-based wall coating having integral color and aggregate.
    1. Color requirements shall be as follows:
        a. Color for the sign band on the front wall shall be as indicated on the drawings.
        b. Color for walls and other items shall be as indicated on the drawings.
        c. Submit samples as and when required by Owner's representative.
    2. Aggregate texture shall be Fine Sand.
F. Water: Clean and potable.

PART 3 EXECUTION

3.01 INSTALLATION

A. Installation shall be performed by manufacturer's approved and trained applicators.
B. The finish system shall be applied in accordance with manufacturer published instructions.
C. The surface to receive the EIFS shall be structurally sound, clean, dry, and uniform.
D. Exterior finish shall be applied to insulation board.
E. Ambient temperature shall be 40 degrees F. or higher during installation and for at least 24 hours thereafter. Avoid application in direct sunlight.

F. Adhesive to be applied in ribbons using a 3/16" trowel, and running horizontal with the building walls.
G. Maintain surface flatness with maximum variation of 1/8" within 10 feet.
H. No exposed or partially exposed fabric will be acceptable.
I. Finish shall be applied in a continuous application, always working to a smooth wet edge. Finish shall be uniform, sand-type texture.
J. Mixing of materials to be done with clean, rust free, high-speed mixer. Small amounts of water may be added to the finish, per specification, to aid workability.
K. Where indicated on the drawings install base coat and reinforced finish coats directly on the smooth face concrete block.
L. Finished EIFS surfaces shall be painted see Section 09900 of the Specifications for requirements.
M. At completion of work clean up all areas and remove all material from surfaces not scheduled to receive finish coat.

End of Section

DIVISION 7 – SECTION 07500 ROOFING MEMBRANE

07500 ROOFING MEMBRANE

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. AutoZone's preferred membrane choice is Single Ply PVC, however, Contractor shall have the option of choosing either of the two specified roofing membranes:
   1. Mechanically Fastened Single Ply PVC Roof - Section 07510.
   2. Smooth Surface Built-up Roof with Applied Reflective Coating - Section 07520.
      a. Selection of this membrane by Contractor shall require prior written approval of either the AutoZone Director of Construction or Vice President of Store Development.

B. The roof membrane installation shall conform to Factory Mutual 4470, material shall carry a class 1 fire rating and be installed in accordance with the requirements for a Factory Mutual I-90 wind classification, as well as the requirements of Underwriters Laboratory Construction Number 120 (TGKX.120).

C. For roof insulation requirements, see Section 07220 of Specifications.

D. Only membrane manufacturers and their approved, authorized representatives shall be allowed to install the roofing membrane as well as the roof insulation.

1.02 GUARANTEE

A. At AutoZone's sole discretion and prior to making final payment, AutoZone may request the General Contractor to furnish an extended written guarantee of products and workmanship provided in the roofing system beyond the normal one year warranty. If so requested, Contractor shall prepare a cost estimate for AutoZone's approval to furnish said guarantee.

B. Guarantee shall provide extended coverage of no less than 5-years, beginning after the initial one-year warranty. Cost estimate shall also include the costs for three additional 5-year periods.

C. Guarantee shall be non-prorated, manufacturer's warranty for workmanship and materials comprising entire roofing system, including insulation, membrane, base flashing and all related accessories.

D. Guaranty shall state that all leaks occurring within this period shall be repaired at no additional cost to AutoZone, and shall also state period of coverage, roof membrane provider's and AutoZone's responsibilities, excluded items, and provisions for assignment shall be stated.

E. Limit of Liability: No Dollar Limit.

End of Section

DIVISION 7 – SECTION 07510 PVC ROOFING (Option 1)

PART 1 GENERAL

1.01 ROOFING SYSTEM

A. One ply mechanically fastened Poly Vinyl Chloride (PVC) membrane.

1.02 REQUIREMENTS

A. Roofing applicator shall be approved by the manufacturer of roofing systems and shall provide letter stating same.
B. Store all roll goods on a hard, smooth surface per manufacturer's instructions.
C. Do not apply roofing when substrate is wet.
D. All liquids shall be stored at 40 degrees F and above.

1.03 APPROVED MANUFACTURERS / SYSTEM

A. Duro-Last Roofing, Inc.: Duro-Last
B. GAF Materials: Everguard PVC
C. Johns Manville: JM-PVC-50
D. Sarnafil: Sikaplan 60
E. Seaman Corp.: Fibertite
F. Carlisle Syntec Systems: Sure Flex PVC 50 Mil

PART 2 PRODUCTS

2.01 MATERIALS

A. Membrane: Minimum 0.050-inch thick polyester reinforced PVC, surface color white, ASTM D4434.
B. Solvent: As recommended by manufacturer to clean membrane.
C. Lap Sealant: As recommended by manufacturer.
D. Caulk: One part polyurethane.
E. Adhesive: As recommended by manufacturer used for bonding membrane to the roof insulation, where the insulation has been installed on a wood deck as well as the parapet walls or any other vertical surface.
F. Flashing: Minimum 0.050 inch thick PVC membrane or pre-formed pipe boots.
G. Fasteners, Plates, and Bars: As required by system for proper attachments.
H. Walkway Pads: Minimum 0.10-inch thick PVC, 24 inches x 24 inches.

PART 3 EXECUTION

3.01 GENERAL

A. Apply PVC roofing in strict accordance with manufacturers latest printed instructions.
B. Roofing materials shall be thoroughly dry when applied and shall be closed in at end of each day.

3.02 MEMBRANE APPLICATION

A. Unroll roofing membrane and place without stretching. Allow 30 minutes minimum before fastening or splicing for membrane to relax.
B. Install two (2) half-width sheets with long dimension perpendicular to roof slope.
C. Adjoining sheets shall be lapped a minimum of 5 inches to allow for a proper field splice. Overlaps shall be shingled with the flow of water.
D. For steel deck installations, fasteners, plates and bars shall be installed per manufacturer's recommendations and Factory Mutual requirements.
E. For wood deck installations, roof membrane shall be fully adhered to the roof insulation per manufacturer's recommendations and Factory Mutual requirements.
F. Membrane to be either fully adhered or mechanically fastened to parapet walls as required by membrane manufacturer, then extended over the top of the parapet wall and terminated in a two piece metal compression fascia system.
G. At inside corners of parapet walls provide for a minimum of 1 ½ inch overlap and solid hot air weld the pig ear flap.
H. At junction of parapet wall and roof plane, provide base tie in per membrane manufacturer's requirements.

3.03 MEMBRANE SPLICE APPLICATION

A. Clean all seam surfaces as required by manufacturer.
B. All seams shall be heat welded in strict accordance with the membrane manufacturers' requirements and guidelines.
C. Seams shall be inspected for continuous bonding.
D. Apply sealant in continuous bead along all exposed seam edges.
E. Apply caulk to membrane edges at parapets, roof edges, and as required by manufacturer.
F. Membrane flashing shall be fully adhered to roof membrane and to adjacent vertical surfaces.

3.04 WALKWAY PAD APPLICATION

A. Provide walkway pads around the perimeter of HVAC rooftop units. Provide 6-inch space between pads for proper drainage. Pads around the perimeter of the rooftop units are to be within 2 inches of the vertical face of the units. See drawings for walkway layout.
B. Heat weld perimeter of pad and apply seam sealant at all welded edges.

End of Section

DIVISION 7 – SECTION 07520 BUILT-UP ROOFING (Option 2)

PART 1 GENERAL

1.01 ROOFING SYSTEM

A. Four (4) ply fiberglass, smooth surface with top glaze coat and reflective coating.
B. The reflective coating shall be applied by the Roofing Contractor after the top glaze coat has had an opportunity to cure.

1.02 REQUIREMENTS

A. Contractor must secure written approval from either the AutoZone Regional Construction Manager or the Director of Construction before proceeding with this membrane option.
B. Roofing applicator shall be approved by the manufacturer of roofing systems and shall provide letter stating same.
C. Store rolled goods on edge on a hard, smooth surface.
D. Do not apply roofing when substrate is wet.
E. Keep roll goods at 40 degrees F. and above.
F. For roofing applications when ambient temperature is below 45 degrees F. follow material manufacturer's specific printed instructions.

1.03 APPROVED MANUFACTURERS / SYSTEM

A. Firestone Building Products: I-4F-C
B. GAF Corporation: I-0-4-C
C. Johns Manville: 4 GIS
D. Tamko Corporation: 605

PART 2 PRODUCTS

2.01 MATERIALS

A. Bitumen: ASTM D312 Types II and III asphalt.
B. Felts: ASTM D2178 Type VI.
C. Roofing Cement: ASTM D4586, Asphalt based flashing cement, asbestos-free.
D. Top Glaze Coat: Bitumen asphalt type II.
E. Reflective Surface Coating: Acu-Flex elastomeric coating as manufactured by Advanced Coating Systems Inc., 2295 Towne Lake Parkway, STE 116, #288, Woodstock, GA. 30189. Toll Free: 800-587-3758, Fax: 678-445-0399, Phone: 678-445-0040. Alternative products will be considered provided they carry an Energy Star solar reflectance rating after 3 years of 0.85 or better. Submit appropriate documentation to AutoZone Project Manager with request for approval
F. Walkway Pads: 24-inch square asphalt impregnated mineral boards with slate granular surface.
G. Tapered Edge Strips: Perlite board taper strips ASTM C728.
H. Base-Flashing: ASTM D5147 Polyester reinforced SBS modified bitumen.

PART 3 EXECUTION

3.01 GENERAL

A. Apply built-up roofing in strict accordance with manufacturers printed instructions.
B. Roofing materials shall be thoroughly dry when applied and shall be closed in at end of each day.

3.02 PROTECTION OF OTHER WORK

A. Protect metal, glass, plastic and unpainted surfaces within wind-borne range of bitumen application. Protect neighboring work, properties, cars and person from spills and wind-borne bitumen surfacing.

3.03 ROOF MEMBRANE SYSTEM

A. Description: Four hot mopped plies plus smooth surfacing over perlite thermal barrier and accepted roof insulation.
B. Plies: Four shingled plies, lapped 24-2/3 inches, using starter sheets.
C. Type of Felt: Fiberglass.
D. Interply bitumen: Type II or III asphalt.

E. Smooth Surfacing: Glaze coat of bitumen over top felt layer, then after proper curing, apply the reflective coating, to a minimum dry film thickness of 20 mils.

3.04 APPLICATION TEMPERATURES OF ASPHALT

A. Type II asphalt: 350 to 415 degrees F.
B. Type III asphalt: 365 to 435 degrees F.

3.05 ROOFING PLY APPLICATION

A. Apply uniform, solid bitumen mopping at the rate of 23 to 27 pounds per 100 square feet. Apply bitumen the full width of the sheet, and sufficiently hot to obtain complete embedment of ply to ply.
B. Roll felt into hot bitumen. Extend each ply of roofing felts to the top of the parapet wall.
C. Broom in promptly to eliminate voids and obtain total embedment.
D. Apply layer of roofing cement to top layer of wall felts and cover with 90 pound roll roofing. Lap joints in direction of water flow.

3.06 SMOOTH SURFACING

A. Squeegee glaze coat of bitumen over last felt uniformly at the rate of 15 pounds per 100 square feet.
B. Contractor shall allow the glaze coat to properly cure before applying the reflective coating. Cure time will vary depending on the time of year the roof was installed but in no case shall the cure period be less than 90 days after the glaze coat installation.
C. Pressure wash the roof surface prior to the application of the reflective coating, roof surface must be clean and dry.
D. Apply roof coating at the rate of 100 square feet per gallon this should produce a dry film thickness of 10 mils. Allow the first coat to cure for 24 to 48 hours depending on humidity and temperature before applying the second coat at the same rate. Finished coating should have an average thickness of 20 mils and utilize 2 gallons per 100 square feet.
E. Follow the coating manufacturer's printed instructions for all aspects of the installation including the following restrictions and limitations:
    1. Do not apply materials during inclement weather or when precipitation is imminent.
    2. Do not apply materials to wet, dirty, or frozen surfaces.
    3. Do not apply materials when temperatures are below 40 degrees F., or above 100 degrees F.
    4. Do not apply materials when the relative humidity levels are above 88 percent.

3.07 WALKWAY PAD APPLICATION

A. Provide walkway pads around the perimeter of HVAC rooftop units. Set walkway pads in hot, Type III asphalt at the rate of 23 TO 27 pounds per 100 square feet. Provide 6-inch space between pads for proper drainage. Pads around the perimeter of the rooftop units are to be within 2 inches of the vertical face of the units. See drawings for walkway layout.

End of Section

DIVISION 7 – SECTION 07600 SHEET METAL FLASHING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Roof edging
B. Vent and Pipe flashing
C. Gutters and Downspouts
D. Scuppers, Overflow Openings and Conductor Heads
E. Roof Edge System
F. Related Work:
   1. Parapet flashing

1.02 ROOF EDGE SYSTEM GENERAL REQUIREMENTS

A. High performance roof edge system shall be CERTIFIED by the manufacturer to comply with ANSI/SPRI Standard ES-1. Roof edge shall meet performance design criteria according to the following test standards: [select, if applicable]:
   ANSI/SPRI ES-1 Test Method RE-1 Test for Roof Edge Termination of Single-Ply Roofing Membranes: The fascia system shall be tested to secure the membrane to minimum of 100 lbs/ft in accord with the ANSI/SPRI ES-1 Test Method RE -1. Use the current edition of *ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems*.
   ANSI/SPRI ES-1 Test Method RE-2 Pull-Off Test for Fascia: The fascia system shall be tested in accord with the ANSI/SPRI ES-1 Test Method RE -2. Use the current edition of *ANSI/SPRI ES-1 Wind Design Standard for Edge Systems Used with Low Slope Roofing Systems*.
B. The fascia product shall be approved for use in Miami-Dade County and has been designed to comply with Florida Building Code, including the High Velocity Hurricane Zone. Miami-Dade County NOA No. 08-0604.02 Expiration Date 12/11/13.

PART 2 PRODUCTS

2.01 MATERIALS

A. Metal Flashing: 22 gauge, G90 coating phosphotized, ASTM A525, unless otherwise indicated on drawings.
B. Solder: 50-50 Composition for galvanized metals.
C. Flux: Raw muriatic acid or a type specifically suited to the conditions used.
D. Nails, Rivets, and Fasteners: Shall have rust resistive coating compatible to, and designed for, the material being anchored.
E. Plumbing Vent or Pipe Penetration Flashing: Pipe boot of appropriate size for the vent or pipe penetration and manufactured from either Neoprene for built-up roofs, or the same material as the chosen single ply membrane.
F. Gutters: Aluminum, minimum thickness 0.032 inch material, formed in to a 5 inch wide seamless box gutter. Downspouts when utilized with gutter shall be aluminum of the same thickness material, with a minimum size of 6 inches wide by 4 inches deep.
G. Scuppers, Overflow Openings and Conductor Heads: Shall be fabricated from 22 gauge galvanized steel. Downspouts when utilized with conductor heads shall be fabricated of the same material, with a minimum size of 6 inches wide by 4 inches deep.
H. Roof Edge System:
   1. Anchor-Tite standard decorative metal fascia with continuous extruded aluminum bar as manufactured by Metal Era, Waukesha, WI. Contact Brad Van Dam or Eric Godfrey in national accounts for pricing, Tel. 800-558-2162.
   2. System shall be watertight with no exposed fasteners and shall be capable of terminating either an adhered or mechanically fastened single ply or a built-up roof membrane.
   3. Standard fascia height shall be 5-1/2” unless shown otherwise on the drawings and shall be formed of .040” thick aluminum with a factory Kynar 500 finish. Color to be as shown on the drawings.
   4. System shall come with injection molded EPDM splices to allow thermal expansion of extruded aluminum bar which anchors membrane. Corner pieces shall be factory mitered and welded. Fascia pieces shall come in 12 foot lengths.

PART 3 EXECUTION

3.01 GENERAL INSTALLATION REQUIREMENTS

A. Install metal flashing as detailed on drawings and in a manner that will ensure watertight conditions.
B. Fabricate metal flashing with lines, risers and angles sharp, true and plain surfaces free of waves and buckles and install with no exposed fasteners.

3.02 PLUMBING VENT OR PIPE PENETRATION FLASHING INSTALLATION

A. Install prefabricated boots in accordance with manufacturer's instructions and recommendations for the type of roofing system being applied.

3.03 GUTTER INSTALLATION

A. Fabricate and install gutters in a manner to insure positive drainage to downspouts. Make connections between gutter and downspout watertight. Install splash block at base of downspout, or connect to underground drainage system.

3.04 SCUPPER, OVERFLOW OPENINGS AND CONDUCTOR HEAD INSTALLATION

A. Fabricate items to the dimensions indicated on the drawings. If none are shown, then fabricate to the following minimum sizes: scuppers 6 inches wide and 4 inches high; overflow openings shall be the same size as the scupper; conductor heads 10 inches wide by 10 inches high by 8 inches deep.
B. Make the connection between conductor head and downspout watertight. Install splash block at the base of each downspout or connect downspout to underground drainage system.

3.05 ROOF EDGE SYSTEM

A. Verify the parapet wall and substrates are ready to start edge system installation, correct all deficiencies before starting. Install edge system in strict accordance with manufacturer's printed instructions and recommendations using mechanical fasteners provided by manufacturer. Fasteners shall have a minimum pull-out resistance of 240 pounds and be suitable for parapet substrates.
B. Install water cut-off as recommended by the membrane manufacturer under the anchor bar.

End of Section

DIVISION 7 – SECTION 07700 ROOF ACCESSORIES

PART 1 GENERAL

1.01 JOB CONDITIONS

A. Verify that other trades with related work are complete before installing roof hatch rail system.
B. Mounting surfaces shall be straight and secure; substrates shall be of proper width.
C. Refer to the construction documents, shop drawings, and manufacturer's installation instructions.
D. Observe all appropriate OSHA safety guidelines for this work.

1.02 WARRANTY

A. Manufacturer's standard warranty: Materials shall be free of defects in material and workmanship for a period of twenty-five years from the date of purchase. Should a part fail to function in normal use within this period, manufacturer shall furnish a new part at no charge.

