



# **CITY OF GALLUP**

City of Gallup, New Mexico  
Purchasing Division  
P.O. Box 1270  
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[gallupnm.gov/purchasing](http://gallupnm.gov/purchasing)

## **INVITATION TO BID FORMAL BID NO NO. 1621**

### **CONSTRUCTION FOR OLIVA PARK AT BASILIO DRIVE**

**ISSUE DATE: September 10, 2016**  
**BID OPENING DATE: October 11, 2016**  
**BID OPENING TIME: 2:00 p.m. Local Time**

#### **Notes:**

Quantities may be increased or decreased  
within reasonable amounts

F.O.B. Point : Destination

Payment Terms: Net 30, unless otherwise stated

# PROJECT MANUAL

**PROJECT:** OLIVA PARK AT BASILIO DRIVE

**OWNER:** CITY OF GALLUP  
PUBLIC WORKS DEPARTMENT  
110 WEST ASTC AVENUE  
GALLUP, NM 87301  
Contact: Mr. Stan Henderson, Public Works Director

“The technical material and data contained in the specifications were prepared under the supervision and direction of the undersigned, whose seal as a Registered Architect, licensed to practice in the State of New Mexico, is affixed below.” “All questions about the meaning or intent of these documents shall be submitted only to the Architect of Record, stated above, in writing. Refer to Paragraph 3.2 of the Instructions to Bidders as to interpretations.”



**ARCHITECT OF RECORD:** Huitt-Zollars, Inc.  
6501 Americas Parkway NE  
Suite 550  
Albuquerque, NM 87110-8154  
Contact: Joseph M. Gallegos, AIA, LEED AP  
(505) 883-8114 ph (505) 883-5022 fax

**CIVIL ENGINEER:** Huitt-Zollars, Inc.  
333 Rio Rancho Drive NE  
Suite 101  
Contact: Scott Eddings, PE  
(505) 892-5141 ph (505) 892-3259 fax

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## GENERAL CONDITIONS

### FORMAL BID NO. 1621

**SEALED BIDS:** ALL BIDS MUST BE SUBMITTED IN A SEALED ENVELOPE AND SHALL NOT BE OPENED AND CONSIDERED IF THEY ARE NOT RECEIVED BY THE PURCHASING DEPARTMENT PRIOR TO THE TIME SPECIFIED FOR THE BID OPENING. ALL SEALED BIDS MUST BE SUBMITTED ON THE BID DOCUMENT ORIGINALS OF FORMS, OR REASONABLE FACSIMILE, FURNISHED BY THE CITY OF GALLUP. ALL PROPOSALS MUST BE SIGNED BY A RESPONSIBLE AND AUTHORIZED PERSON FOR THE BIDDING FIRM. EACH BIDDER MUST ALSO FILL-IN AREAS FOR DELIVERY DATE, PAYMENT TERMS, AND F.O.B. POINT IF REQUESTED; FAILURE TO DO SO MAY RESULT IN DISQUALIFICATION OF THEIR RESPECTIVE BID. NOTE THAT FAX OR ELECTRONICALLY TRANSMITTED BIDS ARE NOT ACCEPTED ON THE CITY OF GALLUP **FORMAL BIDS.** BIDS SUBMITTED AFTER THE BID OPENING DATE AND TIME WILL NOT BE CONSIDERED AND WILL BE RETURNED UNOPENED. BIDS WILL BE OPENED IN THE PURCHASING DEPARTMENT CONFERENCE ROOM.

BIDS WILL BE ACCEPTED UNTIL 2:00 P.M. LOCAL TIME ON **OCTOBER 11, 2016** AT THE CITY OF GALLUP PURCHASING OFFICE; 110 WEST AZTEC (87301); P.O. BOX 1270; GALLUP, NEW MEXICO 87305.

**MAILING:** BIDDER TO UTILIZE THE CITY'S SELF-ADDRESSED LABEL ON THEIR RETURN MAILING ENVELOPE OR PACKAGE IF ONE IS FURNISHED. IF SENT BY MAIL OR OVERNIGHT METHOD (FED-EXPRESS, UPS NEXT DAY AIR ETC.), OR HAND DELIVERED PLEASE **Note Bid Number on EXTERIOR OF ENVELOPE.** FAILURE TO DO SO WILL NOT CONSTITUTE A LIABILITY ON THE CITY IF THE BID IS MISPLACED OR LOST.

**COPIES OF PLANS:** COPIES OF THE PLANS AND SPECIFICATIONS MAY BE OBTAINED FROM: **Albuquerque Reprographics, 4716 McLeod NE, Albuquerque, NM 87109; [info@abgrepro.com](mailto:info@abgrepro.com); Phone 505-884-0862; Fax: 505-883-6452.** THERE IS A **\$50.00** REFUNDABLE CHARGE FOR THE PLANS. COMPLETE SETS OF PLANS MUST BE RETURNED WITH TEN (10) DAYS OF BID AWARD AND BE IN GOOD CONDITION.

**PUBLIC WORKS:** THIS SOLICITATION IS FOR A PUBLIC WORKS PROJECT AND SUBJECT TO THE PUBLIC WORKS STATUTES OF THE STATE OF NEW MEXICO (13-4-1 to 13-4-43 NMSA 1978); CONSTRUCTION INDUSTRIES LICENSING ACT (60-13-1 et seq. NMSA 1978); CID RULES AND REGULATIONS; APPLICABLE FEDERAL, STATE AND LOCAL STATUTES AND LAWS; AND THE CITY OF GALLUP ORDINANCES.

**SPECIFICATIONS:** SPECIFICATIONS, AS INCLUDED IN THIS BID AND THE PLANS, ARE INTENDED TO INDICATE THE REQUIREMENTS OF THE CITY OF GALLUP AND GIVE AN ACCURATE DESCRIPTION OF MINIMUM STANDARDS ACCEPTABLE. ALL ITEMS EQUAL OR EQUIVALENT TO THESE REQUIREMENTS AND STANDARDS WILL BE CONSIDERED, EXCEPT WHERE OTHERWISE NOTED. ALL MATERIALS USED AND INCORPORATED INTO THIS PROJECT SHALL BE NEW UNLESS OTHERWISE AGREED UPON.

**BRAND NAMES:** UNLESS OTHERWISE INDICATED IN THE PLANS AND SPECIFICATIONS, WHERE A PRODUCT OR BRAND NAME IS INDICATED IN THE PLANS AND/OR SPECIFICATIONS, IT SHALL MEAN A MINIMUM ACCEPTABLE LEVEL OR MINIMUM QUALITY REQUIRED. IF THE BIDDER IS OFFERING, AND THE PLANS AND SPECIFICATIONS ALLOW, AN ITEM OTHER THAN THE ONE SPECIFIED THEN THE MANUFACTURER'S NAME AND MODEL NUMBER OF THAT ITEM SHALL BE FURNISHED TO THE CITY AND SUFFICIENT SPECIFICATION AND DESCRIPTIVE DATA PROVIDED TO PERMIT A THOROUGH EVALUATION. FAILURE TO PROVIDE APPROPRIATE INFORMATION WHEN REQUESTED MAY RESULT IN DISQUALIFICATION OF THE OFFER.

**SUBMITTALS:** EACH BIDDER WILL FURNISH, WHEN REQUESTED, PRINTED LITERATURE AND MANUFACTURERS SPECIFICATION SHEETS THAT FULLY DESCRIBE THE MATERIAL THEY PROPOSE TO FURNISH THE CITY. THE ACCEPTANCE OR REJECTION OF EQUALS OR EQUIVALENTS SHALL BE DETERMINED SOLELY BY THE CITY OF GALLUP OR THEIR REPRESENTATIVE .