PART 2 PRODUCTS

2.01 MANUFACTURER

A. The BILCO Company, P.O. Box 1203, New Haven, CT 06505
Tel: 203-934-6363, Fax: 203-933-8478
Internet address: http://www.bilco.com

2.02 MATERIALS

A. Roof hatch shall be 2 foot 6 inches by 3 foot, factory assembled, 14 gauge cover and curb, 22 gauge cover liner, galvanized with red oxide primer, Type "S" roof scuttle.
B. Hatch rail system shall be Model RL-S to match the roof hatch.
C. Performance characteristics:
1. High visibility safety yellow color shall be molded in.
2. Hatch rail system shall attach to the cap flashing of the roof hatch and shall not penetrate any roofing material.
3. Hatch rail system shall satisfy the requirements of OSHA 29 CFR 1910.23 and shall meet OSHA strength requirements with a factor of safety of two.
4. All components shall be of UV and corrosion resistant construction with a twenty-five year warranty.
5. Gate shall be self-closing.
D. Posts and Rails: Shall be round pultruded reinforced fire retardant yellow fiberglass treated with a UV inhibitor.
E. Hardware: Mounting brackets shall be ¼" thick hot dip galvanized steel. Hinges and post guides shall be 6063T5 aluminum. Fasteners shall be Type 316 stainless steel.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install roof hatch where indicated on drawings and in strict accordance with manufacturer's instructions and recommendations.
B. The hatch rail system shall be field assembled and installed per the manufacturer's instructions.

End of Section

DIVISION 7 – SECTION 07900 SEALANTS

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Install sealant between all dissimilar materials as well as all expansion, construction and saw cut joints.
B. Joint width and depth shall be 1/4 inch minimum and 1/2 inch maximum.
C. Joints which are deeper than 1/2 inch shall have their overall depth reduced by the use of closed cell backer rod.

PART 2 PRODUCTS

2.01 MATERIALS

A. Exterior:
   1. Masonry Control Joints: Paintable, polyurethane base, multi-component, chemical curing, type II, non-sagging, conforming to FS TT- S227E with 25 percent joint movement capability.
   2. Aluminum Framing System: Silicone base, one component, chemical curing, conforming to FS TT-S1543A with 25 percent joint movement capability, color to match adjacent surface.
   3. Control Joints in Paving: Polyurethane based, one-component, self-leveling, moisture curing, conforming to FS TT-S-00230C, Class A, Type 1. Color: gray, to closely match pavement color.
   4. Expansion Joints in Paving: For joints not indicated to receive a pre-molded cap strip, polyurethane based, one-component, self-leveling, moisture curing, conforming to FS TT-S-00230C, Class A, Type 1. Color: gray, to closely match pavement color
   5. Hollow Metal Frames and Other Openings: Silicone base, one component, chemical curing, conforming to FS TT-S1543A with 25 percent joint movement capability, color to match adjacent surface.
B. Interior:
   1. Control Joints in Slab: Semi-rigid, two components, 100% solids compound, with a minimum Shore A hardness of 80.
   2. General Purpose: Paintable, acrylic base, one component, solvent curing, non-staining, non-bleeding, non sagging conforming to FS TT-S- 230, Type II with 7.5 percent joint movement capability.
C. Primer: Non-staining type recommended by caulking manufacturer to suit application.
D. Joint Cleaner: Non-corrosive type recommended by caulking manufacturer to suit application.
E. Joint Filler: Round backer rods of either open or closed cell polyethylene foam, dependant on the sealant manufacturer's recommendation, oversized 25 to 50 percent larger than the width of the joint to allow for compression.

PART 3 EXECUTION

3.01 INSTALLATION

A. Clean and prepare joints in accordance with manufacturers recommendations. Remove loose material and other foreign matter that might impair adhesions of caulking.
B. Install backer rod where required.
C. Ensure that joint forming material is compatible with caulking.
D. Comply strictly with manufacturers printed instructions.
E. Remove excess caulking material from surfaces adjacent to caulked joints.
F. For interior building slab control joints do not install semi-rigid joint filler prior to thirty (30) days after slab placement.

End of Section

DIVISION 8 – SECTION 08100 H M DOORS AND FRAMES

PART 1 GENERAL

1.01 GENERAL PROVISIONS

A. Deliver and handle doors and frames in a manner to prevent rust and damage, store doors upright, under cover, in a dry area. Provide packaging, separators, banding, spreaders and paper wrappings as required to completely protect doors during transportation and storage.

PART 2 MATERIALS

2.01 FRAMES

A. Steel Door Frames: 16 Gauge cold-rolled steel in sizes and profiles as shown on drawings. Frames shall be knock down type with mitered corners. Prepare frames to receive three silencers. Apply a shop coat of baked on rust inhibiting primer. Provide anchors as required by all conditions and as indicated on the drawings. Provide foam blocking in both sides of jamb to receive exit device deadbolts.

B. Frame Reinforcement:
   1. Hinge: 7 gauge
   2. Lock: 12 gauge
   3. Closer: 12 gauge
   4. Hold Open Devices: 12 gauge
   5. Panic Devices: 12 gauge

2.02 DOORS

A. Steel Doors: 18 Gauge bonderized steel permanently bonded to rigid polystyrene foam core. Flush design with seamless faces and edges. 16 gauge hinge and lock channel along with 16 gauge closer channel top and bottom. Apply shop coat of baked-on rust inhibiting primer. Install reinforcing plates so that hardware selected may be installed without thru bolting to door.

B. Door Reinforcement:
   1. Hinge: 7 gauge
   2. Lock: 12 gauge
   3. Closer: 12 gauge
   4. Hold Open Devices: 12 gauge
   5. Panic Devices: 14 gauge

C. Wood Doors: Flush, solid core, AWI - PC5, five-ply construction, minimum 30 pound density bonded particleboard core which complies with ANSI A208.1 1-LD-1, stiles and rails minimum 1-1/2 inch hardwood bonded to core, crossband nominal 1/16 inch thick, face wood veneers, Luann paint grade, adhesives Type 1, waterproof. Doors shall be pre-machined for hardware specified.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install frames plumb and square in strict accordance with frame manufacturer's instructions.

B. Frames set in masonry walls shall be grouted full as wall is constructed.

C. Hang doors plumb, square and level to provide for easy operation.

End of Section

DIVISION 8 – SECTION 08250 OVERHEAD ROLLING DOOR

PART 1 GENERAL

1.01 GENERAL PROVISIONS

A. Contractor shall purchase the overhead rolling door from either Best Rolling Doors or Cornell Overhead Rolling Door. They have agreed to furnish an install the rolling overhead door called for in the drawings and specifications at a fixed price for the door and the installation. Both vendors are being given advance notice of upcoming projects and Contractor shall call one of the two vendors and finalize all arrangements for the delivery and installation of the door.

B. Upon completion of the installation Contractor shall pay Vendor for the cost of the door and installation along with the cost of freight and any taxes due and owing.

C. If door is being shipped to the job site prior to the time of installation, protect the door and components from weather and any damage that may occur from the construction processes.

D. Contact:

Best Rolling Door National Accounts
9770 N.W. 79th Avenue
Hialeah Gardens, FL 33016
Attn: Brian Santore
Cell: 973-738-3000
Home: 973-383-3257

Cornell Overhead Rolling Door
140 Maffet Street
Wilkes-Barre, PA 18705
Attn: Melissa Kern
Tel. 800-882-6773 ext. 613

PART 2 MATERIALS

2.01 OVERHEAD ROLLING DOOR

A. Door shall be 6'-0" wide by 8'-0" high; Model I-30 Storm Guard Insulated Rolling Door as manufactured by Best Rolling Door, or Model ESD20 Thermiser Insulated Coiling Steel Door as manufactured by Cornell Overhead Rolling Door. If the project is located in a hurricane zone then the door shall have a Florida approval number for the wind speed relative to the project location. Slats are to be 20 gauge front and 22 gauge back and filled with 1" foam insulation to produce a minimum R value of 7.2. Each end of alternate slats are to be assembled with polycast nylon end locks to maintain slat alignment and to act as a wearing surface inside the door guides.

B. Guides shall consist of a minimum of 3" structural steel angles a minimum of 3/16" thick. The guide depth shall be of a length adequate to provide proper slat penetration and specified wind loading. Provide windlocks as required.

C. Spring counter balance shall be housed in a steep pipe of appropriate diameter and thickness to support curtain. Deflection shall not exceed 0.03" per foot of door width. Spring to be helical torsion type and designed to meet a 25 percent safety load factor. Spring tension shall be fully adjustable from outside of end bracket plate.

D. End bracket plates shall be steel with a minimum thickness of 3/16". Bracket plates are to house pipe shaft and counterbalance assembly. Shaft shall be attached to end plate by sealed ball bearings attached to plate.

E. Hood shall be made of 24 gauge steel and supported by intermediate supports as required to prevent hood sag.

F. Weather stripping shall include a neoprene hood baffle, vinyl guide seals and a rubber astragal on the bottom bar.

G. Operation shall be by chain and door shall have slide bolts mounted on bottom bar with provisions for padlocks.

H. Finish for all non galvanized surfaces shall be factory applied gray rust inhibiting primer.

PART 3 EXECUTION

3.01 INSTALLATION

A. Contractor shall select and notify Vendor of the details of the project within 7 days from the date of Notice to Proceed (NTP) so that Vendor can make the necessary arrangements for manufacturing, shipping and installation crews. Contractor shall also coordinate the timing for the installation.

B. Contractor shall furnish and install the steel channel frame around the masonry opening as indicated on the drawings. Contractor shall also furnish and install the chain guard once the door is in place.

C. Contractor to insure that door vendor installs door plumb, square and level to provide for easy operation.

D. At the completion of the installation, Contractor shall notify the installing vendor within seven (7) days of any defects or installation problems encountered or existing. Vendor will then have seven (7) days to get any issues found corrected. Failure to notify the vendor will be taken as the installation and goods are acceptable.

End of Section

DIVISION 8 – SECTION 08400 ALUMINUM STOREFRONT

PART 1 GENERAL

1.01 SYSTEM DESIGN

A. Framing system manufacturer to design the storefront including entrance doors for the same wind load requirements as the structure, but in no case less than a wind pressure loading of 25 pounds per square foot on the gross area of glass and frames, acting both inward and outward. Mullion deflection shall be limited to L/175.
B. Install reinforcement concealed in framing members as required to comply with both wind and dead loads imposed on the system.
C. Framing systems including entrance doors and all glazing to be used in Florida or other areas that have specific codes or requirements more stringent than those listed above shall be designed to me those specific standards and be certified as compliant with those requirements.

1.02 SUBMITTALS

A. The material supplying vendor, if he feels the project is warranted, shall provide complete shop or installation drawings.
B. Contractor shall be responsible for verifying dimensions and anchorage to adjacent building components.

1.03 PRODUCT HANDLING

A. Protect both glass and aluminum framing from damage before, during, and after installation.
B. Remove all glass with chipped edges from the site immediately.
C. Do not deliver glass until framing system has been completed, inspected and is ready to be glazed.
D. Remove manufacturer's labels from glass immediately prior to final inspection.

PART 2 MATERIALS

2.01 APPROVED VENDORS / MANUFACTURERS

A. Framing Systems and Entrance Doors:
   1. Oldcastle Building Envelope
   2. U. S. Aluminum
   3. YKK
B. High Performance Tinted Glass:
   1. Pilkington Glass Co. - Evergreen
   2. Pittsburgh Plate Glass – Atlantica
C. Impact Resistant Glass:
   1. Viracon
   2. Secur Glass
   3. Dupont Glass
   4. Oldcastle Glass

2.02 STOREFRONT

A. System: Standard flush glazed, 4-1/2 inches deep by 2" wide, sized for either single glazing or insulated glazing as noted on the drawings. Hurricane systems, flush glazed, 5 inches deep by 2 1/2" wide, sized for impact resistant glazing.
B. Frames: Extruded aluminum 6063-T5 alloy.
C. Finish: See drawings for color required. If storefront is required to red, then finish shall be Fluropon Special Premier "AutoZone Red" Fluoropolymer, AAMA 2605 Compliance, Wet Film Thickness = 5.9 – 7.2 mils, Dry Film Thickness = 1.4 – 1.7 mils, 390x320 Clear Coat required, Gloss = 30-50@60 degrees. If other color is required it shall be either a hard coat anodic or a special paint with a clear top coat. Aluminum framing fabricator shall guarantee and warrant any painted finish to Owner for a period of ten (10) years from the date of installation, against peeling, cracking, fading, flaking, blistering, or chalking.
D. Anodic finishes shall be warranted for a minimum period of two (2) years against discoloration and all aluminum framing members shall be guaranteed against structural defects for a minimum period of two (2) years.
E. Sealant: See Section 07900.

2.03 ENTRANCE DOORS

A. Medium stile, with welded joints, 3 1/2 inch top rail and stiles and 10 inch bottom rail. Clear finish anodized aluminum conforming to AA-M12-C22-A31. Each door shall have 1 ½ pair of heavy weight ball bearing 4 ½ x 4 ½ full mortise butt hinges with satin chrome finish.
B. Hardware: See section 08700 no substitutions allowed.

2.04 GLAZING

A. Door, Sidelights and Storefront: 1/4" thick high performance tinted glass. Glass shall be float glass, tempered or laminated as required by national or local code or ordinance.
B. Insulated Glass: 1" thick overall with 1/4" inch inboard and outboard lights. Use high performance tinted glass for the outboard light, and clear glass for the inboard light. Units shall be tempered as required by national or local code or ordinance.
C. Impact Resistant Glass: 9/16” thick made up of a 1/4" thick high performance tinted glass outboard layer, a 1/4" thick clear glass inboard layer and a 0.090” thick clear interlayer in between.
D. Glazing Sealant: General Electric 1200 Series silicone sealant or Silglaze II.
E. See drawings for specific requirements and the overall sizes of individual pieces of glass.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install framing system per manufacturer's written installation instructions using sub-sill, end dams, water diverters, etc. Installation contractor shall furnish and install all system components to provide for a complete project whether the items are specifically shown in contract documents or not.
B. Set all frames true, level and plumb.
C. Install sealant between frames and surrounding surfaces.
D. Install reinforcing within the framing system as necessary to meet the required design wind load.
E. Accurately join corners, only hairline joints are acceptable. Exposed fasteners shall be countersunk and finished to match framing.
F. Any breakmetal required to complete the installation shall be furnished by the storefront framing manufacturer and be factory finished to match the main framing members.
G. Install all glazing in strict accordance with each glass manufacturers’ instructions.
H. Deliver glass with manufacturer's labels attached to each pane. Remove labels immediately prior to final inspection.
I. Remove glass with chipped edges from the site immediately.
J. Hang doors and adjust for easy operation.

End of Section

DIVISION 8 – SECTION 08700 HARDWARE

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. AutoZone shall furnish the Best Locks for the glass and aluminum doors and the door at the telephone closet, as well as the touch bar exit device. Contractor shall furnish the remaining required hardware and install all other hardware and accessories necessary to provide for a complete project whether the items are specifically scheduled or not.
B. All hardware shall be installed so that no fasteners are exposed or visible on the exterior of the door.
C. Contractor shall not substitute for the specified Closers.

PART 2 MATERIALS (schedule)

2.01 GLASS AND ALUMINUM ENTRANCE DOORS

A. Closers for Single Acting Doors:
   1. All closers shall be mounted on the inside of the building, no closers are to be left exposed on the exterior to the weather and shall be set for a maximum opening of 110 degrees.
   2. Exit doors, LCN 4040XP, with 18TJ mounting plate, plated finish US 26D, closer mounts on push side of door at head frame.
B. Closers for Double Acting Doors: Concealed in frame with 90-degree stop, Jackson JED-101, LCN-6031, or Dorma RTS-88.
C. Locks: Cylinder lock, Best Co. IE-6A4, (key operation exterior and thumb turn interior, unless prohibited by code). AutoZone furnished Contractor installed.
D. Threshold: Aluminum 5 inches wide x 1/2 inch high sized to fit opening, National Guard Products #425.
E. Push Bars: Manufacturer's standard, finish to match door.
   1. Single Acting Doors: Push side only.
   2. Double Acting Doors: Both sides of door.
F. Pulls: Manufacturer's standard, finish to match door.
   1. Add to all doors that are required to swing out.
G. Automatic Flush Bolts: Paired doors must have three point locking to activate flush bolts
H. Signs: Provide a sign over each glass and aluminum exit door to read as follows "THIS DOOR TO REMAIN UNLOCKED WHEN BUILDING IS OCCUPIED". Letters to be 1" high, color to be black or white as dictated by local Building Official.

2.02 Pair 2'-6" x 6'-8" Solid Core Wood Doors At Telephone Cabinet - Hollow Metal Frame

A. Hinges: Full mortise, 3 pair, 4-1/2 inch x 4-1/2 inch, NRP Hager #1279 (1-1/2 pair each leaf).
B. Lock Set: Active leaf-Best 83T Deadlock with Deadbolt, AutoZone furnished and Contractor installed.
C. Surface Bolts: Ives # SB360-T top and bottom 8 inch surface bolts, US 26D, (inactive leaf).

2.03 3'-0" x 6'-8" x 1-3/4" Solid Core Wood Doors At Toilets - Hollow Metal Frame

A. Hinges: Full mortise, 1-1/2 pair, 4-1/2 inch x 4-1/2 inch, Hager #1279.
B. Lockset: ADA compliant. Lever handle, 2-3/4 inch backset, Hagar #3540-US26D-WTN-ASA.
C. Door Stop: Dome floor stop Hager #241F.
D. Signs: ADA tactile signage, 6 inches by 8 inches, blue with white symbol and lettering, women, Hager #368W and men, Hager #368M.
E. Silencers: Ives #SR 64 (3 per strike side of frame).

2.04 3'-0" x 7'-0" x 1-3/4" Hollow Metal Doors at Exits - Hollow Metal Frame

A. Hinges: Full mortise, 1-1/2 pair, 4-1/2 inch x 4-1/2 inch, NRP Hager #1279 BB.
B. Push Bar Exit Device: Advantex, 40 series, with and without alarm, as manufactured by Detex, furnished by AutoZone, installed by contractor.
C. Closer: LCN #4040XP, plated finish US 26D, closer is parallel arm and mounts on push side of door.
D. Viewer: 190 degree, solid brass, US 26D finish, Ives #698, centered in door 5'-0" above floor.
E. Silencers: Ives #SR 64 (3 per strike side of frame).
F. Rigid Jamb Weather-strip: Bronze, National Guard Products #43 CB x required length.
G. Threshold: Aluminum 5 inches wide x 1/2 inch high sized to fit opening, National Guard Products #425.
H. Door Top Rain Drip: Aluminum, full width of frame, National Guard Products #17.
I. Door Bottom: Aluminum with nylon brush insert, Pemko # 3452DNB.
J. Latch Protector: Latch plate, US 32D stainless steel, Ives #LG 1.