**COMPETENCY OF BIDDER:** BIDS WILL BE CONSIDERED ONLY FROM FIRMS WHO CAN PROVIDE EVIDENCE THAT THEY HAVE ESTABLISHED A SATISFACTORY RECORD OF PERFORMANCE AND INTEGRITY TO INSURE THEY CAN EXECUTE THE REQUIREMENTS AS STATED HEREIN. THE CITY MAY MAKE SUCH INVESTIGATION IT DEEMS NECESSARY TO DETERMINE THE ABILITY OF THE BIDDER TO PERFORM THE WORK. ANY DETERMINATION AS TO COMPETENCY SHALL BE MADE BY APPROPRIATE CITY STAFF.

ANY PROPOSAL WHICH IS INCOMPLETE, IRREGULAR, OR ACCOMPANIED BY AN INSUFFICIENT OR BOND MAY BE REJECTED. THE CITY OF GALLUP ALSO RESERVES THE RIGHT TO REJECT THE PROPOSAL OF A BIDDER WHO HAS PREVIOUSLY FAILED TO PERFORM PROPERLY, INCLUDING INFERIOR MATERIALS, WORKMANSHIP, OR ATTEMPTS TO USE SUBSTANDARD EQUIPMENT, EXCESSIVE INSPECTION CAUSED TO THE PROJECT TO INSURE GOOD WORKMANSHIP, OR POOR CONSTRUCTION METHODS, OR FAILURE TO COMPLETE ON TIME A CONTRACT OF SIMILAR NATURE, OR THE PROPOSAL OF A BIDDER WHO IS NOT IN A POSITION TO PERFORM THE WORK GOVERNED BY THE CONTRACT.

**WARRANTY:** ALL LABOR AND WORK DONE BY THE CONTRACTOR SHALL BE WARRANTED FOR A PERIOD OF ONE YEAR FROM DATE OF FINAL ACCEPTANCE

**BUSINESS LICENSE:** BIDDER'S ARE ADVISED THAT THEY MUST HAVE OR OBTAIN A CURRENT CITY OF GALLUP BUSINESS LICENSE FOR THE TYPE OF MATERIAL OR SERVICES REQUIRED UNDER THIS CONTRACT BEFORE WORK COMMENCES OR A PURCHASE ORDER ISSUED.

**F.O.B. POINT:** ALL MATERIAL AND WORK SHALL BE QUOTED F.O.B. GALLUP, FREIGHT PREPAID.

**PAYMENT OR ACCEPTANCE NOT CONCLUSIVE:** VENDOR WILL SUPPLY THE CITY WITH INVOICE FOR PAYMENT. NO PAYMENT MADE UNDER THIS CONTRACT SHALL BE CONCLUSIVE EVIDENCE OF THE PERFORMANCE OF THIS CONTRACT, EITHER WHOLLY OR IN PART, AND THAT NO PAYMENT MADE FOR THE DELIVERY OF THE ITEMS IN WHOLE OR IN PART SHALL BE CONSTRUED AS AN ACCEPTANCE OF DEFECTIVE WORK OR IMPROPER MATERIALS, NOR RELIEVE THE BIDDER FROM CORRECTIONS OF THE DEFECTS. THE FINAL ACCEPTANCE SHALL NOT BE BINDING UPON THE CITY, NOR CONCLUSIVE, SHOULD IT SUBSEQUENTLY DEVELOP THE BIDDER HAS FURNISHED INFERIOR ITEMS OR HAD DEPARTED FROM THE SPECIFICATIONS AND/OR THE TERMS OF THE CONTRACT. SHOULD SUCH CONDITIONS BECOME EVIDENT, THE CITY SHALL HAVE THE RIGHT, NOTWITHSTANDING FINAL ACCEPTANCE AND PAYMENT, TO CAUSE THE ITEM(S) TO BE PROPERLY FURNISHED IN ACCORDANCE WITH THE SPECIFICATIONS (AND DRAWINGS, IF ANY) AT THE COST AND EXPENSE OF THE BIDDER.

**PRICE TERMS:** BIDDER AGREES THAT THE PRICES BID SHALL REMAIN IN EFFECT FOR 45 DAYS FROM THE DATE OF THE BID OPENING AND SUBJECT TO ACCEPTANCE BY THE CITY OF GALLUP WITHIN THAT PERIOD. TIME FOR ACCEPTANCE MAY BE EXTENDED WITH THE MUTUAL CONCURRENCE OF THE CONTRACTOR.

**VISIT SITE OF WORK:** ALL BIDDERS ARE ENCOURAGED TO VISIT THE SITE OF THE WORK AND TO FAMILIARIZE THEMSELVES WITH THE DIFFICULTIES INVOLVED. FAILURE TO DO SO IS ENTIRELY AT THE RISK OF THE CONTRACTOR AND WILL NOT BE RECOGNIZED AS A BASIS OR CLAIM FOR EXTRA COMPENSATION.

**COMMENCEMENT AND COMPLETION:** THE CONTRACTOR SHALL FULLY COMPLETE THE PROJECT WITHIN 120 DAYS AFTER NOTICE TO PROCEED. A TIME ALLOWANCE MAY BE GRANTED FOR WEATHER CONDITIONS. FINAL DECISIONS ON ADDITIONAL TIME ALLOWANCE WILL BE DETERMINED BY THE CITY OF GALLUP.

**INSPECTION:** THE ENGINEER, ARCHITECT OR ANY DULY AUTHORIZED INSPECTORS SHALL AT ALL TIMES HAVE THE RIGHT TO INSPECT AND APPROVE THE WORK AND MATERIALS.

**CODE COMPLIANCE:** COMPLETE INSTALLATION MUST MEET FEDERAL, STATE, AND LOCAL LAWS, CODES AND REGULATIONS.

**PERMITS AND LICENSES:** CONTRACTOR SHALL BE LICENSED IN NEW MEXICO FOR THE WORK REQUIRED. BIDDERS ARE NOTIFIED THAT A CITY OF GALLUP BUSINESS LICENSE IS REQUIRED. ALL OTHER PERMITS OR LICENSES REQUIRED SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

**GOVERNING LAW:** THIS AGREEMENT SHALL BE CONSTRUED IN ACCORDANCE WITH THE LAWS OF THE STATE OF NEW MEXICO AS THEY PERTAIN TO AGREEMENTS EXECUTED AND FULLY TO BE PERFORMED WITH NEW MEXICO, OR FEDERAL LAW WHERE APPLICABLE, BUT IN EITHER CASE EXCLUDING THAT BODY OF LAW RELATING TO CHOICE OF LAW.

**INSURANCE:** BIDDER SHALL PROVIDE A CERTIFICATE OF INSURANCE IN COMPLIANCE WITH THE TERMS OF THIS BID AND THE STATE OF NEW MEXICO CONSTRUCTION INDUSTRIES DIVISION RULES AND REGULATIONS, INCLUDING WORKMEN'S COMPENSATION IF REQUIRED BY LAW. CERTIFICATE SHALL BE FURNISHED UPON REQUEST OF THE CITY OF GALLUP.

**SUBCONTRACTORS:** THE LISTING THRESHOLD FOR SUBCONTRACTORS FOR THIS PROJECT IS **\$5,000** AND SHALL BE SUBMITTED IN COMPLIANCE WITH 13-4-32 THRU 13-4-43 NMSA 1978. THERE SHALL BE ONLY ONE SUBCONTRACTOR LISTED FOR EACH CLASSIFICATION. **IF SUBCONTRACTORS CHANGE ACCORDING TO BID OPTIONS/ADDITIVE ALTERNATES ACCEPTED THEN LIST THE SUBCONTRACTORS AND THE BID LOTS WHERE THEY ARE TO BE USED.**

THE OWNER RESERVES THE RIGHT TO DISQUALIFY SUBCONTRACTORS AND SUPPLIERS IN ACCORDANCE WITH THE CONDITIONS OF THE BID AND CONTRACT. THE CONTRACTOR AGREES THAT HE IS FULLY RESPONSIBLE TO THE OWNER FOR THE ACTS AND OMISSIONS OF HIS SUBCONTRACTORS AND OR PERSONS EITHER DIRECTLY OR INDIRECTLY EMPLOYED BY THEM, AS HE IS FOR THE ACTS AND OMISSIONS OF PERSONS DIRECTLY EMPLOYED BY HIM. NOTHING CONTAINED IN THE CONTRACT DOCUMENTS SHALL CREATE ANY CONTRACTUAL RELATION BETWEEN ANY SUBCONTRACTOR AND THE OWNER.

THE BIDDER MAY BE REQUIRED TO ESTABLISH THE RELIABILITY AND RESPONSIBILITY OF THE PROPOSED SUBCONTRACTORS OR OF ANY MANUFACTURER TO FURNISH AND PERFORM THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND COMPLETION SCHEDULE, AND MAY ALSO BE REQUIRED TO REQUIRE PERFORMANCE AND PAYMENT BONDS OF SOME OR ALL SUBCONTRACTORS IN CONFORMANCE WITH SEC. 13-4-37 NMSA 1978.

**WAGES:** WAGES WILL BE PAID IN ACCORDANCE WITH THE STATE OF NEW MEXICO PUBLIC WORKS STATUTES REGARDING WAGE RATES. A WAGE RATE SCHEDULE IS ENCLOSED WITH THIS BID. CONTRACTOR AND ALL TIERS OF SUBCONTRACTORS WILL SUBMIT CERTIFIED WEEKLY PAYROLLS TO THE CITY OF GALLUP (BI-WEEKLY), AND THE PUBLIC WORKS DIRECTOR IF REQUESTED.

**DEPARTMENT OF LABOR REGISTRATION:** BIDDERS ARE ADVISED THAT ALL TIERS OF CONTRACTORS (INCLUDING SUBCONTRACTORS) BIDDING MORE THAN \$60,000 ON A PUBLIC WORKS CONTRACT MUST BE REGISTERED WITH THE LABOR & INDUSTRIAL DIVISION OF THE STATE OF NEW MEXICO PRIOR TO SUBMITTING A BID IN COMPLIANCE WITH 13-4-13.1 NMSA 1978. A LABOR ENFORCEMENT FUND FORM IS AVAILABLE AT [HTTP://WWW.DWS.STATE.NM.US/NEW/LABOR\\_RELATIONS/PUBLICWORKS.HTML](http://www.dws.state.nm.us/new/labor_relations/publicworks.html)

**NON-DISCRIMINATION:** THE CITY OF GALLUP DOES NOT DISCRIMINATE ON THE BASIS OF RACE, COLOR, NATIONAL ORIGIN, SEX, RELIGION, AGE OR DISABILITY IN THE EMPLOYMENT OR THE PROVISION OF SERVICES. CONTRACTORS SHALL BE IN COMPLIANCE WITH ALL FEDERAL, STATE AND LOCAL LAWS AND ORDINANCES REGARDING EMPLOYMENT PRACTICES AND A.D.A. REQUIREMENTS.

**BID SECURITY:** SHALL BE SUBMITTED WITH THE BID AND MADE PAYABLE TO THE OWNER IN THE AMOUNT OF FIVE PERCENT (5%) OF THE BID SUM. SECURITY SHALL BE BY CERTIFIED OR CASHIERS CHECK, OR A BID BOND PREPARED ON A FORM ACCEPTABLE TO THE OWNER (PERSONAL OR CORPORATE CHECKS ARE NOT ACCEPTABLE), ISSUED BY A SURETY LICENSED TO DO BUSINESS IN THE STATE WHERE THE PROJECT IS LOCATED. PERSONAL OR CORPORATE CHECKS ARE NOT ACCEPTABLE. THE OWNER WILL RETAIN THESE SECURITIES UNTIL A CONTRACT HAS BEEN ENTERED INTO. SHOULD THE LOW BIDDER REFUSE TO ENTER INTO A CONTRACT, THE OWNER WILL RETAIN HIS SECURITY AS LIQUIDATED

DAMAGES, NOT AS A PENALTY. IF THE LOWEST BIDDER FAILS TO ENTER INTO A CONTRACT, THEN THE NEXT LOWEST BIDDER WILL BE CONSIDERED AS THE LOWEST BIDDER.

**TAXES:** THE PROPOSAL TOTAL SHALL EXCLUDE ALL APPLICABLE TAXES. THE CITY WILL PAY ANY TAXES DUE ON THE CONTRACT BASED UPON BILLING SUBMITTED BY THE CONTRACTOR, AT THE APPLICABLE TAX RATE. TAXES SHALL BE SHOWN AS A SEPARATE AMOUNT ON ANY BILLING OR REQUEST FOR PAYMENT. **PERFORMANCE AND PAYMENT BOND:** THE SUCCESSFUL BIDDER SHALL EXECUTE A PERFORMANCE BOND AND PAYMENT BOND, EACH IN THE SUM OF 100% OF THE TOTAL BID PRICE WITH A CORPORATE SURETY AUTHORIZED TO DO BUSINESS IN THE STATE OF NEW MEXICO AND SAID SURETY TO BE APPROVED IN FEDERAL CIRCULAR 570 AS PUBLISHED BY THE U.S. TREASURY DEPARTMENT WITHIN **FIFTEEN (15)** DAYS OF RECEIPT OF NOTICE OF AWARD.

**FORMS COMPLETION:** ALL FORMS SUBMITTED MUST BE TYPEWRITTEN OR WRITTEN IN INK. ANY ALTERATIONS TO THE BID AMOUNTS BY ERASURES OR BY INTERLINEATIONS SHALL BE INITIALED BY THE SIGNER OF THE BID FORM.

**UNIT PRICES:** TYPOGRAPHICAL ERRORS, ERRORS IN EXTENDING UNIT PRICES, ARITHMETIC ERRORS OR ERRORS CLEARLY EVIDENT ON THE FACE OF THE BID DOCUMENT MAY BE CORRECTED IN ACCORDANCE WITH THE PROCUREMENT ORDINANCE AND PROCUREMENT REGULATIONS. DISCREPANCIES INVOLVING THE INCORRECT EXTENSION OF UNIT PRICES SHALL BE RESOLVED IN FAVOR OF UNIT PRICES AS UNIT PRICES CANNOT BE CORRECTED.

**INFORMATION:** IF CLARIFICATION IS NEEDED ON ANY PART OF THE GENERAL CONDITIONS, CONTACT **FRANCES RODRIGUEZ; PURCHASING DIRECTOR; P.O. BOX 1270; GALLUP, NM 87305; 505-863-1334 OR 505-722-5133 (FAX); [frodriguez@gallupnm.gov](mailto:frodriguez@gallupnm.gov) (EMAIL).** QUESTIONS REGARDING THE SPECIFICATIONS AND SCOPE OF WORK SHOULD BE DIRECTED TO THE ARCHITECT: **Joe Gallegos, AIA, LEED BD+C, [jgallegos@huitt-zollars.com](mailto:jgallegos@huitt-zollars.com). Huitt-Zollars, Inc. 505-883-8114.** QUESTIONS SUBMITTED LESS THAN 3 DAYS PRIOR TO BID OPENING, OR AFTER OCTOBER 5, 2016, MAY NOT BE ADDRESSED.