2.05 Pair 3'-0" x see height on drawings x 1-3/4" Hollow Metal Doors - Hollow Metal Frame
Doors may be for delivery or equipment closets (see drawings for location of active leaf)

A. Hinges: Full mortise, 4 pair, 4-1/2 inch x 4-1/2 inch, NRP Hager #1279 BB (2 pair per leaf).
B. Push Bar Exit Device: Advantex, 40 series, w/ alarm as manufactured by Detex, furnished by AutoZone, installed by contractor (active leaf). Will not be required for equipment room doors.
C. Lock Set for Equipment Doors: Active leaf-Best 83T Deadlock with Deadbolt, AutoZone furnished and Contractor installed.
D. Closer: LCN #P4041, plated US 26D finish, closer is parallel arm and mounts on active leaf (not required on equipment room doors).
E. Viewer: 190 degree, solid brass, US 26D finish, Ives #698, centered in door 5'-0" above floor.
F. Silencers: Ives #SR 64 (2 per leaf at the top of frame).
G. Rigid Jamb Weather-strip: Bronze, National Guard Products #43 CB x required length.
H. Automatic Door Bottom: Aluminum National Guard Products #220 SA x required length.
I. Door Top Rain Drip: Aluminum, full width of frame, National Guard Products #17.
J. Surface Bolts: Rockwood #585-24-626 24" surface bolt, mount at top of door and Don Jo #1578-626 8" surface bolt mount at bottom of door, US 26D, (inactive leaf) Bolts furnished by AutoZone installed by GC.
K. Exterior Door Protection: 3 inch wide by full height by 1/8 inch thick steel bar welded to the active leaf and positioned so that there will be a minimum of 1 inch overlap to the inactive leaf.
L. Kick Down Holder: Ives #FS 555 US 26D (one for each leaf).

2.06 MISCELLANEOUS HARDWARE AND ACCESSORIES

A. Corner Guards: Aluminum 3" x 3" x length required x 0.080" thickness with mitered corners.
   1. Provide along top edge of toilet rooms.
   2. Provide at outside corner of toilet room.
   3. Provide at both jambs and head of all hollow metal exit doors and jambs of overhead door.
   4. Vertical member shall be one piece in length.
B. Vinyl Numbers: Install vinyl street numbers of the height required by local authority. Numbers are to be located in the glass panel either above or adjacent to the entrance door. Color to be white.
C. Chain Guards at Overhead Door: Aluminum 6" wide by 8'-0" high by 0.080" thick
   1. Provide on chain side of overhead door
   2. Cut slot at top of guard if required to allow sprocket wheel to turn freely. Maximum 1" clearance on all sides.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install all hardware and specialty items in strict accordance with manufacturers printed instructions, utilizing an appropriate anchoring device or adhesive.
B. Installation of door hardware shall be accomplished so that no anchoring devices are visible on the exterior of the door.
C. Corner guards and chain guard shall be installed using adhesive so that no fasteners are visible. Contractor shall exercise care during the installation process and ensure that all edges are firmly attached with no excess adhesive visible on either the guards or the adjacent wall surface.

End of Section

DIVISION 9 – SECTION 09220 CEMENT PLASTER (stucco)

PART 1 GENERAL

1.01 REFERENCES

A. American Society for Testing and Materials (ASTM) Specifications for:
   1. Installation of Lathing and Furring for Portland Cement Plaster ASTM C-1063
   2. Application of Portland Cement Plaster ASTM C-926
B. Stucco Manufacturers Association (SMA) Finished Plaster Standards

1.02 QUALITY ASSURANCE

A. Qualifications of installers: For installation of lath and plaster, use only skilled journeyman plasterers who are completely familiar with the referenced standards and with the requirements for this Work.
B. Codes and Standards: In addition to complying with all pertinent codes and regulations, comply with the materials handling and workmanship provisions of "Referenced Specifications", including current amendments of the California Lathing and Plastering Contractors' Association, Inc.

1.03 FINISHED COLOR

A. Finished color of the plaster shall be achieved by painting the plaster once it has cured.
B. Refer to Section 09900 of these specifications for products and information regarding installation of the paint.

1.04 DELIVERY, STORAGE AND HANDLING

A. All materials except water and sand shall be delivered in their original unopened packages and stored in an enclosed shelter providing protection from damage and exposure to the elements. Damaged or deteriorated materials shall be removed from the site.

1.05 PROTECTION

A. Provide proper protection during plastering operations for finished door and window frames along with other designated areas that do not receive a plaster finish.

1.06 ENVIRONMENTAL CONDITIONS

A. Do not apply cement plaster unless minimum ambient temperature of 40 degrees F. has been and continues to be maintained for a minimum of 48 hours prior to application and until plaster cures.
B. Do not apply plaster on exterior of building when hot, dry windy conditions exist.

PART 2 PRODUCTS

2.01 MATERIALS

A. Building Paper: Comply with Federal Specification UU-B-790a, Type 1 Grade D and weigh not less than nine (9) pounds per 100 square feet.
B. Metal Lath:
   1. Self-furring, expanded copper bearing steel sheet, diamond mesh weighing 3.4 pounds per square yard, coated with rush inhibitive paint after fabrication.
   2. Approved manufacturers:
      a. Alabama Metal Industries Corp. (AMICO) 800-366-2642
      b. K-LATH Building Products 800-669-5284
C. Stucco Netting: 16 gage, 1-1/2" mesh, galvanized or 18 gage 1" mesh, galvanized, or combine with the building paper as self-furring paper-backed netting.
D. Screeds and Other Material Accessories: Fabricate from 24 gage, hot dipped, zinc galvanized steel, prime coated and coated with a protective material to permit removal of overspray at completion of plastering.
E. Cement: Portland cement, Type 1, conforming to the requirements of ASTM C-150.
F. Plastic Cement: ASTM C-150, Type 1, manufactured with added plasticizer not exceeding 12% of total volume. Do not add plasticizer during mixing.
G. Lime for Portland cement Plaster: Hydrated Lime ASTM C-206, Type S.

H. Lime Substitute: Concrete Additives, California, Kel-Crete Plasticizer. Do not use Lime or other additives if Kel-Crete Admixture is used.
I. Sand for Plaster: Clean well graded from coarse to fine conforming with ASTM C-144.
J. Additive for Crack Control: ½ inch chopped fiberglass strands, alkaline resistant (AR).
K. Finish Coat of Plaster: Factory prepared LaHabra Products, Expo Stucco Products, Merlex Stucco, or Omega Products in a standard neutral color and finish.
L. Water: Clean, potable, fresh and free from injurious amounts of acid, alkali, organic matter or other deleterious substances.

2.02 MIXES

A. Mixing:
   1. General requirements:
      a. Accurately proportion materials for each plaster batch with measuring devices of known volume.
      b. Mix material dry to uniform color and consistency before adding any water.
      c. Mix only as much plaster as can be used in one (1) hour.
      d. Protect mixes from frost, dust and evaporation.
      e. Do not retemper the mix after initial set.
   2. Cement plaster mixing – Portland cement:
      a. Scratch Coat (3/8 inch thick): 1 part cement, ½ part lime, 3 parts aggregate and 2 pounds of ½ inch chopped fiberglass strands per this volume of cement.
      b. Brown Coat (3/8 inch thick): 1 part cement, ¾ part lime, 4 parts aggregate and 2 pounds of ½ inch chopped fiberglass strands per this volume of cement
   3. Cement plaster mixing – Plastic Cement:
      a. Scratch Coat (3/8 inch thick): 1 part plastic cement, 3 parts aggregate
      b. Brown Coat (3/8 inch thick): 1 part cement, 4 parts aggregate
   4. Finish plaster mixing:
      a. Mix finish coat plaster per manufacturer's recommendations and specifications.

PART 3 EXECUTION

3.01 INSPECTION

A. Prior to commencing work, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.
B. Verify that surfaces to be plastered are free of dirt, oil and other foreign matter which would affect bond of plaster coats.

3.02 LATHING INSTALLATION

A. Building Paper: Over all elements of construction which are to receive plaster, apply the specified building paper with the long dimension horizontal, lapping all upper courses over lower courses at least two (2) inches, and lapping vertical joints at least six (6) inches.
B. Metal Lath: Install self-furring metal lath against sheathing and with end joints staggered in adjacent rows. Screw lath to studs through dimples only, spacing screws 6 inches o.c. Lap ends of lath at least 1 inch between supports. Lap side (horizontal) joints at least ½ inch. Wire tie all side laps and end joints between supports together at intervals not exceeding 6 inches
C. Stucco Netting: Install stucco netting over building paper with the long dimension horizontal, lapping all joints at least one mesh but not less than one inch, lapping all upper courses over lower courses, and lapping all ends. At exterior corners wrap the netting around the corner and reinforce with exterior corner reinforcement. At interior corners fold the netting through the corner and reinforce with interior corner reinforcement. Attach the stucco netting to supports at a maximum six (6) inches each way, furring the netting away from the building paper at least ¼ inch by use of standard furring attachments. As alternate, paper-backed stucco netting may be used.
D. Accessories: Attach control joints to the stucco netting and attach all other grounds and accessories to supports, so as to provide true grounds for the plaster. Wire, tie, nail, screw, or staple all accessories to supporting surface sufficiently to hold accessories in place during plastering. Provide casing beads at all terminations of plaster and intersections with dissimilar materials and control joints where indicated on drawings, or if not shown then 10-foot o.c. each way.

3.03 PLASTERING

A. Mixing of plaster: Accurately and separately measure materials, mix in a modern clean batch mixer as follows:
   1. Measure materials either by weight or by volume.
   2. Mix plaster for not less than two (2) but not more than three (3) minutes, rotating the mixer at a speed recommended by the manufacturer of the mixer.
   3. Discharge batch completely before mixer is recharged. Mixer is to be thoroughly cleaned of all plaster whenever a different kind of plaster is to be mixed.

B. Scratch Coat: Apply scratch coat with sufficient material and force to form good keys, embedding and filling all spaces of the netting. Score horizontally.

C. Brown Coat: Do not apply brown coat sooner than 48 hours after the installation of the scratch coat. Apply the brown coat to the scratch coat. Bring out to grounds, straighten to a true surface, float, compact, and leave sufficiently rough to ensure adequate bond of the finish coat.

D. Finish Coat: Do not apply finish coat sooner than seven (7) days after installation of the brown coat. Finish all plaster true and even with 1/8-inch tolerance in five (5) feet and leave the finish surface free from tool marks and all other blemishes. Wipe all metal accessories clean after application of each coat.

3.04 ADJUST AND CLEAN

A. Patching: Upon completion, point up plaster around trim and other locations where plaster meets dissimilar materials. Cut out and patch defective plaster. Match patch of defective or damaged plaster to existing or surrounding work in form, texture and color.

B. Cleaning: Remove plaster and protective materials from expansion beads, perimeter beads and adjacent surfaces. Remove stains from plaster surfaces that would adversely affect subsequent finishes.

End of Section

DIVISION 9 – SECTION 09250 GYPSUM WALL BOARD

PART 1 GENERAL

1.01 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original packaging, containers or bundles bearing manufacturer's brand name and product identification.
B. Store materials inside under cover, keep dry, protect from weather, other elements and damage from construction operations or other causes.
C. Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trims from being bent or damaged.

1.02 PROJECT CONDITIONS

A. Comply with requirements of gypsum board manufacturer's application standards and requirements for environmental conditions before, during and after application of gypsum board.
B. When outdoor temperature is below 55 degrees F., maintain building working temperature of not less than 50 degrees F. for a period of 48 hours prior to, during and following application of gypsum board and joint treatment materials or bonding of adhesives.
C. Ventilate building spaces as required, removing excess moisture that would prevent drying of joint treatment material immediately after its application.
D. If drawings call for gypsum sheathing to be installed on the exterior side of structural steel studs and gypsum wallboard to be installed on the interior side of the same stud, then additional framing required for furred out spaces will be accomplished with 25 gage steel studs and accessories.

PART 2 PRODUCTS

2.01 EXTERIOR MATERIALS

A. Gypsum Sheathing: A gypsum core sheathing panel with additives to enhance the water resistance of the core; surfaced with water repellant paper on front, back and long edges; and complying with ASTM C-79. Panel size shall be minimum ½ inch thick by 2 foot wide by 8 foot long with tongue and groove edges.
B. Fasteners: Type S-12, bugle head corrosion resistant screws, minimum length 1 inch.

2.02 INTERIOR MATERIALS

A. Metal Studs: 3-5/8 inch, 25 gauge galvanized steel, conforming to ASTM C645
B. Gypsum Wall Board:
    1. Standard: ASTM C 36. 1/2 inch thick, TYPE - *C*, square cut ends, tapered edges, 4 foot wide by 8 foot long (minimum) unless otherwise noted on drawing.
C. Tape: Conform to ASTM C475.
D. Joint Compound: Ready mixed conforming to ASTM C475.
E. Fasteners
    1. Wood Supports: Type W, bugle head screws
    2. Metal Supports: Type S, bugle head screws
    3. Metal Liner Panel: Adhesive as recommended by the wallboard manufacturer
F. Accessories:
    1. Corner Beads: 1-1/4 inch x 1-1/4 inch galvanized steel
    2. Metal Edge Trim: Square nose and "L" type, galvanized steel as appropriate
    3. Closure Strips: Flexible closure strip for metal deck, vulcanized, 1 inch, color black, closed cell EDPM synthetic rubber as manufactured by Houston Foam, telephone 713-224-3484.

PART 3 EXECUTION

3.01 EXTERIOR SHEATHING INSTALLATION

A. Install 2 foot wide sheathing horizontally with the long dimension at right angles to the framing or ribs of the metal panels and with grooved edges down. Interlock the groove over the tongue of previously installed panels and with all edges butted but not forced into place. Stagger all vertical joints and abut them over the centers of framing members or metal panel ribs. Fit sheathing snugly around all openings. Secure sheathing to substrate with screws not spaced over 4 inches on center along edges and not over

8 inches on center every where else. Fasteners shall be no less than 3/8 inch from the edges and ends of the panel.

3.02 INTERIOR WALLBOARD INSTALLATION

A. Install metal stud framing vertically, at a maximum spacing of 16 inches on center horizontally.
B. Apply the wallboard either horizontally or vertically, center all vertical edges over studs or liner panel ribs. Wallboard shall terminate at the top of the liner panel. Adhesive may be used to attach wallboard to the liner panel. Provide lines of adhesive the full length of the wallboard starting at the edge of the panel and then spaced approximately 12 inches apart.
C. Install wallboard on the interior walls of both toilet rooms. Boards shall be installed vertically on walls and across the framing members on the ceilings. All joints shall center or bear on framing members.
D. Attach wallboards to framing members with 1-inch self-drilling drywall screws. Do not use adhesives to attach wallboard to studs. Screws shall be spaced no more than 12 inches on center and shall be located not less than 3/8 inch or more than 1/2 inch from edges.
E. Wallboard shall be held in firm contact with the framing member while fasteners are being driven. Fastening shall proceed from center portion of the wallboard toward the edges and ends. Fasteners shall be set with the heads slightly below the surface of the wallboard in a dimple formed by the power screw driver. Care shall be taken to avoid breaking the face paper of the wallboard. Improperly driven fasteners shall be removed prior to finishing.
F. Install appropriate metal trim at all exposed wallboard edges, where gypsum panels abut a different material, and where indicated on drawings. Install accessories with screws, nails or crimping as appropriate. Do not use staples.

3.03 FINISHING

A. Apply joint compound in accordance with manufacturer's printed instructions and recommendations at all gypsum board joints, flanges of trim accessories, penetrations, fastener heads, and surface defects. Pre-fill all open joints and rounded or beveled edges with joint compound recommended by wallboard manufacturer.
B. All joints and interior angles shall be taped embedded in joint compound and three separate coats of joint compound applied over all joints, angles, fastener heads and accessories. All joint compound shall be smooth and free of tool marks and ridges.

End of Section

DIVISION 9 – SECTION 09660 RESILIENT TILE FLOORING

PART 1 GENERAL

1.01 GENERAL INFORMATION

A. Armstrong Flooring, Inc. has initiated a new program whereby they will be selling resilient floor tile and other related flooring products on a direct basis to national flooring contractors who have an account with Armstrong. The General Contractor shall confirm that the flooring sub-contractor has a national account with Armstrong otherwise the special pricing will not be available.

B. To contact Armstrong Flooring call 877-212-8511, for customer service choose option 1; for technical support choose option 2 and for billing questions choose option 3. Hours of operation for these options are Monday through Friday 9 am to 4:30 pm Eastern Standard Time. Email address for customer service is aficnaorders@armstrongflooring.com.

GEN**ERAL REQUIREMENTS**

A. Allow all flooring materials and adhesives to condition to the room temperature for a minimum of 48 hours before starting the installation.

B. The arear to receive the resilient flooring should be maintained at a minimum of 65 degrees F (18 degrees C) and a maximum of 100 degrees F (38 degrees C) for 48 hours before, during and after completion.

C. New and existing concrete subfloors must meet the requirements of the current edition of ASTM F710, "Standard Practice for Preparing Concrete Floors to Receive Resilient Flooring" available from ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428; 610-832-9500; http://www/astm.org
   1. For concrete substrates, conduct moisture tests(moisture vapor emission rate [MVER]) and / or percent relative humidity (in-situ probe) using the respective ASTM test methods.
   2. Concrete substrates should also be checked for alkalinity and conform to the recommended limits from the floor tile manufacturer.
   3. If moisture levels are too high to accept the specified adhesive, follow manufacturer's recommendation for proper mitigation system.

D. Floor Flatness and Levelness should have a specified minimum overall value of FF25 / FL 20.
   1. If leveling is required use specified underlayment in strict accordance with manufacturer's specification and requirements.

E. All unused tiles to remain in store along with one unopened box of tile of same shade.

PART 2 PRODUCTS

2.01 SELF LEVELING AND PATCH / SKIM COAT UNDERLAYMENT

A. Armstrong S-453 Level Strong – Self-leveling Underlayment.

B. Armstrong S-456 Patch Strong – Feather Edge, Patch and Skim Coat.

C. NO SUBSTITUTIONS OR ALTERNATES.

2.02 FINISH FLOORING

A. Floor tile shall be Armstrong Imperial #51899, (Cool White) size to be 12 inch x 12 inch x 1/8 inch. NO SUBSTITUTIONS OR ALTERNATES.