**PREFERENCES:** THE STATE OF NEW MEXICO STATUTES SHALL APPLY. NEW MEXICO GRANTS A PREFERENCE TO THOSE CONTRACTORS WHO HAVE BEEN CERTIFIED BY THE STATE OF NEW MEXICO DEPARTMENT OF TAXATION AND REVENUE AS A RESIDENT CONTRACTOR OR A RESIDENT VETERANS CONTRACTOR AT THE TIME BIDS ARE OPENED, PURSUANT TO 13-1-22 & 13-4-2 (NMSA 1978). THE NEW MEXICO RESIDENT CONTRACTOR'S PREFERENCE OR RESIDENT VETERANS CONTRACTOR SHALL BE THE ONLY PREFERENCE THAT APPLIES. **CONTRACTORS MUST SUBMIT A COPY OF THEIR NEW MEXICO RESIDENT CONTRACTOR'S CERTIFICATE OR NEW MEXICO RESIDENT VETERAN CONTRACTORS CERTIFICATE WITH THEIR BID IN ORDER TO BE CONSIDERED FOR THE PREFERENCE AS PER 13-1-22 (A) NMSA 1978 .**

THE APPLICABLE STATE OF NEW MEXICO RESIDENT CONTRACTOR'S OR RESIDENT VETERAN CONTRACTOR'S PREFERENCE WILL BE FACTORED INTO BID PRICES WHERE APPLICABLE. HOWEVER, THE PREFERENCES ARE NOT CUMULATIVE AND BIDDERS WILL ONLY BE ENTITLED TO RECEIVE ONE PREFERENCE.

FOR INFORMATION ON NEW MEXICO RESIDENT CONTRACTOR CERTIFICATION PLEASE CALL 505-827-0951 OR TO DOWNLOAD APPLICATIONS, GO TO: [WWW.TAX.NEWMEXICO.GOV](http://WWW.TAX.NEWMEXICO.GOV) , SELECT "BUSINESSES" AND CLICK ON "IN-STATE PREFERENCE CERTIFICATION" UNDER "POPULAR INFORMATION" CAPTION.

**ADDENDA/AMENDMENTS:** IF ANY QUESTIONS OR RESPONSES REQUIRE REVISION TO THE SOLICITATION AS ORIGINALLY PUBLISHED, SUCH REVISIONS WILL BE BY FORMAL AMENDMENT ONLY TO KNOWN PLANHOLDERS OF RECORD. IF THE SOLICITATION INCLUDES A CONTACT PERSON FOR TECHNICAL INFORMATION, BIDDERS ARE CAUTIONED THAT ANY ORAL OR WRITTEN REPRESENTATIONS MADE BY THIS OR ANY PERSON THAT APPEAR TO CHANGE MATERIALLY ANY PORTION OF THE SOLICITATION SHALL NOT BE RELIED UPON UNLESS SUBSEQUENTLY RATIFIED BY A WRITTEN AMENDMENT TO THIS SOLICITATION ISSUED BY THE PURCHASING OFFICE OR DESIGNEE. FOR A DETERMINATION AS TO WHETHER ANY REPRESENTATION MADE REQUIRES THAT AN AMENDMENT BE ISSUED, CONTACT THE BUYER LISTED UNDER THE PARAGRAPH ENTITLED "INFORMATION".

**MODIFICATIONS:** THE CITY RESERVES THE RIGHT TO WAIVE MINOR INFORMALITIES, IRREGULARITIES OR TECHNICALITIES IN THE BID. THE CITY WILL BE THE SOLE ENTITY TO DETERMINE THE ACCEPTANCE OR NON-ACCEPTANCE OF ANY MODIFICATIONS OR DEVIATIONS.

**AWARD:** THE AWARD, IF MADE, SHALL BE MADE TO THE LOWEST RESPONSIBLE BIDDER SUBMITTING A RESPONSIVE BID THAT IS MOST ADVANTAGEOUS TO THE PUBLIC. EXCEPT THAT IF SUFFICIENT FUNDS ARE AVAILABLE TO FUND OPTION/ADDITIVE ALTERNATE BIDS, THE OWNER MAY AWARD THE CONTRACT TO THE RESPONSIBLE BIDDER SUBMITTING THE LOW COMBINED BID WITHIN THE FUNDS AVAILABLE (BASE BID PLUS OR MINUS OPTION/ADDITIVE ALTERNATES). **BIDDER MUST SUBMIT BIDS FOR ALL ITEMS - BASE BID PLUS ALL OPTION/ADDITIVE ALTERNATES-OR THEIR BID WILL BE FOUND NON RESPONSIVE.**

THE CITY RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS, TO WAIVE MINOR TECHNICALITIES OR IRREGULARITIES AND TO ACCEPT THE PROPOSAL IT DEEMS TO BE IN THE BEST INTERESTS OF THE CITY. BIDS MAY BE REJECTED FOR, AMONG OTHER REASONS:

- BIDS CONTAINING ANY IRREGULARITIES.
- UNBALANCED VALUE OF ANY ITEMS.
- REASON FOR BELIEVING COLLUSION EXISTS AMONG THE BIDDERS.
- THE BIDDER BEING INTERESTED IN ANY LITIGATION AGAINST THE CITY.
- THE BIDDER BEING IN ARREARS ON ANY EXISTING CONTRACT OR HAVING DEFAULTED ON A PREVIOUS CONTRACT; OR WITHIN THE PAST THREE YEARS BEEN FORMALLY DEBARRED IN THE STATE OF NEW MEXICO OR ANY OTHER JURISDICTION; OR WHOSE LICENSE HAS BEEN SUSPENDED OR REVOKED BY THE APPROPRIATE LICENSING AUTHORITY
- LACK OF RESPONSIBILITY AS MAY BE REVEALED BY A FINANCIAL STATEMENT, EXPERIENCE AND EQUIPMENT, QUESTIONNAIRES, ETC.
- UNCOMPLETED WORK WHICH IN THE JUDGMENT OF THE CITY WILL PREVENT OR HINDER THE PROMPT COMPLETION OF ADDITIONAL WORK IF AWARDED.

**PROTESTS:** ANY BIDDER OR OFFEROR WHO IS AGGRIEVED IN CONNECTION WITH ANY PHASE OF A SOLICITATION, OR AWARD OF A CONTRACT MAY PROTEST TO THE CENTRAL PURCHASING OFFICE. THE PROTEST MUST BE SUBMITTED IN WRITING WITHIN SEVEN (7) CALENDAR DAYS AFTER KNOWLEDGE OF THE FACTS OR OCCURRENCES GIVING RISE THERETO, STATE THE GROUNDS FOR THE PROTEST AND INCLUDE ANY SUPPORTING DOCUMENTATION, AND THE RELIEF REQUESTED.

**PROJECT ERRORS:** BIDDERS WILL PROMPTLY NOTIFY THE CITY OF GALLUP OF ANY AMBIGUITY, INCONSISTENCY OR ERROR THEY MAY DISCOVER UPON EXAMINATION OF THE PROJECT DOCUMENTS OR THE SITE AND LOCAL CONDITIONS.

**PROCUREMENT CODE VIOLATIONS:** THE PROCUREMENT CODE IMPOSES CIVIL AND CRIMINAL PENALTIES FOR ITS VIOLATION. IN ADDITION, THE NEW MEXICO CRIMINAL STATUTES IMPOSE FELONY PENALTIES FOR ILLEGAL BRIBES, GRATUITIES, AND KICK-BACKS. THE CITY OF GALLUP RESERVES THE RIGHT TO REJECT ANY OR ALL BIDS IN WHOLE OR IN PART, TO CANCEL THE BID, TO WAIVE TECHNICALITIES AND TO ACCEPT THE PROPOSAL IT DEEMS TO BE IN THE BEST INTEREST OF THE CITY.

## **NOTICE TO BIDDERS**

As of October 5, 2011 applications for Resident New Mexico in-state contractors will no longer be processed through the State Purchasing Division. All resident business and contractors will have to obtain a new preference number with the New Mexico Department of Taxation and Revenue as of January 1, 2012.

As of July 1, 2012 a New Mexico Resident Veteran Contractors preference number may be obtained from the New Mexico Department Taxation and Revenue Department.

**It will be the sole responsibility of Bidders requesting consideration for the New Mexico Resident Contractors Preference or the New Mexico Resident Veteran Contractors Preference to obtain approval and a certification from the New Mexico Department of Taxation & Revenue prior to the bid opening date. You must submit a copy of the Resident Contractors Certificate or Resident Veteran Contractor's Certificate with your bid in order to be considered for the in-state preference as per Section 13-1-22, and 13-4-2 NMSA 1978.**

For additional information please call 505-827-0951, or to download applications log on at: [WWW.TAX.NEWMEXICO.GOV](http://WWW.TAX.NEWMEXICO.GOV), select "Business" in top left hand corner, click on "In-State Preference Certification" under "Popular Information" caption.

## **LABOR ENFORCEMENT FUND**

*(STRICTLY ENFORCED)*

13-4-13.1 Public works contracts; registration of contractors and subcontractors.

- A. Except as otherwise provided in this subsection, in order to submit a bid valued at more than sixty thousand dollars (\$60,000) in order to respond to a request for proposals or to be considered for award of any portion of a public works project greater than sixty thousand dollars (\$60,000) for a public works project that is subject to the Public Works Minimum Wage Act [13-4-10 NMSA 1978], the contractor, serving as a prime contractor or not, shall be registered with the labor and industrial division of the labor department. Bidding documents issued or released by a state agency or political subdivision of the state shall include a clear notification that each contractor, prime contractor or subcontractor is required to be registered pursuant to this subsection. The provisions of this section do not apply to vocational classes in public schools or public postsecondary educational institutions.
- B. The state or any political subdivision of the state shall not accept a bid on a public works project subject to the Public Works Minimum Wage Act from a prime contractor that does not provide proof or required registration for itself.
- C. Contractors and subcontractors may register with the division on a form provided by the division and in accordance with labor department rules. The division shall charge an annual registration fee of two hundred dollars (\$200). The division shall issue to the applicant a certificate of registration within fifteen days after receiving from the applicant the completed registration form and the registration fee.
- D. Registration fees collected by the division shall be deposited in the labor enforcement fund.

### **13-4-14.1 Labor enforcement fund; creation; use.**

The "labor enforcement fund" is created in the state treasury. The fund shall consist of contractor and subcontractor registration fees collected by the labor and industrial division of the labor department and all investment and interest income from the fund. The fund shall be administered by the division and money in the fund is appropriated to the division for administration and enforcement of the Public Works Minimum Wage Act [13-4-10 NMSA 1978]. Money in the fund shall not revert to the general fund at the end of a fiscal year.

### **13-4-14.2 Registration cancellation, revocation, suspension; injunctive relief.**

The director of the labor and industrial division of the labor department may:

- A. cancel, revoke or suspend with conditions, including probation, the registration of any party required to be registered pursuant to the Public Works Minimum Wage Act [13-4-10 NMSA 1978] for failure to comply with the registration provisions or for good cause, subject to appeal pursuant to Section 13-4-15 NMSA 1978; and
- B. seek injunctive relief in district court for failure to comply with the registration provisions of the Public Works Minimum Wage Act.

**INSURANCE**

**INSURANCE:** THE CONTRACTOR OR HIS SUBCONTRACTORS SHALL NOT COMMENCE WORK UNDER THIS CONTRACT UNTIL HE OR HIS SUBCONTRACTORS HAVE OBTAINED INSURANCE REQUIRED UNDER THIS PARAGRAPH, AND IF ANY PORTION OF THE WORK IS SUBLET THE SUBCONTRACTOR SHALL CARRY SIMILAR COVERAGE FOR ALL ITS EMPLOYEES ENGAGED IN THE PROJECT. FOR PURPOSES OF THIS PARAGRAPH THE FOLLOWING INSURANCE REQUIREMENTS SHALL APPLY:

THE CONTRACTOR AND HIS SUBCONTRACTORS SHALL OBTAIN AND MAINTAIN IN EFFECT DURING THE LIFE OF THE CONTRACT COMPREHENSIVE GENERAL LIABILITY INSURANCE INCLUDING PREMISE/OPERATIONS; PRODUCTS/COMPLETED OPERATIONS; BROAD FORM CONTRACTUAL INDEPENDENT CONTRACTORS; BROAD FORM PROPERTY DAMAGE AND PERSONAL INJURY LIABILITIES:

COMPREHENSIVE GENERAL LIABILITY

BODILY INJURY:	\$1,000,000 EACH OCCURENCE \$1,000,000 ANNUAL AGGREGATE
PERSONAL INJURY	\$1,000,000 ANNUAL AGREGATE
PROPERTY DAMAGE	\$1,000,000 EACH OCCURENCE \$1,000,000 ANNUAL AGGREGATE

AUTOMOTIVE LIABILITY  
(OWNED, NONOWNED  
HIRED)

BODILY INJURY	\$1,000,000 EACH PERSON \$1,000,000 EACH ACCIDENT
PROPERTY DAMAGE	\$1,000,000 EACH OCCURENCE
PRODUCTS AND COMPLETED OPERATONS	SAME LIMITS AS ABOVE
INDEPENDENT CONTRACTORS	SAME LIMITS AS ABOVE
WORKMAN'S COMPENSATION	STATUTORY
EMPLOYERS LIABILITY	\$1,000,000

ALL CERTIFICATES OF INSURANCE SHALL NAME THE CITY OF GALLUP AS OWNER AND ADDITIONAL INSURED, AND STATE THAT 30 DAYS WRITTEN NOTICE WILL BE GIVEN TO THE OWNER BEFORE THE POLICY IS CANCELLED OR CHANGED.

## CONDITIONS OF THE CONTRACT

**CONTRACTOR'S PRE-START REPRESENTATIONS** - CONTRACTOR REPRESENTS THAT HE HAS FAMILIARIZED HIMSELF WITH AND ASSUMES FULL RESPONSIBILITY FOR HAVING FAMILIARIZED HIMSELF WITH THE NATURE AND EXTENT OF THE CONTRACT DOCUMENTS, WORK, LOCALITY, AND WITH ALL LOCAL CONDITIONS INCLUDING WEATHER CONDITIONS, AND FEDERAL, STATE, AND LOCAL LAWS, ORDINANCES, RULES AND REGULATIONS THAT MAY IN ANY MANNER AFFECT PERFORMANCE OF THE WORK AND REPRESENTS THAT HE HAS CORRELATED HIS STUDY AND OBSERVATIONS WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS. CONTRACTOR ALSO REPRESENTS THAT HE HAS STUDIED ALL SURVEYS AND INVESTIGATION REPORTS OF SUBSURFACE LATENT PHYSICAL CONDITIONS REFERRED TO IN THE SPECIFICATIONS AND MADE SUCH ADDITIONAL SURVEYS AND INVESTIGATIONS AS HE DEEMS NECESSARY FOR THE PERFORMANCE OF THE WORK AT THE CONTRACT PRICE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS AND THAT HE HAS CORRELATED THE RESULTS OF ALL SUCH DATA WITH THE REQUIREMENTS OF THE CONTRACT DOCUMENTS.