B. Reducer strip shall be vinyl 1 inch wide by 1/8 inch thick with one edge beveled, color to be black.

2.03 BASE

A. Base shall be standard top set cove type, 4 inch high x 0.08 inch gauge vinyl as manufactured by Armstrong (V4860 Jet Black) or Flexco, (Color Black).

2.04 ADHESIVE

A. Adhesive for floor tile - Armstrong S-515 clear mastic.

B. Adhesive for Wall Base – Armstrong S-725.

C. Adhesive for vinyl reducer strip - 3 M Company contact adhesive.

2.05 POLISH

A. Polish for floor finishing shall be “Vectra” from Johnson Diversey, Inc.
B. See Division 1 for information on vendor contacts.
C. Wax is available in 5 gallon containers and should be purchased in the following quantities based on the prototype size:
    1. 6w2 – three 5-gallon containers
    2. 57n2 – three 5-gallon containers
    3. 65w2 – three 5-gallon containers
    4. 7n2 – four 5 gallon containers
D. Do not wet wash or auto-scrub the newly installed VCT flooring for a minimum of 5 days after installation to allow the adhesive to cure.
    1. Sweep and damp mop with as little water as possible using a neutral cleaner only – NO STRIPPERS
    2. Follow floor tile manufacturer’s recommendations for cleaning and protecting the floor.
    3. Put minimum of 2 coats of polish down to protect the floor during construction.
    4. Information regarding maintenance recommendations can be found by visiting www.floorexpert.com.

PART 3 EXECUTION

3.01 SELF LEVELING UNDERLAYMENT

A. All self-leveling products shall be installed in strict accordance with manufacturers printed instructions, which the Contractor shall obtain and have on site prior to commencement of any work.
B. Printed information for Armstrong is available from:

Armstrong Flooring Inc.
P.O.Box 3001
Lancaster, PA. 17604
Tel. (800) 292-6308 Fax (717) 396-5251

3.02 INSPECTION

A. Examine sub-floors prior to installation to determine that surfaces are smooth and free from cracks, holes, ridges and other defects that might prevent adhesive bond or impair durability or appearance of the flooring material.
B. Inspect sub-floors prior to installation to determine that surfaces are free from curing, sealing and hardening compounds or other foreign materials that might prevent adhesive bond. Visually inspect for evidence of moisture, alkaline salts, carbonation, dusting, mold or mildew.
C. Report conditions contrary to Contract requirements that would prevent a proper installation. Do not proceed with the installation until unsatisfactory conditions have been corrected.
D. Failure to call attention to defects or imperfections will be construed by Contractor as acceptance and approval of the sub-floor. Installation indicates acceptance of substrates with regard to conditions existing at time of installation.

3.03 PREPARATION

A. Smooth concrete surfaces, removing rough areas, projections, ridges and bumps. Fill low spots, joints and other defects with Armstrong’s S-453 Level Strong or S-456 Patch Strong underlayment as recommended by the tile manufacturer.
B. Remove paint, varnish, oils, release agents, sealers and waxes from floor surfaces. Remove residual adhesives as recommended by flooring manufacturer. Remove curing and hardening compounds not compatible with flooring adhesives. Avoid using organic solvents chemical adhesive removers.
C. Perform a sub-floor Bond and Moisture Test or a Calcium Chloride Test as described in publication number F-5061, “Armstrong Engineered Installation System”, to determine if surfaces are dry, free of curing and hardening compounds and any other coatings and are ready to receive resilient flooring.
D. Vacuum or broom clean surfaces making sub-floor free from dust, dirt, grease and all foreign materials immediately before the application of flooring.

3.04 FINISH FLOORING

A. Install flooring with adhesives, tools and procedures in strict accordance with the latest edition of "Armstrong Engineered Installation System" which can be found at www.floorexpert.com .
B. Open enough tile cartons and mix tile to ensure shade variations do not occur within any one space.
C. Lay tiles from start point as indicated on Drawings.
D. Scribe, cut and fit tile to permanent fixtures, columns, walls, pipes, outlets and any other items.
E. Observe the recommended adhesive trowel notching, open times and working times. Use a 1/32 inch deep x 1/16 inch wide Fine Notch trowel. Installers shall not use re-notched trowels.
F. Immediately remove excessive adhesive from visible surfaces.

3.05 ACCESSORIES

A. Apply base to walls, columns and other permanent fixtures in areas where base is required. Install base in lengths as long as practical, with inside corners fabricated from base materials that are mitered or coped. Outside corners shall be pre-fabricated by the base manufacturer. Ensure base is tightly bonded to vertical substrate.
B. Fill voids with Armstrong S-295 plastic filler along the top edge of the resilient wall base on masonry surfaces or other similar irregular substrates.
C. Place resilient edge strips tightly butted to flooring and secure with 3 M Company contact adhesive. Install edge strips at edges of flooring, which would otherwise be exposed.

3.06 FINAL CLEANING AND WAXING

A. Clean floor with a 175-rpm electric low speed side to side floor scrubber, however, an automatic floor scrubber that will also pickup solution may be used. Use Johnson Diversey General Purpose Forward at recommended dilution per label instructions. Use a trot mop (floor vacuum with squeegee) to pick up cleaning solution.
B. Damp mop with clear water to remove any remaining residue.
C. Floor must be thoroughly clean and dry prior to applying wax. Use an untreated dust mop to sweep floor prior to laying wax.
D. Waxing Floor:
    1. Contractor must use wax specified, no substitutions will be accepted unless AutoZone provides a written change order prior to application.
    2. Contractor shall apply a minimum of four (4) coats of wax and will apply additional coats until all containers purchased are utilized completely.
    3. Allow each coat of wax to dry a minimum of forty-five (45) minutes before applying the next coat.
E. Allow wax to dry overnight prior to buffing.
F. Buff the store prior to final inspection. Use a high-speed buffer, minimum 1500-rpm.
G. Provide empty floor finish containers at final punch.
H. Contact the wax vendor if more detailed instructions for application are needed.

End of Section

DIVISION 9 – SECTION 09900 PAINTING

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. All paint used on the project shall be from Sherwin-Williams Paints and as specified herein.
B. Contractor will notify vendor of the expected schedule for shipping and delivery of the painting material. No other material other than that furnished by Sherwin-Williams Paints will be acceptable for use on the project.
C. Based on Contractor's schedule for painting, paint material vendor will visit the project prior to the commencement of any painting to determine if the surfaces are ready to receive the paint. Paint material vendor will have the authority to issue a "do not" or "not ready for paint" order. If such order is given, it shall be done both verbally and followed by an email communication to the General Contractor as well as the AutoZone Project Administrator. Upon receipt of such order Contractor will immediately take all steps to remedy what ever defects were in place to cause such order to be given.
D. If such order was given as a result of weather, either temperature or moisture, then AutoZone Project Manager will determine the next course of action to be taken, which may include postponing paint the store until a later date. In all cases the surface must by dry prior to beginning ant coating application.
E. Paint material vendor will visit the project at the completion of the painting to ensure the materials have been applied in accordance with the requirements of the specification. Additionally he may visit during the application process to determine if the work is progressing appropriately. If paint material vendor determines that corrective work or other actions are required he shall so notify the AutoZone field project manager who in turn will notify the Contractor.
F. AutoZone at its own expense reserves the right to hire an independent third party to conduct tests on the paint application.

1.02 CONTACTS

A. Sherwin-Williams Paints:
Pat Busch, National Account Manager
2100 Lakeside Boulevard, Suite 500, Richardson, TX 75082
Cell: 214-587-3057 Fax: 214-553-3907
Email: pat.t.busch@sherwin.com

1.03 PAINT MATERIAL REQUIREMENTS

A. Store all products at 40 degrees F and above.
B. Do not apply to frozen substrate.
C. Apply when surface temperature is 35 degrees F or warmer and all frozen water in or on the surface is thawed.
D. Avoid applying material in snow, fog, mist, or when such conditions are expected.
E. Follow all other printed instructions regarding the application of each type of paint material.

1.04 ATTACHMENTS TO EXTERIOR WALLS

A. Contractor before attaching anything to the exterior wall shall ensure the underlying wall surface has been painted with two coats of SuperPaint Exterior Latex in the color appropriate and called for on the drawings. Items falling into this category would include but not necessarily be limited to Electric Swithchgear, Electric Meters and Conduit, Light Fixtures, Wall Signs, Coping, Gutters and Downspouts, Architectural Items, etc. Items which have been installed without the underlying paint will void the warranty, and therefore will be required to be removed, the wall surface painted, and then reinstalled all at no additional cost to AutoZone.

1.05 WARRANTY

A. Paint material vendor will be issuing to AutoZone, based on the Contractor's application of material, a 3 year manufacturer's warranty for labor and materials against the paint becoming unserviceable or objectionable in appearance with respect to chipping, cracking, peeling and alligatoring.
B. Warranty for loss of gloss or color retention shall be made against preset and predefined standards.

C. Contractor shall work and cooperate with paint material vendor to ensure everything is done so that warranty can be issued.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

A. The following manufacturers are approved for use on an AutoZone project:
   1. The Sherwin-Williams Company
B. Paint materials from no other manufacturer shall be used unless pre-authorized in writing by AutoZone.

2.02 EXTERIOR MATERIALS

A. Exterior Concrete Masonry Units (smooth or split face):
   1. Primer: Loxon Block Surfacer, A24W200:
      a. Smooth faced CMU 60 - 80 square feet per gallon
      b. Split faced CMU 40 - 60 square feet per gallon
      c. WFT 16.0 mils - DFT 8.0 mils
   2. Finish: 2 coats SuperPaint Exterior Latex Satin, A89 Series:
      a. WFT 4.0 mils - DFT 1.44 mils per coat
   3. Medium Gray Color Number 89AV001
   4. Dark Gray Color Number 89AV002
   5. Other colors as required and noted on drawings.

   NOTE: For painting under conditions where the temperature will be below 35 but above 20 degrees F the following will be applicable:

   6. Finish: 2 coats Ultra Crete Solvent Borne Smooth Coating, B46 Series (tinted to color match medium and dark gray Super Paint colors or what ever color is called for on the drawings):
      a. DFT 10.0 mils minimum / 16.0 mils maximum per coat (100 – 160 S.F. per gallon)

   Apply this product in strict accordance with the manufacturer's printed instructions. Spray applications shall be done in a crosshatch pattern, to be followed by backrolling. Rolling is always to be finished in a downward motion. Finish coats are to be applied to achieve a pinhole free surface.
B. Exterior Insulation Finish System (E.I.F.S.) or Stucco:
   1. Primer: Loxon Acrylic Conditioner, A24-100
      a. Maximum coverage 200 to 300 square feet per gallon
   2. Finish: 2 coats SuperPaint Exterior Latex Satin, A89 Series
      a. WFT 4.0 mils - DFT 1.44 mils per coat
C. Exterior Graphics: Red, Orange and White Bands (if permitted)
   1. Finish Coat Red: 2 Coats SherCryl HPA Gloss, B66 Series
      a. WFT 6.0 mils min. / 10.0 mils max.; DFT 2.5 mils min. / 4.0 mils max. per coat
   2. Finish Coat White: 2 coats SherCryl HPA Gloss, B66 Series
      a. WFT 6.0 mils min. / 10.0 mils max.; DFT 2.5 mils min. / 4.0 mils max. per coat
   3. Finish Coat Orange: 2 Coats SherCryl HPA Gloss, B66 Series
      a. WFT 6.0 mils min. / 10.0 mils max.; DFT 2.5 mils min. / 4.0 mils max. per coat
   4. Applied over SuperPaint Exterior Latex Satin coating
D. Pipe Guards / Guard Rails:
   1. Primer: 1 coat ProCryl Universal Primer, B66-310
      a. WFT 5.0 mils min. / 10.0 mils max.; DFT 2.0 mils min. / 4.0 mils max.
   2. Finish: 2 coats SherCryl HPA Gloss, B66 Series
      a. WFT 6.0 mils min. / 10.0 mils max.; DFT 2.5 mils min. / 4.0 mils max. per coat
E. Parking Lines:
   1. 2 coats Set Fast Acrylic Traffic Marking Paint
      a. WFT 15.0 mils - DFT 7.5 mils per coat
   2. Color to be either White #TM2160, or Yellow #TM2161
F. Gutters/Downspouts:
   1. Primer: 1 coat ProCryl Universal Primer, B66-310
      a. WFT 5.0 mils min. / 10.0 mils max.; DFT 2.0 mils min. / 4.0 mils max.
   2. Finish: 2 coats SuperPaint Exterior Latex Satin, A89 Series
      a. WFT 4.0 mils - DFT 1.44 mils per coat (color to match adjacent wall color)
G. Galvanized metal fabrications:

1. Primer: 1 coat ProCryl Universal Primer, B66-310
    a. WFT 5.0 mils min. / 10.0 mils max.; DFT 2.0 mils min. / 4.0 mils max.
2. Finish: 2 coats SuperPaint Exterior Latex Satin, A89 Series
    a. WFT 4.0 mils - DFT 1.44 mils per coat (color to match adjacent wall color)

H. Metal Man Doors:
1. Primer: 1 coat ProCryl Universal Primer, B66-310
    a. WFT 5.0 mils min. / 10.0 mils max.; DFT 2.0 mils min. / 4.0 mils max.
2. Finish: Coats: 2 coats Red SherCryl HPA Gloss, B66 Series
    a. WFT 6.0 mils min. / 10.0 mils max.; DFT 2.5 mils min. / 4.0 mils max. per coat

I. Hollow Metal Door Frames:
1. Primer: 1 coat ProCryl Universal Primer, B66-310
    a. WFT 5.0 mils min. / 10.0 mils max.; DFT 2.0 mils min. / 4.0 mils max.
2. Finish: Coats: 2 coats Black SherCryl HPA Gloss, B66 Series
    a. WFT 6.0 mils min. / 10.0 mils max.; DFT 2.5 mils min. / 4.0 mils max. per coat

J. Gas Piping:
1. Primer: 1 coat ProCryl Universal Primer, B66-310
    a. WFT 5.0 mils min. / 10.0 mils max.; DFT 2.0 mils min. / 4.0 mils max.
2. Finish: 2 coats Black SherCryl HPA Gloss, B66 Series
    a. WFT 6.0 mils min. / 10.0 mils max.; DFT 2.5 mils min. / 4.0 mils max. per coat

K. Roof Hatch Cover:
1. Primer: 1 coat ProCryl Universal Primer, B66-310
    a. WFT 5.0 mils min. / 10.0 mils max.; DFT 2.0 mils min. / 4.0 mils max.
2. Finish: 2 coats White SherCryl HPA Gloss, B66 Series
    a. WFT 6.0 mils min. / 10.0 mils max.; DFT 2.5 mils min. / 4.0 mils max. per coat

2.03 INTERIOR MATERIALS

A. Walls: (Block & Drywall)
1. Drywall Primer: 1 coat PrepRite 200 Wall Primer, B28W200
    a. WFT 4.0 mils – DFT 1.1
2. Block Primer: 1 coat PrepRite Block Filler, B25W25
    a. WFT 16.0 mils – DFT 8.0
3. Finish Coat Red: 2 Coats Matalatex Semi Gloss Enamel, B42 Series
    a. DFT 1.5 mils min. / 4.0 mils max. per coat
4. Finish Coat White: 2 coats Matalatex Semi Gloss Enamel, B42 Series
    a. DFT 1.5 mils min. / 4.0 mils max. per coat
5. Finish Coat Orange: 2 Coats Matalatex Semi Gloss Enamel, B42 Series
    a. DFT 1.5 mils min. / 4.0 mils max. per coat

B. Restroom Ceiling: (Walls are FRP).
1. Primer: 1 coat PrepRite 200 Wall Primer, B28W200
    a. WFT 4.0 mils – DFT 1.1
2. Finish: 2 coats White ProMar 200 Semi Gloss Latex
    a. WFT 4.0 mils – DFT 1.5 per coat

C. Doors Frames:
1. Primer: 1 coat ProCryl Universal Primer, B66-310
    a. WFT 5.0 mils min. / 10.0 mils max.; DFT 2.0 mils min. / 4.0 mils max.
2. Finish: 2 coats Black Matalatex Semi Gloss Enamel, B42 Series
    a. DFT 1.5 mils min. / 4.0 mils max. per coat

D. Doors: (Wood)
1. Primer: 1 coat PrepRite Wall & Wood Primer, B49W1
    a. WFT 4.0 mils – DFT 1.9
2. Finish: 2 coats Red Matalatex Semi Gloss Enamel, B42 Series
    a. DFT 1.5 mils min. / 4.0 mils max. per coat

E. Exposed Joist Girders and Bar Joists:
1. Orange paint for touch up (supplied by Owner).

F. Exposed Roof Deck:
1. Deck is galvanized no painting required

G. Roof Ladder and Hatch:
    1. Primer: 1 coat ProCryl Universal Primer, B66-310
        a. WFT 5.0 mils min. / 10.0 mils max.; DFT 2.0 mils min. / 4.0 mils max.
    2. Finish: 2 coats Red Matalatex Semi Gloss Enamel, B42 Series
        a. DFT 1.5 mils min. / 4.0 mils max. per coat

2.04 FORMULATIONS

A. Formulas listed below are for one gallon sized containers and are shown in full ounces and 1/32 of an ounce. Also not that all SherCryl colors are to be created using only the EnviroToner System while all other colors are to be created using the Blend-A-Color System.

B. Exterior Red:
    1. SherCryl Gloss Ultradeep Base, B66T304
    2. 4 oz. Red-101
    3. 8 oz. Yellow-100

C. Exterior Orange:
    1. SherCryl Gloss Ultradeep Base, B66T304
    2. 48/32 oz Yellow-101
    3. 2 oz. + 56/32 oz. Orange
    4. 6 oz. Yellow-100

D. Exterior Medium Gray:
    1. SuperPaint Exterior Satin Deep Base, A89W53
    2. 2 oz. + 24/32 oz. Black
    3. 24/32 oz. Raw Umber
    4. 15/32 oz. Deep Gold
    5. 4/32 oz. New Red
    6. 2/32 oz. Magenta

E. Exterior Dark Gray:
    1. SuperPaint Exterior Satin Deep Base, A89W53
    2. 4 oz. + 63/32 oz. Black
    3. 62/32 oz. Raw Umber
    4. 36/32 oz. Deep Gold
    5. 4/32 oz. Magenta

F. Interior Red:
    1. Matalatex Semi Gloss
    2. Safety Orange B42E39 and Safety Red B42E38 in a 1:1 intermix

G. Interior Orange
    1. Matalatex Semi Gloss Safety Orange B42E39
    2. 2 oz. + 37/32 oz. Magenta
    3. 2 oz. + 13/32 oz. White
    4. 1/32 oz. Yellow

H. Any non standard color used to paint the exterior of any store shall have the paint color name, formula and store number on which the color was applied logged into the Sherwin-Williams Custodian System for future reference.