**INDEMNIFICATION OF OWNER:** THE CONTRACTOR EXPRESSLY BINDS HIMSELF TO DEFEND, INDEMNIFY, AND SAVE HARMLESS THE OWNER, HIS AGENTS AND EMPLOYEES, FROM ALL SUITS AND ACTIONS OF EVERY NATURE AND DESCRIPTION BROUGHT AGAINST THEM ON ACCOUNT OF THE CONSTRUCTION OF THIS WORK OR BY REASON OF ANY ACT, OMISSIONS, MALFEASANCE OF THE CONTRACTOR, HIS EMPLOYEES OR AGENTS, OR ANY SUBCONTRACTOR OR HIS AGENTS OR EMPLOYEES. THIS APPLIES EQUALLY TO INJURIES TO THE CONTRACTOR'S EMPLOYEES. THE CONTRACTOR IS RESPONSIBLE FOR PROTECTION OF LIFE, PROPERTY AND PREMISES FROM HARM, DAMAGE AND INJURY. **SECURITY:** THE CITY DOES NOT ASSUME ANY RESPONSIBILITY, AT ANY TIME, FOR THE PROTECTION OF OR LOSS OF MATERIALS FROM THE TIME THAT CONTRACT OPERATIONS HAVE COMMENCED UNTIL THE FINAL ACCEPTANCE OF THE WORK BY THE OWNER.

**CLEANING:** THE CONTRACTOR SHALL KEEP THE PREMISES CLEAN OF ALL RUBBISH AND DEBRIS GENERATED BY THE WORK INVOLVED. ALL SURPLUS MATERIAL, RUBBISH, DEBRIS SHALL BE DISPOSED OF BY THE CONTRACTOR AT THE CONTRACTOR'S EXPENSE. THE CITY WILL NOT BE RESPONSIBLE FOR THEFT OR DAMAGE TO THE CONTRACTOR'S PROPERTY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO AT ALL TIMES MAINTAIN A SAFE WORKING ENVIRONMENT. ALL POSSIBLE SAFETY HAZARDS TO WORKERS OR THE PUBLIC SHALL BE CORRECTED IMMEDIATELY AND THE PREMISES LEFT IN A SAFE CONDITION AT THE END OF EACH WORK DAY.

PRIOR TO PREPARATION OF FINAL PAY ESTIMATE, THE CONTRACTOR SHALL REMOVE FROM THE SITE OF THE WORK ALL RUBBISH, DEBRIS, UNUSED MATERIAL, TEMPORARY BUILDINGS, EXCESS EARTH OR PAVEMENT RUBBLE AND SHALL LEAVE THE PREMISES IN GOOD ORDER AND CONDITION, SUBJECT TO APPROVAL OF THE OWNER.

**PROTECTION OF MATERIAL AND WORK:** THE CONTRACTOR SHALL AT ALL TIMES CAREFULLY AND PROPERLY PROTECT ALL MATERIALS, EQUIPMENT AND FACILITIES BOTH BEFORE, DURING AND AFTER USE ON THE JOB, AND ALL WORK PERFORMED BY HIM AND PROVIDE ANY SPECIAL PROTECTION AS NECESSARY FROM WEATHER, THEFT, AND/OR VANDALISM WITHOUT ADDITIONAL COSTS TO THE CITY.

**WATER, GAS AND ELECTRICITY:** ALL WATER, GAS, ELECTRICITY OR OTHER UTILITIES REQUIRED TO COMPLETE THE PROJECT SHALL BE PROVIDED BY THE CONTRACTOR AT HIS EXPENSE, UNLESS SPECIFICALLY MODIFIED IN OTHER PORTIONS OF THE CONTRACT DOCUMENTS.

**PROTECTION AND/OR RESTORATION OF PUBLIC OR PRIVATE PROPERTY:** THE CONTRACTOR SHALL TAKE EVERY REASONABLE PRECAUTION TO INSURE THAT ALL PUBLIC AND PRIVATE PROPERTY IS PROTECTED FROM DAMAGE DURING THE EXECUTION OF THE WORK. THE CONTRACTOR SHALL RESTORE AT HIS OWN EXPENSE, ANY DAMAGES, EXCEPT AS OTHERWISE PROVIDED FOR IN THIS CONTRACT, FOR WHICH HE IS DIRECTLY OR INDIRECTLY RESPONSIBLE, TO A CONDITION EQUAL TO THAT EXISTING BEFORE THE DAMAGE. IF HE FAILS OR REFUSES TO DO SO UPON NOTICE, THE CITY MAY CAUSE SUCH RESTORATION AND DEDUCT THE EXPENSE THEREFORE FROM THE MONIES DUE, OR WHICH MAY BECOME DUE, TO THE CONTRACTOR.

EQUIPMENT AND MATERIALS SHIPPED TO MANUFACTURER OR TESTING FACILITY ARE TO BE EXCLUDED FROM THIS PROVISION, IF ITEM(S) IS DECLARED BY SUCH AUTHORITY TO NOT BE ABLE TO BE REPAIRED TO MANUFACTURER'S SPECIFICATIONS, NOR CERTIFIABLE. CONTRACTOR SHALL PROVIDE DOCUMENTATION FROM MANUFACTURER OR TESTING FACILITY AND PROVIDE TO THE CITY.

**SALVAGEABLE MATERIAL:** ALL MATERIAL DEEMED SALVAGEABLE FROM EXISTING OWNER FACILITIES WHICH ARE TO BE ABANDONED SHALL REMAIN THE PROPERTY OF THE OWNER.. THE ENGINEER WILL DETERMINE THE LOCATION FOR DISPOSITION OF SALVAGEABLE MATERIAL. MATERIAL DEEMED NOT SALVAGEABLE SHALL BE THE CONTRACTOR'S PROPERTY AND SHALL BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL RULES, REGULATIONS AND LAWS.

**CHANGED WORK:** THE OWNER MAY FROM TIME TO TIME ORDER ADDITIONS, DELETIONS OR REVISIONS IN THE WORK; THESE WILL BE AUTHORIZED BY WRITTEN CHANGE ORDER PREPARED BY THE ENGINEER AND SIGNED BY THE OWNER. ALL SUCH WORK WILL BE EXECUTED UNDER THE APPLICABLE CONDITIONS OF THE CONTRACT DOCUMENTS.

ADDITIONAL WORK PERFORMED WITHOUT AUTHORIZATION OF A WRITTEN AND EXECUTED CHANGE ORDER WILL NOT ENTITLE CONTRACTOR TO AN INCREASE OF CONTRACT PRICE OR AN EXTENSION OF CONTRACT TIME.

IF NOTICE OF A CHANGE AFFECTING THE GENERAL SCOPE OF WORK OR CHANGE IN CONTRACT PRICE IS REQUIRED BY THE PROVISIONS OF ANY BOND TO BE GIVEN TO THE SURETY, IT WILL BE **CONTRACTOR'S** RESPONSIBILITY TO SO NOTIFY THE SURETY, AND THE AMOUNT OF EACH APPLICABLE BOND SHALL BE ADJUSTED ACCORDINGLY. **CONTRACTOR SHALL FURNISH PROOF TO THE OWNER.**

**CHANGE IN CONTRACT PRICE:** ANY CLAIM FOR AN INCREASE IN CONTRACT PRICE SHALL BE BASED ON WRITTEN NOTICE DELIVERED TO **OWNER OR OWNER'S REPRESENTATIVE** WITHIN FIFTEEN (15) DAYS OF THE OCCURRENCE OF THE EVENT GIVING RISE TO THE CLAIM BUT **BEFORE** THE CONTRACTOR HAS INCURRED ADDITIONAL EXPENSE. NOTICE OF THE AMOUNT OF THE CLAIM WITH WRITTEN SUPPORTING DATA AND EXPLANATION OF THE BASIS OF THE CLAIM SHALL BE DELIVERED WITHIN SEVEN (7) DAYS OF THE OCCURRENCE UNLESS ENGINEER ALLOWS EXTRA TIME TO ASCERTAIN ACCURATE COST DATA. ANY CHANGE IN CONTRACT PRICE SHALL BE BY CHANGE ORDER. ENGINEER MAY GRANT CONTRACTOR AN EXTENSION OF TIME FOR RESOLVING A CLAIM FOR ADJUSTMENT BUT IN NO CASE SHALL CONTRACTOR BE ENTITLED TO DAMAGES FOR DELAY.

THE VALUE OF ANY WORK COVERED BY A CHANGE ORDER OR FOR ANY CLAIM OF INCREASE OR DECREASE IN CONTRACT PRICE SHALL BE DETERMINED IN ONE OF THE FOLLOWING WAYS:

1. BY UNIT PRICES CONTAINED IN THE CONTRACT DOCUMENTS; OR
2. MUTUAL ACCEPTANCE OF LUMP SUM OR UNIT PRICES
3. THE ACTUAL COST OF: (1) LABOR, INCLUDING FOREMEN (2) MATERIALS ENTERING PERMANENTLY INTO THE WORK (3) THE OWNERSHIP OR RENTAL COST OF CONSTRUCTION PLANT AND EQUIPMENT DURING THE TIME OF USE ON THE EXTRA WORK (4) POWER AND CONSUMABLE SUPPLIES FOR THE OPERATION OF POWER EQUIPMENT

TO THE COST UNDER (3) THERE SHALL BE ADDED A FIXED FEE TO BE AGREED UPON BUT NOT TO EXCEED TEN PERCENT (10%) UNLESS STATED OTHERWISE IN THE BID PROPOSAL, OF THE ACTUAL COST OF THE WORK. THE FEE SHALL BE COMPENSATION TO COVER THE COST OF SUPERVISION, OVERHEAD, BOND, PROFIT AND ANY OTHER GENERAL EXPENSES. TO THE CHARGE FOR EXTRA WORK UNDER (3) THE CONTRACTOR MAY ADD APPLICABLE LOCAL AND STATE GROSS RECEIPTS TAXES.

**CHANGE IN CONTRACT TIME:** THE CONTRACTOR EXPRESSLY COVENANTS AND AGREES THAT IN UNDERTAKING TO COMPLETE THE WORK AND HAVING MADE ALLOWANCES FOR ALL OF THE ORDINARY DELAYS AND HINDRANCES INCIDENT TO SUCH WORK WHETHER GROWING OUT OF DELAYS IN SECURING MATERIALS, WORKMEN OR OTHERWISE. SHOULD THE CONTRACTOR, HOWEVER, BE DELAYED IN THE PROSECUTION AND COMPLETION OF THE WORK BY REASON OF DELAYED SHIPMENT ORDERS, OR BY ANY CHANGES, ADDITIONS OR OMISSIONS THEREIN ORDERED IN WRITING BY THE OWNER OR BY THE ABANDONMENT OF THE WORK BY MEN ENGAGED HEREON THROUGH NO FAULT OF THE CONTRACTOR,

OR BY EMBARGOES, ETC. WHICH WOULD EFFECT THE FABRICATION OR DELIVERY OF MATERIALS AND/OR EQUIPMENT TO THE WORK, OR BY DELAYS CAUSED BY COURT PROCEEDINGS, OR WEATHER, THE CONTRACTOR SHALL HAVE NO CLAIMS FOR DAMAGES FOR ANY CAUSE OR DELAY, BUT HE SHALL IN SUCH CASES, BE ENTITLED TO SUCH EXTENSION OF THE TIME SPECIFIED FOR THE COMPLETION OF THE WORK AS THE OWNER SHALL AWARD IN WRITING ON ACCOUNT OF SUCH DELAYS, PROVIDED HOWEVER, THAT CLAIM FOR SUCH EXTENSION OF TIME IS MADE BY THE CONTRACTOR TO THE OWNER IN WRITING WITHIN ONE WEEK FROM THE TIME WHEN ANY SUCH ALLEGED CAUSE FOR DELAY SHALL OCCUR.

**SUSPENSION OF WORK:** THE OWNER MAY AT ANY TIME SUSPEND THE WORK OR ANY PART THEREOF FOR A PERIOD NOT TO EXCEED NINETY (90) DAYS BY NOTICE TO THE CONTRACTOR IN WRITING. THE WORK SHALL BE RESUMED BY THE CONTRACTOR WITHIN TEN (10) DAYS AFTER THE DATE FIXED IN THE WRITTEN NOTICE FROM THE OWNER TO THE CONTRACTOR TO DO SO.

BUT IF THE WORK, OR ANY PART THEREOF, SHALL BE STOPPED BY THE NOTICE IN WRITING AFORESAID, AND IF THE OWNER DOES NOT GIVE NOTICE IN WRITING TO THE CONTRACTOR TO RESUME WORK AT A DATE WITHIN NINETY (90) DAYS OF THE DATE FIXED IN THE WRITTEN NOTICE TO SUSPEND, THEN THE CONTRACTOR MAY ABANDON THAT PORTION OF THE WORK SO SUSPENDED, AND HE WILL BE ENTITLED TO THE ESTIMATE AND PAYMENTS FOR ALL WORK DONE ON THE PORTIONS SO ABANDONED.

**OWNER'S RIGHT TO DO WORK:** IF THE CONTRACTOR SHOULD NEGLECT TO PERFORM THE WORK PROPERLY OR FAIL TO PERFORM ANY PROVISION OF THIS CONTRACT, THE OWNER MAY, WITHOUT PREJUDICE TO ANY OTHER REMEDY, MAKE GOOD SUCH DEFICIENCIES AND DEDUCT THE COST THEREOF FROM THE PAYMENT THEN OR THEREAFTER DUE THE CONTRACTOR.

**FINAL EXAMINATION AND ACCEPTANCES:** AFTER CONTRACTOR HAS COMPLETED ALL WORK TO THE SATISFACTION OF OWNER AND DELIVERED ALL MAINTENANCE AND OPERATING INSTRUCTION, SCHEDULES, GUARANTEES, BONDS, CERTIFICATES OF INSPECTION, AS-BUILT PLANS AND OTHER DOCUMENTS HE MAY MAKE APPLICATION FOR FINAL PAYMENT FOLLOWING THE PROCEDURE FOR PROGRESS PAYMENTS. THE FINAL APPLICATION FOR PAYMENT SHALL BE ACCOMPANIED BY SUCH DATA AND SCHEDULES AS OWNER MAY REASONABLY REQUIRE, TOGETHER WITH COMPLETE AND LEGALLY EFFECTIVE RELEASES OR WAIVERS (SATISFACTORY TO OWNER) OF ALL LIENS ARISING OUT OF THE CONTRACT DOCUMENTS AND THE LABOR AND SERVICES PERFORMED AND THE MATERIAL AND EQUIPMENT FURNISHED. **CONTRACTOR MUST ALSO FURNISH THE AFFIDAVIT OF WAGES PAID FOR HIMSELF AND ALL SUBCONTRACTORS TO THE CITY OF GALLUP (OWNER) PRIOR TO FINAL PAYMENT BEING RELEASED.** ALTERNATELY, AND AS APPROVED BY OWNER, CONTRACTOR MAY FURNISH RECEIPTS OR RELEASES IN FULL; AN AFFIDAVIT OF CONTRACTOR THAT THE RELEASES AND RECEIPTS INCLUDE ALL LABOR, SERVICES, MATERIAL, AND EQUIPMENT FOR WHICH A LIEN COULD BE FILED, AND THAT ALL PAYROLLS, MATERIAL, AND EQUIPMENT BILLS, AND OTHER INDEBTEDNESS CONNECTED WITH THE WORK FOR WHICH OWNER OR HIS PROPERTY MIGHT IN ANY WAY BE RESPONSIBLE, HAVE BEEN PAID OR OTHERWISE SATISFIED. IF ANY SUBCONTRACTOR, MATERIALMAN, FABRICATOR, OR SUPPLIER FAILS TO FURNISH A RELEASE OR RECEIPT IN FULL, CONTRACTOR MAY FURNISH A BOND OR OTHER COLLATERAL SATISFACTORY TO OWNER TO INDEMNIFY HIM AGAINST ANY LIEN. ACCEPTANCE OF FINAL PAYMENT BY THE CONTRACTOR SHALL CONSTITUTE A WAIVE OF ALL CLAIMS BY CONTRACTOR AGAINST OWNER OTHER THAN THOSE PREVIOUSLY MADE IN WRITING AND STILL UNSETTLED.