PART 3 EXECUTION

REFER TO DRAWINGS FOR REQUIRED PAINT COLORS AND THEIR LOCATIONS.

3.01 EXAMINATION AND PREPARATION

A. Remove all dirt, oil, grease, efflorescence, laitance, curing compounds, existing paint, and other surface contaminants.

B. For masonry or concrete surfaces, point and / or fill holes 3/8 inch or larger. Surface shall be free from honeycombs, holes or voids.

C. Surfaces shall be thoroughly dry. Application of finishes over rust, dirt, and foreign substances will be cause for rejection.

D. Completely mask, remove, or otherwise adequately protect hardware, accessories, or other adjacent surfaces.

E. Contractor shall insure that all items that would normally be attached to the exterior wall are not in place or removed prior to painting be commenced; or that the wall has been painted with all required coats prior to the item being installed. Items falling in the category would include gutters, downspouts, leader boxes, electrical switchgear, electric meters and conduit, light fixtures, wall signs, coping and any architectural embellishment.

F. Contractor shall verify that surface preparation is complete to the point that finishes may be properly applied and contact the appropriate vendor to schedule an inspection to determine if the project is ready to receive paint and or coatings.

G. Upon completion of the paint vendor's inspection, if a "not ready" or "do not paint" order is issued, Contractor shall pursue any remedial work required to its completion and then have paint vendor re-inspect the project to determine acceptability of surfaces.

H. If the above issued orders are a result of weather conditions, Contractor shall immediately contact AutoZone's project manager for further instructions.

3.02 APPLICATION GENERAL REQUIREMENTS

A. Start all applications of paint or coating materials at the top of the wall and work your way down to the bottom of the wall.

B. Cover entire wall surface with primer and wall color finish coats before applying any of the red, orange or white graphic bands.

C. Apply all materials in strict accordance with these specifications and the manufacturer's technical data sheets paying particular attention to the temperature requirements of the coating material, substrate surface and the ambient air, as well as recoating or over coating times. Apply additional coats as required to achieve coverage and appearance if the specified number of coats does not achieve full coverage.

D. Produce all coats so that the dry film thickness "DFT" is within the range specified for each product.

E. Pin Hole Free shall mean the following; for blockfiller no breaks in the surface coat where the underlying surface of the block shows through, and for the finish coat, no breaks in the surface where either the underlying white blockfiller coat or the actual surface of the masonry shows through.

3.03 APPLICATION OF BLOCKFILLER

A. Surfaces must be dry with a moisture content of 15 percent or less and with a ph range of 6-12.

B. Apply block filler by brush, roller, or heavy-duty airless or air-assisted texture spray equipment.

C. Using a clean, damp 3/4-inch to 1-1/4 inch nap roller, work the spray coat in a horizontal direction to fill all pores, cross-roll uniformly on the wall, maintaining a wet edge. Keep rollers fully loaded with materials and apply sufficient amounts to fill all pores.

D. Finish application in one directional pass from breakpoint to breakpoint. Do not stop applications in the middle of the wall and avoid overlap.

E. Blockfiller must cure for a minimum 4 hours prior to top coat application.

F. Do not apply block filler over elastomeric sealant materials. Maintain substrate expansion joints as recommended by coating manufacturer.

G. Air and surface temperatures must not drop below 35 degrees F for 48 hours after application.
   1. Recoat @ 55 degrees F+ Latex – 8 hours; Alkyd and HP Coatings – 48 hours
   2. Recoat @ 35 to 55 degrees F Latex – 24 hours; Alkyd and HP Coatings – 48 hours

3.04 TOP COAT APPLICATION over BLOCKFILLER

A. Apply topcoat smooth by brush, roller, or spray, and back roll methods as per the manufacturer's coverage instructions. Finish coating materials so that brush and roller strokes are in one uniform direction. Two coats are required, allow first coat to dry thoroughly before recoating. Follow manufacturer's printed instructions with regard to drying time between coats.

B. Tolerances: Finish system to be pinhole free.

3.05 PREPARATION OF METAL SURFACES

A. Clean surfaces thoroughly with solvent and allow surface to dry thoroughly before applying paint.

B. Treat new galvanized metal surfaces with a chemical etching compound as recommended by the paint manufacturer. Remove excess etching solution and allow surface to dry completely before applying first coat of paint.

3.06 PAINT APPLICATION

A. Apply finishes in strict accordance with the manufacturer's printed directions.
B. Access doors or panels, exposed pipes, and raceways shall be painted to match adjacent surface except where color-coding is specified.
C. Primer, where indicated on painting schedule, may be omitted where shop coat primer has been applied. Touch up metal surfaces with the specified primer as required. Do not apply subsequent coats of paint to bare metal.
D. Pre-finished painted roof structure such as bar joists, joist girders and bridging shall be touched up under this contract. AutoZone's steel bar joist vendor shall supply touch-up paint.

3.07 INTERIOR WALL GRAPHICS (If Required)

A. Transfer graphics to wall surface by either using AutoZone furnished pounce pattern or by dimensionally locating and masking off.
B. Install correct primer under all finish coats. See drawings for final finish color requirements.

3.08 INSPECTION and TESTING

A. Upon completion of the exterior painting, but prior to the interior being completed and the painting sub contractor leaving the job site, Contractor shall contact the paint manufacturer's representative to come and perform their specific tasks with regard to inspections.
B. At the completion of the inspections written reports and or comments will be given to both AutoZone and the Contractor for review. All work not meeting the specified requirements shall be immediately corrected at no additional cost to AutoZone.
C. Corrected work shall be re-inspected and all costs associated with that process shall be borne by Contractor.
D. The intent at the completion of this process is to have the paint manufacturer issue the warranty to AutoZone.

3.09 WARRANTY

A. Warranty for all new painting shall be issued by the paint manufacturer for three (3) years and shall cover both labor and material. Without limiting the warranty, the work shall be warranted not to:
    1. Noticeably discolor, yellow, streak, bloom, bleach, or darken.
    2. Peel, crack, blister or alligator.
    3. Release from the substrate or intermediate coats.
    4. Chalk or dust excessively.
    5. Stay tacky or become tacky.
B. After the first year, fading and changes in gloss shall be measured against predetermined standards supplied to and accepted by AutoZone.
C. Any area or surface requiring re painting under the warranty shall be done corner to corner.
D. Contractor shall warrant that the exterior walls, copings, parapet flashings will be watertight for the same period as the paint warranty. Contractor shall immediately repair any failure not cause by the direct action of AutoZone. Paint failures that are the result of water or moisture getting into the wall shall be the responsibility of Contractor to repair and re-paint.
E. Contractor shall review at the first job site meeting all requirements of this section of the specifications to insure that everyone understands the importance maintaining high level of quality and workmanship.
F. Paint manufacturer shall issue warranty to Contractor in AutoZone's name and warranty shall commence at the date of Project Completion.

End of Section

DIVISION 9 – SECTION 09986 SANITARY WALL PANELS

PART 1 GENERAL

1.01 DELIVERY AND STORAGE OF MATERIALS

A. All materials shall be inspected upon delivery and defects reported. Remove panels from shipping skid and restack on a solid, flat, dry surface. Do not stack on fresh concrete floors or other surfaces that may emit moisture. Lay panels flat, do not store on edge. Damaged or deteriorated materials shall be removed from premises.

B. Panels shall be acclimated at least 24 hours in temperature and humidity conditions approximating the operating environment of the finished room before being installed.

PART 2 PRODUCTS

2.01 FIBERGLASS REINFORCED PANELS

A. Panels for the restrooms shall be equal to Structoglas, smooth surface, white, Fire Retardant (Class A), fiberglass reinforced wall panels, 0.09 inch thick, 48 inches wide and 96 inches long.

B. Panels to be mounted to wall behind the battery charging station shall be equal to Structoglas, pebble texture surface, black, Fire Retardant (Class A), fiberglass reinforced wall panels, 0.09 inch thick, 48 inches wide and 96 inches long.

C. Black FRP panels are available from the following web sites:
   1. Eplastics.com telephone 800-474-3688
   2. F V Vleck.com telephone 410-276-8500

2.02 MOLDINGS AND TRIM

A. Moldings and trim for white panel only shall be panel manufacture's standard one-piece or two-piece, non-staining, extruded vinyl moldings.

2.03 FASTENERS AND SEALANT

A. Fasteners shall be panel manufacturer's standard non corroding mechanical type, truss head nylon drive rivets, or stainless steel screws. Fastener holes must be pre-drilled slightly over sized.

B. Sealant shall be clear silicone per panel manufacturer's recommendations.

C. Adhesive for mounting the black panels to the shall be as recommended by the panel manufacturer.

PART 3 EXECUTION

3.01 INSTALLATION OF RESTROOM PANELS

A. Verify that gypsum board subsurface is flat, clean, dry and free from all dirt, dust or grease prior to commencing installation of panels. Panel installation shall be per manufacturer's printed instructions.

B. Lay-out and cut panels to fit from floor to ceiling leaving not less than 1/4 inch gap at ceiling and floor, and 1/8 inch gap between panels.

C. All exposed panel edges shall receive and be finished with an appropriate molding or trim.

D. Allow not less than 1/8-inch gap around all pipes fittings and projections.

E. Install fasteners no farther than 8 inches apart around the outside edges and 12 inches apart on intermediate 16 inch centers. Stagger fasteners on opposing panel edges. Fasteners on outside edges shall be located 1 inch from panel edge.

F. Alternative installation, panels maybe glued to the backer board per manufacturer's instructions.

G. Seal all corner seams, ceiling and base junctures, and fastener holes with clear silicone sealant.

3.02 INSTALLATION OF CHARGING STATION PANELS

A. Verify that gypsum board subsurface is flat, clean, dry and free from all dirt, dust or grease prior to commencing installation of panels. Panel shall be glued to the gypsum board per manufacturer's printed instructions.

B. Panels shall be butt jointed together and no trim will be required around the perimeter

End of Section

DIVISION 10 – SECTION 10426 SIGNAGE
(AutoZone Furnished and Installed Contractor Coordinated)

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. The specifications contained in this section cover both wall mounted and freestanding signs. This signage will be AutoZone furnished and installed; however, General Contractor will be responsible for coordination and in some instances the furnishing and installation of the freestanding sign support pipe (see paragraph C. below) as well as directing and cooperating with the installer performing the installation.

B. AutoZone's sign vendor will be responsible for the following:
   1. Manufacturing all signage for the project unless noted otherwise in the drawings.
   2. Identifying and contracting with the installer to be used for the project and communicating that information to the General Contractor.
   3. Securing all required sign permits by the time the project commences construction.
   4. Shipping all signage, drawings and instructions to the installer within two (2) weeks after commencement of construction, unless a remodel project which will require a faster response.
   5. Installation of all project signage as shown on the drawings.
   6. Final cleaning of all signage that vendor has manufactured for the project.
   7. Removal of any debris created by the installing subcontractor.

C. General Contractor / Developer will be responsible for the following:
   1. Staking the location of the freestanding sign and insuring that the site for the freestanding sign is to grade as well as the building walls are ready to commence the sign installation no later than one (1) week before the "Set-up In Date". Failure to meet this time table may result in penalty or fee being assessed against the General Contractor / Developer.
   2. Furnishing and installation of support pole and foundation for all monument signs 20 feet or less in height that have "masonry" as a part of the sign base.
   3. Furnishing and installation of all "masonry" which is a part of any freestanding sign base no matter what height the sign is.
   4. Furnishing and installation of conduit and wire to provide an electrical circuit for the freestanding sign.
   5. Provide an electrical sub-contractor who will make all final electrical connections and run all primary wiring for sign circuits so that sign installer can confirm that all signage is working properly prior to his leaving the job site.
   6. Provide general coordination that will allow the installing contractor access to the areas of the project where signs are to be installed.
   7. Use of the project's dumpster to discard any waste material generated by the sign installation.

D. AutoZone will pay sign vendor directly for the manufacturing, shipping and installation of project signage with the exception of those portions of the freestanding sign that the General Contractor / Developer will be responsible for.

1.02 SIGN TYPES

A. Wall Signs:
   1. Channel Letter Signs: Internally illuminated, individual metal channel letters with polycarbonate faces either attached to the face of the wall or pre-mounted on a metal raceway which is then attached to the face of the wall. (The sign is made up of multiple letters that fit together with the overall size and location to be indicated on drawings.)

B. Freestanding Signs:
   1. Exposed Support Pole Signs: Internally illuminated and consisting of a metal cabinet with either "flex-face" faces or rigid faces supported by a single pole. The sign will be attached to its required foundation per engineered drawings, with the overall size and height of sign to be as indicated on drawings.
   2. Covered Support Pole Signs: Internally illuminated and consisting of a metal cabinet with either "flex-face", pan-formed, push-through letters, or vinyl on modified acrylic faces supported by a single pole which is then covered with other material to form a closed base. The sign will be

attached to its required foundation per engineered drawings with the overall size and height of this sign to be as indicated on drawings.

1.03 ELECTRIC REQUIREMENTS

A. Unless otherwise specified, all wall and freestanding signs are to be illuminated with appropriate LED lighting. Lamp spacing shall be per the drawings and provide an overall even level of illumination.
B. All signs must be built to Underwriters Laboratories (UL) specifications, using UL approved component parts. Each new electric sign shall bear the UL label which shall be installed in plain view according to local code requirements.
C. Each new sign shall be provided with a waterproof external disconnect safety switch, located as required by codes.
D. Sign vendor shall provide all wiring within the sign, between the sign and the LED drivers, and between the drivers and the junction box containing the home run circuit. The General Contractor's electrical subcontractor will make the final electrical connection to the home run circuit.

1.04 CODE REQUIREMENTS

A. If a conflict arises between any code requirement and what is shown or called for in the drawings and / or specifications the more stringent shall govern.

1.05 SIGN WARRANTIES

A. All warranties shall commence from the later of the date the store opens for business or the date of the sign installation and run for the period attributable to each item. Sign vendor shall be responsible for all warranties and shall respond to each request for warranty work within 24 hours of the request being made and shall have the work completed within 7 days after the agreed to problem and fix have been determined unless a later date has been agreed to by both parties in writing.
B. Channel letter sign faces along with Jewelite trim shall be warranted for a period of ten (10) years against all defects including but not limited to fading, discoloration and delamination along with any changes that would cause the sign to become visually unacceptable. Exceptions to be made for damage caused by Acts of War, Vandalism, and Weather Related Events.
C. Flex face substrate with UV protective over-laminate shall be warranted for a period of eight (8) years against fading, discoloration and delamination.
D. LED lighting, power supplies and other components shall be warranted for a period of five (5) years against all defects.
E. All other aspects of the sign including but not necessarily limited to metal cabinets, channel letters, and steel supporting structures shall be warranted for a period of one (1) year against all defects including fit, finish and merchantability.

PART 2 PRODUCTS

2.01 MATERIALS

A. Channel Letters:
   1. Letter / Stripe Sides and Back: Aluminum .063 inches thick and painted gloss black on the exterior of the letter / stripe and white on the interior. Dry film thickness shall be 2.2 mils minimum and 2.5 mils maximum.
   2. Letter / Stripe Face:
      a. For letters up to 54" in height: Pigmented Plexiglas 3/16 inch thick, colors red #2662 and orange #2119.
      b. For letters over 54" in height: Lexan 1/4 inch thick with pressure sensitive vinyl on the first surface. Arlon red vinyl to match PMS 485 and Arlon orange vinyl to match PMS 165.
   3. Trim: For letters 60" high and greater black 2 inch Jewelite or Gem trim, with #10 sheet metal screws for attachment. For all other letter sizes black 1 inch Jewelite or Gem trim, with # 8 sheet metal screws for attachment.
   4. Raceway for Mounting Letters: Where required shall be aluminum .080 inches thick four sided, weather resistant, sized as shown on drawings, with a removable face for access to power supplies. Raceways shall be painted to match the background color of the wall it is mounted on.

5. Raceway for Drivers and Wire: Shall be aluminum .063 inches thick four sided, weather resistant, with a removable face for access to power supplies and sized to accommodate drivers and wiring. Raceways shall be painted white.
6. LED Lighting: General Electric Tetra Max LED System as manufactured by GE Lighting Solutions. Each module shall have three (3) LED's and there shall be two (2) modules per foot. LED's within letters shall be red and within stripes shall be orange. The number of power supplies shall be determined by the number of modules within the sign and in strict accordance with LED manufacturer's requirements.
7. Paint: Acrylic enamel polyurethane as manufactured by Matthews Paint Company, Pleasant Prairie, WI. Colors shall be series 42-204 Gloss Black and 42-202 White.
8. Wall Anchors: Non-corrosive, minimum 3/8 inch diameter, threaded rod for through bolting, toggle bolts for EIFS locations and lag bolts and shields or 3/8" diameter by 3" long tapcons with washers for masonry locations. Length of fastener unless specified shall be appropriate for the thickness of the substrate material.

B. Freestanding Signs:
1. Cabinets: Constructed of extruded aluminum angles and components having a minimum thickness of .125 inch and sheet aluminum fillers having a minimum thickness of .063 inch.
2. Cabinet Supporting Structure: Constructed of steel of size and thickness required for wind loads all as called for on approved prototype or engineered drawings.
3. Support Pipe: Constructed of steel of a diameter and thickness as required and called for on engineering drawings for each project. Support pipe may be either direct bury or have base plate and anchor bolts per project drawings.
4. Anchor Bolts (if required): Steel complete with fastening and leveling nuts and washers and of sizes and shapes as shown on drawings.
5. Paint: Acrylic enamel polyurethane as manufactured by Matthews Paint Company, Pleasant Prairie, WI. Colors shall be series 42-204 Gloss Black and 42-202 White.
6. Vents: Two inch round aluminum located per drawings.
7. Faces: For the two smallest size cabinets (210 and 313) 1/4 inch Lexan with pressure sensitive vinyl decoration on the first surface. For all other size cabinets Cooley – Bright white flexible substrate, 20 oz / sq. yd., full width of sign. Decoration will be Arlon 2500 series pressure sensitive vinyl. All faces shall receive a UV protective over-laminate once the decoration has been applied to the substrate as recommended by Cooley Commercial Graphics. For replacement panel in existing freestanding signs, Arlon pressure sensitive vinyl film applied to first surface white pigmented impact modified acrylic panels. Colors to match:
AutoZone Red PMS 485
AutoZone Orange PMS 165
8. LED Lighting: General Electric Tetra PowerStrip DS LED System as manufactured by GE Lighting Solutions. LED's shall be white 6500K minimum. The number of power supplies shall be determined by the number of modules within the sign and in strict accordance with LED manufacturer's requirements.
9. Grout: Non-shrink with 2500 psi compressive strength.

PART 3 EXECUTION

3.01 SIGN FABRICATION

A. Channel Letter Assembly:
1. Once individual letters have been formed, install LED modules in the number required by drawings and attach to inside back of the channel letter per LED manufacturer's printed instructions.
2. Take the lead wires thru the back of the channel letter at the very bottom of the letter to maximize the possibility of the wiring ending up inside the building below the roof line. Provide a minimum of 20 feet of wire for each letter.
3. When installing the Jewelite trim ensure the screw spacing does not exceed ten (10) inches and that every surface / face has at least one screw.
4. For letters that require 2 inch jewelite trim install two screws one inch apart vertically with the same requirements as outlined in item 3 above.

5. Prepare all required hardware for installation and package separately for crating and shipping to installing subcontractor.

B. Freestanding Cabinet Assembly:
   1. Refer to drawings for the size and location of all cabinet framing and bracing members, LED lighting modules, wiring, access panels, vents and drain holes. Install and wire all components, check to ensure that all LED modules are working prior to making the sign ready to ship.
   2. For freestanding signs with no support pipe enclosure, all LED drivers are to be mounted in waterproof enclosures mounted to the support pole of the sign at a height of 12 feet above the finished grade at the base of the sign. Provide enough wire in the cabinet to insure when the sign is erected the drivers can be connected. For freestanding signs where the support pipe is contained within an enclosure, the LED drivers are to be located and mounted within the sign cabinet.
   3. Layout graphics for sign faces per dimensioned drawings for each size sign. Insure that pressure sensitive vinyl is fully adhered to either the rigid Lexan face or the flexible face substrate with no loose edges, wrinkles or bubbles. For flexible substrate faces, once graphics have been installed install UV over-laminate protective layer.
   4. Install faces making sure graphics are square to and located correctly from the edges of the cabinet. For flexible substrate faces make sure the faces are tensioned correctly.
   5. Based on the ultimate configuration of the sign if default access panels will not provide all needed accessibility (connection of cabinet structure to support pipe and access to LED lighting modules) inside the cabinet, provide additional access panels or other types of access to be able to make final connections between cabinet and support pipe as well as provide maintenance access for the LED lighting modules.
   6. Prepare all required hardware for installation and package separately for crating and shipping to installing subcontractor.

C. Support Pipe Assembly:
   1. Fabricate support pipe to correct overall length as required by the project engineering drawings, if additional pipe needs to be added to achieve the overall height required, the welded joint should be encased in the concrete foundation if at all possible, provide holes in the correct locations for the incoming primary electric power as well as wiring to the LED drivers.
   2. If required by the project engineering drawings fabricate base plate and anchor bolts. Attach base plate to support pipe as required by the project engineering drawings.
   3. Paint the section of the support pipe that will be inside the sign cabinet white and the balance of the pole black.
   4. Fabricate LED driver enclosures as well as the supporting structure that will be used to field attach the driver enclosures to the support pipe and paint to match support pipe.
   5. If transitions are required in the support pipe due to the overall height of the sign, fabricate all rings, plates, gussets and other elements as detailed and called for on the project engineering drawings.

3.02 SIGN INSTALLATION

A. General:
   1. Installation procedures and requirements itemized below are the same for all sizes and lengths and types of signs.
   2. The sign installer shall inspect all components for shipping damage; all visible damage must be noted on the bill of lading at the time of receipt of the signs; hidden damage must be reported within 72 hours of receipt of signage otherwise shipping company shall have no responsibility for replacements. Exercise caution in removing the crating material used to protect the sign during shipping.
   3. The use of ladders, scaffolding or a sign crane in the process of installing signs must be in compliance with the requirements of the Code of Safe Practice for Contractors / Suppliers as well as OSHA and any local requirements.
   4. Make sure that all power to sign junction boxes as well as power to any overhead line in the area of installation is turned off prior to commencing installation.
   5. All work must comply with either local electrical code or the latest version of the National Electric Code which ever is the more stringent.

6. All work associated with the installation of signage must comply with local zoning, building and safety requirements; and all required permits must be issued and in hand prior to beginning any work on the site.
7. Inspection requests and compliance with local codes and inspections shall be the responsibility of the sign vendor and his installing sub-contractor. Final inspection documents issued by the approving agency shall be provided to AutoZone upon completion of the work.
8. All preparatory work required for the installation of all signs shall be accomplished so that the signs could be installed the week prior to the commencement of store fixturing.

B. Channel Letter Signs:
1. Measure and layout sign location to match the approved elevation drawings. Fasten the installation layout pattern furnished by the sign manufacturer in the proper location on the building wall face. Ensure pattern is centered on painted orange graphic band and / or is located per all dimensions on the elevation drawings. If drawings are incomplete or missing dimensions, contact AutoZone before proceeding with the installation.
2. Locate, mark and drill all electrical and attachment penetrations per the pattern.
3. After mounting location has been finalized and the penetrations have been completed, remove the pattern and begin mounting individual letters to either the building or to the raceway, depending on the type of installation called for. Secure all fasteners and inspect workmanship for proper mounting. Repeat for each letter and stripe.
4. Locate power supplies (LED Drivers) relative to the LED modules they serve per LED manufacturer's recommendations. All drivers must be installed in a metal raceway and if the raceway is to be exposed to the weather it must be waterproof. Attach the power supply using #8 or #10 screws within their boxes, maintain a 0.5 inch clearance from any side of the driver to the walls of the enclosure or any other obstruction. If more than one letter is to be attached to a single driver, ensure that each of the supply wires is the same length. Each letter will come with 20 feet of supply wire attached to the letter.
5. All wiring between individual letters and drivers or between drivers and the home run junction box shall be installed in either flexible / rigid conduit or a metal raceway depending on the location of the sign wiring. If located inside the building and visible, then all components shall be installed in a continuous metal raceway painted white and the raceway shall cover the home run junction box for that sign. If located inside the building but concealed, then wiring may be in flexible conduit and power supplies in individual boxes.
6. All raceways and wiring shall be located and /or positioned so that merchandise fixtures and merchandise are not impacted in any way.
7. Set dip switches relative to each letter or stripe in accordance with manufacturer's printed instructions and the requirements of installation drawings from the sign manufacturer.
8. General Contractor's electrical sub-contractor will make the final electrical connections to energize the sign.
9. Test light the sign and inspect all components to ensure all LED's are illuminating properly; repair and / or replace all components that are not working with like specified material. Confirm that all cut off toggle switches are in the on position, drain holes are free and clear and there is no debris left inside the cabinet, then reinstall faces. Install sealant at all required locations to ensure a watertight sign.
10. Clean sign faces per the requirements of paragraph 3.03 below.

D. Freestanding Support Pipe:
1. Installing Contractor (see Section 1.01 C above) shall construct foundation which may be either an anchor bolt type foundation with the anchor bolts furnished by the sign manufacturer or a direct bury type of foundation all as called for per the signed and sealed engineering drawings for the project. Do not set sign cabinet until concrete has properly cured and reached specified design strength.
2. Insure conduit for primary electrical feed is in place and the wire is routed up through the support pipe and out of the hand hole or the top of the supporting pipe structure in the case of a sign that will have a support pipe enclosure prior to setting the pipe and pouring the direct bury foundation.
3. If required, install support pipe enclosure per project drawings. If the enclosure material is other than masonry, install underlying support structure to the main support pipe. Install the enclosure

material after the sign cabinet has been put in place to insure a correct fit and closure between the base covering and the sign cabinet. For masonry base closures, insure the joint between the bottom of the sign cabinet and the top of the masonry is properly closed and sealed to prevent water from entering the sign base.

4. Install supporting structure for LED driver enclosures as well as the enclosure boxes themselves. The boxes are to be located ten feet above the finished grade at the base of the sign. For those installations where the support pipe is enclosed the LED drivers are to be located within the sign cabinet.
5. Once all elements have been put in place touch up support pipe paint.

E. Freestanding Cabinets:

1. Sign installer is to energize sign cabinet to check for proper lighting, confirm that all drain holes are free and clear and there is no debris left inside the cabinet, correct all deficiencies before placing sign straps thru eye bolts on top of the cabinet and lifting sign from crate allowing secondary wiring to hang out of the bottom of the cabinet. Installer to drop secondary wiring down pole to the hole in the support pipe where the driver enclosures are to be mounted and then allow the cabinet to slide over the support pipe until the support pipe make contact with the support saddle within the cabinet. Installers to adjust and level the sign cabinet to its proper position as called for on the drawings, then, weld the support saddle to the support pipe inside the cabinet. Welds are to be uniform around the circumference of the pipe. Installer to touch-up steel pipe with gloss black where strap marks show and paint welded areas at the top of the structure as well as all exposed steel at the bottom of the structure gloss black.
2. Touch up any painted surface that may have been damaged during the erection process.
3. Clean sign faces per the requirements of Paragraph 3.03 Cleaning.

3.03 CLEANING

A. General

1. Do not use any solvent based or abrasive cleaners.
2. Do not use steam cleaners, pressure washers, or hot water.
3. Do not use compressed air to clean any part of any sign.
4. Do not attempt to clean sign while the sign is energized.

B. Supplies Required

1. Mild detergent cleaner like Meguiare's soft car wash gel.
2. Clean car wash mitt or soft cloth.
3. Bucket filled with cool water.
4. Standard lawn and garden hose.
5. Low pressure cold water source (less than 100 psi).
6. Terry cloth towels or chamois.
7. Shop vac with brush attachment.
8. 2" or 4" paint brush or soft parts brush.

C. Sign Exteriors

1. Rinse the loose dirt off the outside of the sign using the hose and a low pressure cold water supply. Always point the hose down at a 45 degree angle. Start at the top of the sign and work your way down. Do not direct any water into any vents or louvers.
2. Thoroughly mix a small amount of the detergent with the cool water in the bucket.
3. Using the wash mitt or soft cloth, gently wipe the sign and faces with soapy water in a circular motion. Start at the top of the sign and work down to the bottom.
4. Rinse off the outside of the sign as well as the faces using the hose and a low pressure cold water supply. Always point the hose down at a 45 degree angle. Start at the top of the sign and work your way down. Do not direct any water into any vents or louvers
5. Dry sign faces with soft terry cloth towel or chamois.
6. For freestanding signs, wash poles and cabinets with the same solution. Rinse poles, cabinets and faces off using hose, always pointing hose down at a 45 degree angle. Start at the top of the pole and work your way down. Rinse the faces last and be sure to remove all soapy residue.

End of Section

DIVISION 10 – SECTION 10800 TOILET ACCESSORIES

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS

A. Contractor shall furnish and install all toilet accessories, as well as provide any other items necessary to provide for a complete project meeting all local or governing requirements whether items are specifically scheduled or not.

B. All accessories are surface mounted provide all concealed blocking required to anchor each item.

PART 2 PRODUCTS (Provide only as scheduled below)

2.01 MATERIALS

A. Men's Toilet
   1. Toilet Paper Holder - InterDesign-White.
   2. Paper Towel (roll) Holder – InterDesigns-White.
   3. Grab Bar 36 inches long - Bobrick #B-5806.99x36.
   4. Grab Bar 42 inches long - Bobrick #B-5806.99x42.
   5. Framed Glass Mirror - Bobrick #B-165, 18x36, 18 inches wide by 36 inches high.
   6. Mop Holder - Bobrick #B223 x 24 inches long (mounted above mop sink).

B. Women's Toilet
   1. Toilet Paper Holder - InterDesign-White.
   2. Paper Towel (roll) Holder - InterDesigns-White.
   3. Grab Bar 36 inches long - Bobrick #B-5806.99x36.
   4. Grab Bar 42 inches long - Bobrick #B-5806.99x42.
   5. Framed Glass Mirror - Bobrick #B-165, 18x36, 18 inches wide by 36 inches high.

C. InterDesign toilet paper and towel holders are available through:
   T & D Maintenance Supply
   2312 Rocky Cove Lane
   Denton, NC 27239
   Attn: Thomas N. Booe
   Tel. 704-791-0012
   Email: tom@tndsupply.com

PART 3 EXECUTION

3.01 INSTALLATION

A. Install all accessories plumb, level and securely anchored into position.

B. Install all toilet accessories in strict accordance with manufacturers printed instructions.

C. All anchoring devices shall be placed into concealed blocking.

End of Section

DIVISION 15 – SECTION 15410 PLUMBING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Include all labor and material (unless noted otherwise) required to complete all plumbing work called for in the Contract Documents or required by approving authorities. Work shall include, but not necessarily be limited to the following:
   1. Storm water and or roof drainage piping system
   2. Gas piping
   3. Sanitary drainage and vent system piping
   4. Hot and cold domestic water system piping (See Section 15425 for PEX Piping)
   5. Condensate piping
   6. Pipe supports and insulation.
   7. Valves and cocks
   8. Plumbing fixtures
   9. All existing drain and sewer lines are to be cleaned from tie-in back to tap at main

1.02 UTILITIES and SERVICE

A. See Section 01010 for specific requirements

PART 2 PRODUCTS

2.01 GENERAL

A. Materials first listed below have been done so in order to meet all general code and ordinance requirements. Alternative materials may be used if approved by the local governing authority and AutoZone.

2.02 PIPE

SERVICE	MATERIALS
A. Soil, Waste & Vent (inside bldg.)	A. Cast Iron, or PVC-DWV with NSF Seal)
B. Soil & Waste (outside bldg.)	B. Cast Iron, or PVC-SDR
C. Domestic Water (below grade)	C. Pex Pipe
D. Domestic Water (above grade)	D. Pex Pipe
E. Domestic Water Main (to within 5' of bldg.)	E. Pex Pipe
F. Condensate	F. PVC
G. Natural Gas (above grade)	G. Schedule 40, Black Steel
H. Natural Gas (below grade)	H. Schedule 40, Black Steel with factory applied protective coating.

2.03 JOINTS AND COUPLINGS

SERVICE	MATERIALS
A. Soil, Waste & Vent (inside bldg.)	A. Cast Iron bell & spigot, mechanical, or PVC-DWV
B. Soil & Waste (outside bldg.)	B. Cast Iron bell & spigot, mechanical, or PVC-SDR, bell and flexible elastomeric rings.
C. Domestic Water (below grade)	C. Pex pipe compatible fittings, no joints shall be allowed under building pad.
D. Domestic Water (inside above grade)	D. Pex pipe compatible fittings
E. Condensate (inside bldg.)	E. PVC-DWV
F. Natural Gas	F. Steel, under 2 inch threaded, over 2 inch welded

2.04 PIPE INSULATION

SERVICE	MATERIALS
A. Domestic Cold Water Piping	A. Imcolock and Imcolshield Polyolefin ½ inch thick
B. Domestic Hot Water Piping	B. Above grade - Same as cold water piping. Below grade - Closed cell pipe insulation 3/8 inch thick suitable for underground use.
C. Condensate	C. Same as cold water piping when located indoors.

2.05 VALVES AND COCKS

A. Valves and cocks shall be selected to suit the function intended and sized to connect to adjoining piping.
B. Acceptable Manufacturers:
   1. Crane
   2. Jenkins
   3. Lunkenheimer
   4. Nibco-Scott
   5. Nordstrom

2.06 DRAINS, CLEANOUTS and HYDRANTS

A. Floor Cleanout: Cast iron body with tapered bronze plug, threaded adjustable nickel bronze top and round satin nickel secured scoriated access cover, Wade 8130AF, Zurn Z-1400, or Smith 4890.
B. Wall Cleanout: Cast iron ferrule with spigot outlet and threaded brass countersunk plug drilled and tapped for 1/4 - 20 screw. Provide round stainless steel access cover with 1/4 - 20 x 3-1/2 center screw, Wade 8550 and 8480R, Zurn Z-1441, or Smith 4436.
C. Grade Cleanout (Paving): Cast iron body with tapered bronze plug, threaded adjustable nickel bronze top and round satin nickel secured scoriated access cover, Wade 8130AF, Zurn Z-1400, or Smith 4890.
D. Grade Cleanout (Landscape): PVC hub with raised head plug.
E. Wall Hydrant: 3/4 inch non-freeze, with straight inlet connections, anti-siphon backflow preventer, bronze casings, and chrome plated bronze box with locking cover; size to suit wall construction, Wade series 8600-175, Zurn Z-1305, or Smith 5509QT.
F. Yard Hydrant: 3/4 inch non-freeze, with straight inlet connections, as manufactured by Woodford Manufacturing Co. See drawings for specific model required.
G. Floor Drain (if required): One piece cast iron body for installation in an unfinished structural floor slab; with nickel-bronze strainer, secured slotted grate, and trap primer if required, Wade 1100STD, Zurn Z-315, or Smith 2005.
H. Roof Drain (if required): One piece cast iron roof drain with flashing ring and polypropylene mushroom dome, Wade 3220, Zurn Z-121, or Smith 1010.

2.07 WATER HEATER (AutoZone Furnished Contractor Installed)

A. Electric Water Heater: 4 Gallon mini tank with electrical connections by Electrical Contractor.

2.08 BACKFLOW PREVENTER (if required by code)

A. Watts No. 909 series reduced pressure backflow preventer. Provide with air gap and drain line to the mop sink. If unit is installed, Contractor shall test the entire system, make repairs or adjustments as required, and tag all valves.

2.09 PLUMBING FIXTURE SCHEDULE

	American Standard	Kohler	Eljer
P-1 Toilet (elongated)			
1.6 gpf	"Cadet 3" #2386.800 R.H. "Cadet 3" #2386.012 L.H.	"Highline" #K-3427	"Patriot" #091-2125

Flush controls shall be handed so that the control will be on the side adjacent to the lavatory

P-2 Lavatory	"Lucerne" #0355.012 "Greenwich" #2032 "Delwyn" #051-1634
Faucet	Moen #8800, 4 inch centers, 4 inch wrist blade with 1/4 turn handles, washerless cartridges, and Moen #116711 1.5 gallon per minute aerator.
Drain	Moen offset chrome plated tailpiece.
P-3 Service Sink	Fiat #MSB-2424 or Mustee #63M
Faucet	Moen #8124
P-4 Water Fountain	Handicap accessible dual height: Elkay EZTL-8C or Halsey Taylor HTV8BL-Q
P-5 Urinal (if Req'd.)	"Trimbrook" #6561.017 "Bardon" #K-4960-T "Savon" #161-1090
Flush Valve	Sloan #186-1 or Zurn #Z6003AV-EWS or A/S 6045.101

PART 3 EXECUTION

3.01 PIPE and JOINT INSTALLATION

A. Install piping concealed unless otherwise specifically approved by Owner.
B. Provide uniform pitch of 1/4" per foot for horizontal waste and soil piping within building unless noted otherwise on drawings. Pitch bends for proper drainage
C. Install vent piping with each bend 45 degrees minimum from horizontal.
D. Where water piping penetrates floor or walls, accurately place non-metallic sleeves of proper sizes to accommodate pipe and insulation. After installation, completely seal all penetrations.
E. Provide clearance for installation of insulation and for access to valves, drains and unions.
F. Install piping to allow for expansion and contraction without stressing pipe or connected equipment.
G. Apply insulation to clean, dry surfaces only, in accordance with manufacturer's printed instruction. Do not use staples.
H. Insulation shall be continuous through hangers, sleeves, openings and around fittings, valves and unions.
I. Insulate all water piping.

3.02 VALVE INSTALLATION

A. Install valves with stems upright or horizontal, not inverted.
B. Install ball valve for shutoff and to isolate equipment.
C. Provide plugs cocks for gas service at entry to building and *at* equipment.
D. Gas pipe sizes 2 inches and smaller will be threaded.

3.03 BURIED PIPE INSTALLATION

A. Install all below grade so that it will be continuously supported for its entire length.
B. Provide a minimum of 18-inch earth cover for exterior water piping. Where frost depth exceeds 18 inches provide earth cover as required by local code.
C. Install waste lines outside the building lines at a minimum slope of 2 percent unless indicated otherwise in drawings.
D. Install same type piping material specified for inside building to 5 feet outside of building.
E. Coat below grade gas piping with asphaltum paint. Protect from damage during back-filling.

3.04 FIXTURE INSTALLATION

A. Set fixtures square, plumb, and rigidly secured in place in accordance with all printed instructions.
B. Install toilets so the flush control will be on the open side of the toilet adjacent to the lavatory in order to meet the handicapped requirements.
C. Install wall mounted fixtures with wall carriers to suit conditions and occupancy use.
D. Provide chrome plated traps and tailpieces and escutcheons where exposed to view.
E. Provide insulating and protective devices for all exposed plumbing under lavatories as required by handicapped codes.
F. Install piping to hot water heater in accordance with the water heater manufacturer's instructions.
G. Run piping for exterior wall mounted hose bibs, if required or shown on the drawings, overhead and down inside face of masonry wall on the warm side of insulation. Water line concealed in drywall shall be insulated. Provide cut-off and winterization vent valve in water line at under side of roof deck before line turns down wall.
H. Install yard hydrant in strict accordance with manufacturer's printed instructions.
I. Lubricate cleanout plugs with mixture of graphite and linseed oil. After grade pads have been poured and prior to final inspection, remove cleanout plugs, relubricate and reinstall using enough force to ensure a permanent, leak-proof joint.

End of Section

DIVISION 15 – SECTION 15425 PEX PIPING

PART 1 GENERAL

1.01 WORK INCLUDED

A. Domestic potable hot and cold water plumbing system, where shown on the Drawings and Schedules, shall be crosslinked polyethylene pipe, and shall include the following:

1. Crosslinked polyethylene (PEXa) piping.
2. Distribution manifold(s) with balancing and flow control valves where required.
3. Cold-expansion fittings.
4. Pipe fasteners as approved by the manufacturer of the PEXa piping.
5. Supervision and field engineering required for the complete and proper function of the system.

1.02 REFERENCES

A. Publications listed here are part of this specification to the extent they are referenced. Where **no** specific edition of the standard or publication is identified, the current edition shall apply.

B. ASTM - American Society for Testing and Materials

1. ASTM D2765 – Standard Test Method for Determination of Gel Content and Swell Ratio of Crosslinked Ethylene Plastics
2. ASTM E84 – Standard Test Method for Surface Burning Characteristics of Building Materials
3. ASTM E119 – Standard Test Methods for Fire Tests of Building Construction and Materials
4. ASTM F876 – Standard Specification for Crosslinked Polyethylene (PEX) Tubing
5. ASTM F877 – Standard Specification for Crosslinked Polyethylene (PEX) Plastic Hot- and Cold-Water Distribution Systems
6. ASTM F2023 – Standard Test Method for Evaluating the Oxidative Resistance of Crosslinked Polyethylene (PEX) Tubing and Systems to Hot Chlorinated Water
7. ASTM F2080 – Standard Specification for Cold-Expansion Fittings with Metal Compression-Sleeves for Crosslinked Polyethylene (PEX) Pipe
8. ASTM F1807 – Standard Specification for Metal Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Crosslinked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing
9. ASTM F2159 – Standard Specification for Plastic Insert Fittings Utilizing a Copper Crimp Ring for SDR9 Crosslinked Polyethylene (PEX) Tubing and SDR9 Polyethylene of Raised Temperature (PE-RT) Tubing
10. ASTM F2657 – Standard Test Method for Outdoor Weathering Exposure of Crosslinked Polyethylene (PEX) Tubing
11. ASTM F1960 – Standard Specification for Cold Expansion Fittings with PEX Reinforcing Rings for Use with Crosslinked Polyethylene (PEX) Tubing
12. ASSE 1061 – Performance Requirements for Push-Fit Fittings

C. AWWA – American Water Works Association

1. AWWA C904-06 - Crosslinked Polyethylene (PEX) Pressure Pipe, 1/2 In.(12 mm) Through 3 In. (76 mm), for Water Service

D. CSA Canadian Standards Associations

1. CSA B137.5 – Crosslinked Polyethylene (PEX) Tubing Systems for Pressure Applications

E. IAPMO – International Association of Plumbing and Mechanical Officials

F. ICC – International Code Council

G. ISO – International Organization for Standardization

1. ISO 9001 – Quality Management Systems – Requirements

H. NSF International
   1. NSF/ANSI 14 – Plastic Piping System Components and Related Materials
   2. NSF/ANSI 61 – Drinking Water System Components – Health Effects

I. Plastic Pipe Institute
   1. PPI TR-3– Policies and Procedures for Developing Hydrostatic Design Basis (HDB), Pressure Design Basis (PDB), Strength Design Basis (SDB), and Minimum Required Strength (MRS) Ratings for Thermoplastic Piping Materials or Pipe

J. Underwriters' Laboratories
   1. ANSI/UL 263 – Standard Fire Tests of Building Construction and Materials

1.03 DEFINITIONS

A. Crosslinked polyethylene, commonly abbreviated PEX, is made from high density polyethylene (HDPE). Crosslinking is accomplished during manufacturing. Crosslinking enhances the physical & mechanical properties of the polymer. The high-temperature properties are improved. Chemical resistance is enhanced by resisting dissolution. Low temperature properties are also improved; its impact and tensile strength, scratch resistance, and resistance to brittle fracture are enhanced. The required degree of crosslinking, according to ASTM Standard F876, is between 70-89%. This specification requires PEX to be designated as PEXa and be manufactured by the high-pressure peroxide method.

1.04 DESIGN STANDARDS

A. Pex pipe shall conform to the standard grade hydrostatic pressure ratings from the Plastic Pipe Institute and shall be one of the following three standard ratings:
   1. 200 degrees F at 80 psi
   2. 180 degrees F at 100 psi
   3. 73.4 degrees F at 160 psi

1.05 DELIVERY STORAGE & HANDLING

A. Deliver and store piping and equipment in shipping containers with labeling in place.
   1. Pipe shall be kept in original shipping boxes until required for installation.

B. Store piping and equipment in a safe place, dry, enclosed, under cover, in a well-ventilated area.
   1. Do not expose pipe to ultraviolet light beyond exposure limits recommended by manufacturer.
   2. Protect piping and manifolds from entry of contaminating materials. Install suitable plugs in open pipe ends until installation.
   3. Where possible, connect pipes to assembled manifolds to eliminate possibility of contaminants and cross-connections.
   4. Piping shall not be dragged across the ground or other surfaces, and shall be stored on a flat surface with no sharp edges.

C. Protect materials from damage by other trades.

D. Pipe shall be protected from oil, grease, paint, direct sunlight and other elements as recommended by manufacturer.

1.06 WARRANTY

A. Provide manufacturer's standard written warranty.
   1. Contractor shall repair or replace any defective product within the warranty period.
   2. The warranty period shall commence on the date the store opens for business.
   3. Cold-expansion fittings shall be warranted to be free from defects in material and workmanship for a period of twenty-five (25) years.
   4. All manifolds, distribution headers, thermostats and actuators shall be warranted to be free from defects in material and workmanship for a period of one (1) year.

PART 2 PRODUCTS

2.01 APPROVED MANUFACTURERS

A. Rehau
B. Upanor / Wirsbo
C. Viega

2.02 COMPONENTS

A. Piping
   1. All pipe shall be high-density crosslinked polyethylene manufactured using the high-pressure peroxide method of crosslinking (PEXa). Pipe shall conform to ASTM F876, ASTM F877 CSA B137.5, NSF/ANSI 14 and NSF/ANSI 61.
   2. Supplier shall provide pipe in sizes 3/8, 1/2, 3/4, 1, 1 1/4, 1 1/2 and 2 in
   3. Pipe shall be rated for continuous operation of 100 psi gauge pressure at 180℉ temperature, and 80 psi gauge pressure at 200℉ temperature.
   4. Pipe shall be certified by PPI to standard TR-3, with applicable plumbing and mechanical code certifications.
   5. Pipe to be manufactured using a high-pressure peroxide method with a minimum degree of crosslinking of 70-89% when tested in accordance with ASTM D2765, Method B.
   6. Pipe to be tested for resistance to hot chlorinated water in accordance with ASTM F2023. Pipe to have a minimum extrapolated time-to-failure of 50 years, calculated in accordance with section 13.3 of F2023 and listed as "3306" per the ASTM F876 standard.
   7. When required, PEX pipe to have a co-extruded red, white or blue UV Shield made from UV-resistant polyethylene providing a minimum UV resistance of 6 months when tested according to ASTM F2657.
   8. Pipe to be manufactured in an ISO 9001 certified production facility.
   9. Bend Radius:
      a. The minimum bend radius for cold bending of the pipe shall be not less than five (5) times the outside diameter.
      b. Bends with a radius less than this shall require the use of a bending template as supplied by the pipe manufacturer, and /or hot air.

B. Fittings
   1. All Fittings used with crosslinked polyethylene (PEX) water distribution pipe intended for plumbing applications shall be certified to the respective fitting standard listed in Section 1.02 B.
   2. All Fittings shall be third-party certified to applicable standards ASTM F877, NSF/ANSI 14, NSF/ANSI 61 and CSA B137.5 and approved by the manufacturer's PEX piping system, with applicable plumbing and mechanical code certifications.
   3. Where fittings are encased in concrete or buried underground, fittings shall be wrapped as per manufacturer's recommendation to protect the material.

C. Manifolds (If Required by Drawings)
   1. Material: Distribution manifolds shall be manufactured of copper and be supplied by the piping manufacturer as a proven cataloged part of the manufacturer's system.
   2. Copper manifolds
      a. Copper manifolds shall be manufactured from Type L copper.
      b. Copper and/or brass outlets shall be high-temperature brazed (lead-free) into headers.

2.03 MARKINGS

A. Pipe shall carry the following markings every three (3) feet (0.9 meters): Manufacturer's name or trademark, nominal size, PEXa 3306 (material designation) SDR9 (standard dimension ratio), ASTM F876/ F877 / F2080, CSA B137.5, NSF-pw, U.P. Code, 160 psi @ 73.4°F / 100 psi @ 180°F / 80 psi @ 200°F, POTABLE TUBING, manufacturing date and footage mark.

2.03 PACKAGING

A. Coiled pipe shall be shipped in protective cardboard boxes marked with product name and size.
B. Straight lengths shall be packed in plastic bags.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine areas and conditions under which work of this Section will be performed. Correct conditions detrimental to the timely and proper completion of work. Do not proceed until unsatisfactory conditions are corrected.
B. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

A. Coordinate with related trades and manufacturer's recommendations with regard to the installation of the manifold. Prepare a suitable cavity for the manifold, with a secure mounting plate that will locate the mounted manifold at least 30 inches above floor level. Manifold to be installed in an area that will allow easy access for piping as well as future access for maintenance.

3.03 INSTALLATION

A. Install in accordance with manufacturer's most current and applicable versions of published installation manuals and / or technical guidelines and final drawings.
B. Manifolds shall be mounted level.
C. Route piping in an orderly manner, according to layout and spacing shown in final drawings. All installation notes shown on drawings shall be followed.
D. At connections and fittings, use a plastic pipe cutter to ensure square, 90 degree, clean cuts. Join pipes immediately or cap ends of pipe to seal from contaminants.
E. Pipe shall be dispensed using a suitable uncoiling device. Remove twists prior to securing pipe. Pipe shall lie flat on an even plane.
F. Piping that will pass through exterior walls and / or floors shall have rigid conduit installed for the pipe to run through. Conduit shall extend a minimum of 6 inches beyond all wall or floor surfaces, and shall be at least twice the diameter of the pipe that will be passing through.

3.04 FIELD QUALITY CONTROL

A. Tests of domestic plumbing systems shall comply with authorities having jurisdiction, and where required, shall be witnessed by the building official.
B. Pressure gauges used in testing and balancing shall show pressure increments of 1 psig and shall be located at or near the lowest points in the distribution system.
C. Air Test
    1. Charge the completed, yet unconcealed pipes with air at a minimum of 40 psig.
    2. Do not exceed 150 psig.
    3. Use soap solution to check for leakage at manifold connections.
D. Water Test
    1. Purge air from pipes.
    2. Charge the completed, yet unconcealed pipes with water.
    3. Take necessary precautions to prevent water from freezing.
    4. Check the system for leakage, especially at all pipe joints.
E. Perform a preliminary pressure test pressurizing the system to the greater of 1.5 times the maximum operating pressure or 100 psig for 30 minutes.
    1. As the pipe expands, restore pressure, first at 10 minutes into the test and again at 20 minutes.
    2. At the end of the 30 minute preliminary test, pressure shall not fall by more than 8 psig from the maximum and there shall be no leakage.
F. After successfully performing the preliminary pressure test, immediately perform the main pressure test.
    1. The test pressure called for in E. above shall be restored and continued as the main test for two (2) hours.
    2. The main test pressure shall not fall more than 3 psig after 2 hours.
    3. No leakage shall be detected.
G. Complete inspection and furnish test reports signed by authorities having jurisdiction.

3.06 CLEANING

A. Clean exposed surfaces upon completion of installation using clean damp cloth. No cleaning agents are allowed.
B. Comply with all manufacturer's recommendations.

3.07 PROTECTION

A. Protect installation throughout construction process until final acceptance by AutoZone.
B. Replace all components that are prove to be defective that cannot be repaired.

End of Section

DIVISION 15 – SECTION 15500 HEATING & AIR CONDITIONING

PART 1 GENERAL

1.01 GENERAL REQUIREMENTS & INFORMATION

A. Contractor shall be responsible for all permits; coordinate roof openings and framing for equipment; and the first year labor and parts warranty on all equipment.

B. The Venstar control system consists of sensors, thermostats, equipment control pacs and a data concentrator / communicator. One equipment control pac will be located inside each roof top unit and the data concentrator is to be located in the telephone closet.

C. The following sizes of roof top units from either Carrier or York will come to the job site with factory installed and wired Venstar sensors and control pac: 5 ton, 6.25 ton, 7.5 ton and 10 ton. For all other size Carrier or York units, as well as all units at 460 volts, the Venstar sensors and control pac will have to be field installed by the Contractor. Additionally, for all existing roof top units that are scheduled to be reused, the Venstar sensors and control pac will need to be field installed by the Contractor. All other devices which make up the Venstar system are to be installed by the Contractor in accordance with the location and wiring diagrams in the drawings.

PART 2 PRODUCTS

2.01 PACKAGE ROOF TOP UNITS (AutoZone Furnished Contractor Installed)

A. Individual package roof mounted heating and cooling units or split systems (see drawings), roof curbs, duct drops, prototypical pre-fabricated ductwork and grilles (used for prototype stores and may be used in remodels see drawings), Venstar communicating HVAC controls, sensors, thermostats, along with accessories (economizers, firestats, and / or smoke detectors) as required by local code. See drawings for specific schedule of quantity and capacity of units.

2.02 TOILET EXHAUST FANS (Fans Only - AutoZone Furnished Contractor Installed)

A. Broan #503 side discharge, 5.0 Sones, 160 CFM.

B. Contractor shall furnish and install Broan # 401 duct and #639 wall cap for each toilet exhaust fan.

2.03 VENSTAR COMPONENTS (AutoZone Furnished Contractor Installed)

A. Communicating Thermostats: One per unit.

B. Data Concentrator / Communicator: One per store

C. Outside Air Temperature Sensor: One per store

PART 3 EXECUTION

3.01 INSTALLATION

A. For all buildings, position roof curb on top of deck directly over steel angle frame between bar joists. Attach the curb to the angle frame with screws through the thickness of the deck.

B. Set rooftop equipment level and square on curb and provide watertight seal for ductwork and utility connections. Do not cut holes in the bottom of the unit. Install all accessories (economizers, firestats, and / or smoke detectors) as required by local codes. Install pre-fabricated duck work and adjust supply grilles for optimum air distribution.

C. Install Venstar HVAC equipment and components in locations shown on the drawings. All low voltage wiring shall be installed per the manufacturer's specifications and printed instructions.

D. Install toilet exhaust fans with housing anchored to ceiling structure and grille with full perimeter contact to ceiling. Install ductwork per SMACNA requirements for low-pressure systems. Wall cap shall fit tightly with full perimeter caulked watertight.

3.02 TEST AND STARTUP

A. Test system for refrigerant leaks after installation; repair all leaks to place system in operation. If start up occurs in winter shut down refrigerant system and repeat startup and testing at start of first cooling season. Replace filters prior to final inspection.

B. Thermostat settings: Summer - 78 degrees F. Winter - 68 degrees F.

3.03 WARRANTY

A. Contractor shall warranty the installation of equipment for 1 year.
B. Supplier shall warranty parts and labor for a minimum of 1 year on any component replacement. See drawings for more detailed warranty information.

End of Section

DIVISION 16 – SECTION 16050 BASIC ELECTRICAL

PART 1 GENERAL

1.01 WORK INCLUDED

A. Include all labor and material (unless noted otherwise) required to complete all electrical work called for in the Contract Documents or required by approving authorities. Work shall include, but not necessarily be limited to the following:
   1. Conduit, Power Poles, Wire, and Cable
   2. Boxes, Wiring Devices and Safety Switches.
   3. Primary wiring, conduit and final connections for all sign circuits
   4. Conduit and pull wire for data and telephone cable runs from phone board to roof deck
   5. Conduit and pull wires for Satellite System Cable
   6. Conduit and wire for Venstar Lighting Control System
   7. Conduit for Venstar HVAC Control System (Wiring by Mechanical Contractor)
   8. Conduit and pull wires for Security System (Wiring N. I. C.).
   9. Electric Water Heater (Plumbing under Division 15)
   10. Devices and wiring which must be completed after store fixtures have been set.
   11. Field-testing.
   12. Electric Service Entrance and Utility Coordination: Including complete connection to utility service point. Provide conduit, wire and equipment necessary per local utility company requirements.
   13. Telephone Service Entrance and Utility Coordination: Including complete conduit connection to utility service point.

1.02 UTILITIES and SERVICE

A. See Section 01010 for specific requirements

1.03 QUALITY REQUIREMENTS

A. Provide UL approved materials and devices.
B. Comply with the most current version applicable of the NFPA 70: National Electrical Code as a minimum standard. Comply with more stringent local requirements if applicable.

PART 2 PRODUCTS

2.01 CONDUIT

A. Rigid: Galvanized steel with threaded couplings. Intermediate grade may be used instead of rigid where permitted by NEC.
B. Thin Wall (EMT): Galvanized steel with liquid tight compression type couplings in concrete slabs, and set screw couplings in dry locations.
C. Nonmetallic: Rigid PVC, Schedule 40, with factory made bends, joints solvent welded.
D. Flexible Conduit (Greenfield): Spirally wound interlocked steel armored raceway conforming to NEC 350 and UL.
E. Metal Clad Cable (MC): Factory assembled 12/2 with ground conforming to NEC 334 and UL1569.
F. Power Poles: Hubbell, two compartment, painted black, furnished by AutoZone, installed by Contractor.

2.02 OUTLET, SWITCH, JUNCTION, and PULL BOXES

A. Boxes: Galvanized steel, sized for application, and conforming to NEC and UL Requirements.
B. Exterior Boxes: Weatherproof type with threaded hubs and gasket covers.
   1. Exterior outlet boxes at the front of the store shall have weatherproofed “while in use” covers.
   2. Exterior outlets installed on the roof top units shall have weatherproof “while in use” covers in the following states: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Pennsylvania, Michigan, Wisconsin, Minnesota, North Dakota, South Dakota, Washington, Alaska, Montana, Idaho, Wyoming, Colorado, Nebraska, Iowa, Kansas, Ohio, Northern half Indiana, Northern half Illinois, and the District of Columbia.
C. Floor Boxes: Rigid PVC with protective cap.

2.03 CONDUCTORS

A. Soft drawn copper of not less than 98% conductivity.
B. Size No. 8 AWG and larger shall be stranded, and sizes smaller than 8 AWG shall be solid.
C. Minimum wire size shall be No. 12 AWG unless noted otherwise. Increase wire one size if length of branch circuit is 100 feet or more.
D. All conductors shall be insulated and rated 600 volts at 75 degrees Centigrade. Use THWN insulation on building and branch circuit wiring unless otherwise indicated on drawings.

2.04 WIRING DEVICES

A. Wall Switches: Specification grade, quiet make / break design, toggle handle, rated 20 AMP, 120 V.
B. Receptacles: Specification grade, full gang size, polarized duplex, parallel blade, U-Grounding Slot, rated 20 AMP, 125 Volt, color to be ivory except as noted below.
   1. Receptacles located in kick plate or wall areas to be painted black shall be Black.
C. Cover Plates: General use bakelite with smooth finish and rolled outer edges. Color to match device.
D. Safety Switches: General duty, fusible types, with NEMA Type 1 enclosure for interior locations, and Type 3R enclosure for exterior locations.
E. Acceptable Manufacturers:
   1. Arrow Hart
   2. Bryant
   3. Crouse-Hinds
   4. General Electric
   5. Hubbell
   6. Pass & Seymour
F. Quick Connect / Relock: Lithonia factory wired, with 11 foot of cable attached, both one and two circuit models, furnished by AutoZone, installed by Contractor.

2.05 WATER HEATER (AutoZone Furnished Contractor Installed)

A. Electric Water Heater: 4 Gallon mini tank, Ariston model GL 4 Ti, 120 volt, 12.5 amps.

PART 3 EXECUTION

3.01 CONDUIT INSTALLATION

A. Use rigid conduit or PVC conduit in earth and where exposed to weather. Make joints with standard thread couplings or unions. Protect newly cut conduit threads with graphite, grease, or other rust resistive, non-insulating compound. Use double lock nuts at terminations.
B. PVC conduit may be used for underground feeders from service entrance to panels, to site lighting, and to pylon / billboard signs only. Use rigid steel, long radius elbows on risers from underground conduit. Provide "THW" copper grounding conductors for entire length of nonmetallic conduit and connect to rigid steel. Size per NEC.
C. Use EMT only in dry, protected areas where not subject to mechanical damage and in accordance with the latest issue of the NEC. Per NEC requirements install EMT so that it is spaced 1-1/2” below the roof deck; do not install either EMT or junction boxes tight to the underside of the roof deck.
D. Install moisture seal where conduits penetrate outside walls or slabs-on-grade.
E. Secure conduits to building structure at intervals of not more than 5 feet for sizes up to and including, 2 inch; and at intervals not to exceed 8 feet for larger sizes.
F. Run conduits concealed wherever possible. Exposed runs shall be installed in neat, symmetrical lines parallel to, or at right angles to building lines.
G. Install conduit a minimum of 6 inches from any water lines.
H. Terminate conduit at equipment subject to vibration with flexible connections. In wet locations, use Neoprene or Polychloroprene covered flex with watertight fittings. Provide for continuity of ground.
I. Install conduit system with pull wire for Venstar HVAC control wiring. See drawings for all required locations.
J. Install conduit system for Venstar Lighting Control system. See drawings for all required locations.
K. Install conduit with pull wire for alarm system where indicated on drawings.
L. Install conduit for telephone service entrance. Service entrance shall be underground from telephone equipment board in building to point of connection at either telephone company ground mounted pedestal or utility pole.

M. Metal Clad (MC) cable may only be used for feed to branch lighting circuits from home run junction box at roof deck. Application and installation of MC Cable must comply with NEC Article 334.
N. Install power poles where shown on the drawings and in a manner recommended by pole manufacturer. Provide all necessary accessories to complete the required installation of circuitry and devices.

3.02 OUTLET, SWITCH, JUNCTION, and PULL BOX INSTALLATION

A. Install outlet, switch and junction boxes slightly recessed to allow for full perimeter contact of device cover plates.
B. Install boxes for convenience outlets 12 inches above floor, unless otherwise indicated on the drawings.
C. Install switch boxes 4'-0" above floor, and on the strike side of doors unless otherwise indicated on the drawings.
D. In masonry construction, height of boxes may be adjusted slightly to fit coursing. Install sealant between the edge of the box and the adjacent wall surface prior to installing the cover.
E. Set boxes for floor outlets flush to floor, unless otherwise indicated on drawings.
F. Install junction or pull boxes at each conductor splice connection point, junction point, or pull point for the connection of conduit.

3.03 CONDUCTOR INSTALLATION

A. Maintain color-coding throughout electric system.
B. Minimum conductor size shall be 12 AWG unless shown otherwise.
C. Increase conductor one size if length of branch circuit is 100 feet or more.
D. Make conductor lengths identical for parallel feeders.
E. Provide solder less connections only.

3.04 DATA, TELEPHONE CABLE & POWER POLE INSTALLATION

A. Install conduit and pull wires from the top of the telephone equipment board to the roof deck in stores with exposed structure, or to above the suspended ceiling in stores with ceilings. Conduit sizing shall be as shown on the drawings.
B. AutoZone's representative will install all Cat. 5 data and telephone cable.
C. Power poles for the check-out pod, parts pods and the test center will come with those fixtures and will be pre-wired with outlets and a mating quick / relock device. The pod fixtures will have provisions to receive the power poles and once in place they should be self supporting. AutoZone's fixture installers will make the quick connect between the two pre-wired devices. Contractor shall install the power pole for the test center as called for in the drawings after the fixtures supporting the test center have been installed.
D. Power poles for the Manager's office and the closed circuit TV system shall be furnished by AutoZone and will be delivered to the job site with all the other electrical gear. Install these poles after office area fixtures are in place and as called for in the manufacturer's instructions.
E. See drawings for additional information and requirements.

3.05 WIRING DEVICE INSTALLATION

A. Install wall switches with the off position of the toggle pointed down.
B. Install receptacle outlet devices so that the grounding prong will be below the power prongs.
C. Do not install any devices rated at less than 20 amps.
D. Install device cover plates with perimeter edges in full contact with finish surfaces.
E. Install wall switch in bathrooms connect both light and exhaust fan to switch.
F. Hard wire quick connect / relock devices to home run circuitry in junction boxes where indicated on drawings. Coil excess cable and wire tie to bar joist closest to junction box. Owner will make final connection to the mating device furnished with the store fixture.

3.06 FIELD TESTING

A. Test all circuits with a "Multi" Tester to determine that system is free of short circuits and that phase conductors are not grounded.
B. Check motor controllers and all electrical equipment for proper operations.
C. Immediately replace defective or damaged materials and equipment.

End of Section

DIVISION 16 – SECTION 16400 ELECTRICAL SERVICE ENTRANCE

PART 1 GENERAL

1.01 FOR ELECTRIC SERVICE

A. Submit to local utility all required drawings, loads and any other information to obtain service.
B. Provide all materials and installation required by the serving utility for the connection of service.
C. Work should include, but not necessarily be limited to, primary conduits, cable (if required), pads for ground mounted transformer, grounding, metering provisions, secondary conductors and conduit, all as required by the local utility.

1.02 FOR REMODEL PROJECTS

A. Contractor shall confirm that the existing electric service configuration and equipment matches that which has been shown on the drawing. Report all discrepancies to the AutoZone project manager prior to finalizing bid or commencing any work.
B. Contractor to confirm with the serving utility that the ultimate configuration will be acceptable for the connection of service.
C. The intent of these documents is to insure that there will be a complete installation connected to the local utility company providing service. See paragraph 1.01 above for work required.

PART 2 PRODUCTS

2.01 ELECTRIC SERVICE COMPONENTS

A. Conduit: Rigid or PVC conduit complete with watertight connectors and couplings.
B. Concrete Pads for Ground Mounted Transformers: Furnish sizes as required by local utility company.
C. Weatherproof Meter Socket: Conform to local utility requirements.
D. Wire way: Three or four wire racks, as determined by local utility for specified service.
E. Conductors: As required by local utility.
F. Fused Disconnects: Furnished by AutoZone, installed by Contractor.
G. External Swithchboards: If required by local utility, furnished by AutoZone, installed by Contractor.
H. If service will be overhead in lieu of underground add the following:
    1. Service Entrance Weatherhead: Cast metal conforming to local utility requirements
    2. Service Entrance Mast: Rigid tubular metal fabrication with provisions for attachment of service rack and weatherhead.

PART 3 EXECUTION

3.01 INSTALLATION

A. Install conduits; pull boxes, transformer pads, etc. as required by local utility company.
B. Install service rack and weatherhead at proper height. Provide mast kit, if required.
C. Extend masthead to provide a minimum ground clearance of 20 feet for overhead service.
D. Install rigid conduit to weatherproof meter socket.
E. Make all secondary terminations and provide coordination with local utility company.

End of Section

DIVISION 16 – SECTION 16480 PANELBOARDS
(AutoZone Furnished Contractor Installed)

PART 1 GENERAL

1.01 FOR PROTOTYPICAL PROJECTS

A. All panelboards shall be AutoZone Furnished and Contractor Installed and will include:
   1. Panelboard Cabinet
   2. Ground Bus bars
   3. Circuit Breakers

1.02 FOR REMODEL PROJECTS

A. Contractor shall confirm that any existing panelboard indicated to remain and be reused is complete with ground buss bars and all circuit breakers and that all is in good working and serviceable order.
B. Report all defects and deficiencies to AutoZone project manager so that replacement parts and / or equipment can be ordered and delivered to the job site within the required timelines for the project.

PART 2 PRODUCTS

2.01 PANELBOARDS - 120 / 208 (120 / 240)

A. Metal cabinets with gray enamel finish complete with panel trim having concealed hinges and flush lock with two keys, concealed trip clamps and screw cover front, and galvanized steel back box with knockouts.
B. Panelboards will be factory assembled, full capacity, solid neutral, with sequence style bussing, three phase - four wire, or single phase - three wire.

2.02 CIRCUIT BREAKERS

A. Molded case, automatic air circuit breakers as supplied with thermal and magnet trip and trip-free position separate from either "ON" or "OFF" positions; interrupting rating of 10,000 AIC.

PART 3 EXECUTION

3.01 PANEL INSTALLATION

A. Install panelboards in accordance with the “one-line” diagram contained in the drawings for the project.
B. Anchor all panelboards securely into position within the wall framing.
C. Connect the circuits exactly as shown on the panel schedule in the drawings.

3.02 IDENTIFICATION OF PANELS

A. Provide a laminated plastic plate at top of panel engraved with designation identical on panelboard schedule or riser diagram.
B. Provide typewritten directory attached to inside cover indicating loads controlled by each circuit, directory should be identical to panel schedule in drawings.
C. Circuits identified on the panel schedules but not utilized shall be labeled as spare on the directory.

End of Section

DIVISION 16 – SECTION 16500 LIGHTING

(AutoZone Furnished Contractor Installed)

PART 1 GENERAL

A. AutoZone shall furnish the following items for installation by Contractor:
   1. All interior light fixtures, lamps, ballast and drivers.
   2. All exterior light fixtures, lamps, ballast and drivers.
   3. Site light poles, brackets, and base plates.
   4. Automatic Lighting Control Panel
   5. Low voltage relay.
   6. Photocell sensor, motion detectors and other accessories for the Lighting Control system.

B. Contractor shall furnish all conduits, conductors, connectors, wall switches and other items necessary for the complete installation and control of the lighting system.

C. Attachments to building structure shall be furnished by Contractor.

D. Provide necessary trim, brackets and accessories for complete installation.

PART 2 PRODUCTS

A. Site Light Poles: Square straight steel, 5" shaft, 25' height unless shown otherwise on drawings, complete with base plate and pre-drilled for luminaire attachment.

B. Site Light: Horizontal pole mounted LED fixture unless shown otherwise on drawings.

C. Wall Light: Wall mounted LED fixture unless shown otherwise on drawings.

D. Soffit Light: Recessed LED downlight unless shown otherwise on drawings.

E. Sales Floor Lighting: 8' long "C" channel strips w/ four 4' long LED tubes and matched drivers where dimming is required.

F. Hard Parts Areas: 8' long "C" channel strips w/ reflectors, two 4' long LED tubes and matched drivers where dimming is required.

G. Exit Light: Polycarbonate housing, LED lamps and nickel cadmium battery.

H. Emergency Light: Polycarbonate housing, with dual heads and lead calcium battery.

I. Bathroom Light: 4' long, 32 watt one lamp strip with matched electronic ballast and glass cover.

J. Automatic Lighting Control Panel: Venstar #LCP-400.

K. Accessories: Multi-level outside light sensor; motion detector; manual push button as manufactured by Venstar.

L. Control Relay: 12 volt to 120 volt alarm panel interface as manufactured by Venstar.

PART 3 EXECUTION

A. Interior Building LED strips: Attach each light fixture directly to either the bottoms of a bar joist or to unistrut that has been attached to the roof structure with allthread rod. Insure each run of fixtures is straight and where hung on unistrut, level. Equip each fixture with owner furnished lamps, as scheduled.

B. Interior Building Other Light Fixture: Attach fixtures either to unistrut or wall surface as required. Insure fixtures are plumb and level. Equip each fixture with owner furnished lamps, as scheduled.

C. Exterior Building Wall Lighting: Attach mounting box and back plate to wall so that it is plumb and level at the correct elevation above finished floor. Provide the correct trim where necessary to achieve tight fit. Attach fixture to back plate and provide gaskets or necessary accessories to prevent light leaks around trim. Provide sealant around all edges.

D. Exterior Building Soffit Lighting (If Required): Attach mounting frame to soffit framing so that it is plumb and level at the correct elevation above finished floor. Attach fixture and trim and provide gaskets or necessary accessories to prevent light leaks around trim. Provide sealant around all edges.

E. Exterior Site Lights: Set light poles plumb, rigidly in place in accordance with light pole manufacturer's recommendations. Provide necessary brackets, caps and accessories to facilitate the installation of the light fixture. Number of fixtures per pole and orientation of fixtures shall be as shown on the drawings.

F. Automatic Lighting Control Panel: Panel installation will be semi-recessed to allow for smooth operation of the hinged door and the connection of conduits between the power and lighting panelboards and this panel. Install ALC Panel where indicated on drawings relative to the other panelboards. Connect circuits to contactor poles in the sequence indicated on drawings.

G. Control Relay: Install alarm panel interface (12 / 120 volt relay) on the alarm / telephone board where indicated on drawings. Connect 120-volt side of relay to the ALC Panel as indicated on the drawings. The alarm contractor will make final connection on the 12-volt side of the relay module.
H. Motion Detectors: Install motion detectors on junction boxes mounted on unistrut and hung from roof structure where indicated on drawings. Install 18 gauge color coordinated wiring in conduit between motion detector and the ALC Panel.
I. Manual Push Button: Install manual push button on junction box located in the Manager's Office Area where indicated on drawings. Install 18 gauge color coordinated wiring in conduit between push button and the ALC Panel.
J. Photocell: Install photocell in a weather-proof junction box to be located on the galvanized pipe conduit for the satellite coax cable above the roof of the building. Photocell must face north and be placed a minimum of 12 inches above finish roof. Do not mount on the backside of the parapet wall. Install 18 gauge color coordinated wiring in conduit between photocell and the ALC Panel.

End of Section