**PAYMENTS:** ON OR ABOUT THE FIRST DAY OF EACH MONTH, THE CONTRACTOR WILL MAKE AN APPROXIMATE ESTIMATE OF THE VALUE OF WORK DONE AND UNUSED MATERIALS DELIVERED AND STORED ON THE SITE OF THE WORK DURING THE PREVIOUS CALENDAR MONTH. AFTER EACH SUCH ESTIMATE HAS BEEN APPROVED BY THE OWNER, THE OWNER SHALL PAY TO THE CONTRACTOR ONE HUNDRED (100%) PERCENT OF THE AMOUNT OF THE WORK COMPLETED LESS PREVIOUS PARTIAL PAYMENTS. PAYMENTS TO THE CONTRACTOR WILL BE MADE WITHIN 21 DAYS OF RECEIPT OF UNDISPUTED AMOUNT OF ANY PAY REQUEST BASED ON WORK COMPLETED.

**PAYMENT WITHHELD FROM CONTRACTOR:** THE OWNER MAY WITHHOLD OR NULLIFY THE WHOLE OR A PART OF ANY CERTIFICATE, ON ACCOUNT OF SUBSEQUENTLY DISCOVERED EVIDENCE, TO SUCH EXTENT ANY MAY BE NECESSARY TO PROTECT HIMSELF FROM LOSS ON ACCOUNT OF:

- A. DEFECTIVE WORK NOT REMEDIED.
- B. CLAIMS FILED OR REASONABLE EVIDENCE INDICATING PROBABLE FILING OF CLAIMS.
- C. FAILURE OF THE CONTRACTOR TO MAKE PAYMENTS PROPERLY TO SUBCONTRACTORS OR FOR MATERIAL OR LABOR.
- D. A REASONABLE DOUBT THAT THE CONTRACT CAN BE COMPLETED FOR THE UNPAID PORTION OF THE CONTRACT AMOUNT.
- E. DAMAGE TO ANOTHER CONTRACTOR.
- F. ANY OTHER VIOLATION OF OR FAILURE TO COMPLY WITH THE PROVISIONS OF THIS CONTRACT.

WHEN THE ABOVE GROUNDS ARE REMOVED, PAYMENT SHALL BE MADE FOR AMOUNTS WITHHELD BECAUSE OF THEM.

**CHARGES FOR ADDITIONAL INSPECTIONS:** SHOULD COMPETITION OF THE WORK EXTEND BEYOND THE TIME ALLOWED BY THE CONTRACT DOCUMENTS OR SUPPLEMENTS THERETO, IT IS EXPRESSLY UNDERSTOOD THAT IN ADDITION TO ANY OTHER PENALTY OR DAMAGE SUFFERED BY THE OWNER, THE INSPECTION COSTS CAUSED BY VIRTUE OF THE DELAY WILL BE CHARGED TO THE CONTRACTOR AND BE DEDUCTED FROM MONIES DUE TO THE CONTRACTOR AS INCLUDED IN LIQUIDATED DAMAGES SPECIFIED IN THE CONTRACT AND BID DOCUMENTS.

**OWNER'S RIGHT TO TERMINATE CONTRACT:** IN THE EVENT THAT ANY OF THE PROVISIONS OF THIS CONTRACT ARE VIOLATED BY THE CONTRACTOR, OR BY ANY OF HIS SUBCONTRACTORS, THE OWNER MAY SERVE WRITTEN NOTICE UPON THE CONTRACTOR AND THE SURETY OF HIS INTENTION TO TERMINATE THE CONTRACT. SUCH NOTICES ARE TO CONTAIN THE REASONS FOR INTENTION TO TERMINATE THE CONTRACT AND UNLESS WITHIN THE TIME SPECIFIED IN THE SERVING OF SUCH NOTICE UPON THE CONTRACTOR, SUCH VIOLATION OR DELAY SHALL CEASE AND SATISFACTORY ARRANGEMENT OF CORRECTION BE MADE, THE CONTRACT SHALL, UPON THE EXPIRATION OF SAID TIME PERIOD, CEASE AND TERMINATE. THE OWNER MAY TAKE OVER THE WORK AND PROSECUTE THE SAME TO COMPLETION BY CONTRACT OR BY FORCE ACCOUNT FOR THE ACCOUNT AND AT THE EXPENSE OF THE CONTRACTOR. THE CONTRACTOR AND HIS SURETY SHALL BE LIABLE TO THE OWNER FOR ANY EXCESS COST OCCASIONED THE OWNER THEREBY, AND IN SUCH EVENT THE OWNER MAY TAKE POSSESSION OF AND UTILIZE IN COMPLETING THE WORK SUCH MATERIALS, APPLIANCES AND PLANT AS MAY BE ON THE SITE OF THE WORK AND NECESSARY THEREFORE.

**TERMINATION FOR CONVENIENCE:** OWNER MAY, FOR CONVENIENCE AND WITHOUT CAUSE AND WITHOUT PREJUDICE TO ANY OTHER RIGHT OR REMEDY, ELECT TO TERMINATE THE CONTRACT FOR CONVENIENCE IN THE TIME SPECIFIED IN THE WRITTEN NOTICE. UPON RECEIPT OF WRITTEN NOTICE, CONTRACTOR SHALL INCUR NO FURTHER OBLIGATIONS IN CONNECTION WITH THE TERMINATED WORK AND, ON THE DATE SET IN THE NOTICE OF TERMINATION, CONTRACTOR SHALL STOP WORK TO THE EXTENT SPECIFIED. CONTRACTOR ALSO SHALL TERMINATE OUTSTANDING ORDERS AND SUBCONTRACTS AS THEY RELATE TO THE TERMINATED WORK. ALL FINISHED OR UNFINISHED DOCUMENTS, DATA, STUDIES, RESEARCH, SURVEYS, DRAWINGS, MAPS, MODELS, PHOTOGRAPHS, AND REPORTS OR OTHER MATERIALS PREPARED BY CONTRACTOR UNDER THIS CONTRACT SHALL, AT THE OPTION OF THE CITY, BE DELIVERED BY CONTRACTOR TO THE CITY AND SHALL BECOME THE CITY'S PROPERTY. IN SUCH CASE, CONTRACTOR SHALL BE PAID FOR ALL WORK EXECUTED AND ANY REASONABLE EXPENSE SUSTAINED. EXERCISE BY THE CITY OF THIS TERMINATION FOR CONVENIENCE PROVISION SHALL NOT BE DEEMED A BREACH OF CONTRACT BY THE CITY.

**SPECIFICATIONS AND DOCUMENTS:** THE BID DOCUMENTS, SPECIFICATIONS, CONTRACT DOCUMENTS AND ALL AMENDMENTS OR ADDENDA TO THE BID DOCUMENTS, SPECIFICATIONS AND CONTRACT DOCUMENTS, IF ANY, ARE ESSENTIAL PARTS OF THE CONTRACT, AND A REQUIREMENT OCCURRING IN ONE IS JUST AS BINDING AS THOUGH OCCURRING IN ALL. THE CONTRACTOR SHALL NOT TAKE ADVANTAGE OF ANY APPARENT ERROR OR OMISSION IN THESE DOCUMENTS. IF THE CONTRACTOR DISCOVERS AN APPARENT ERROR OR DISCREPANCY, HE SHALL IMMEDIATELY CONTACT THE OWNER FOR ITS INTERPRETATION AND DECISION, AND SUCH DECISION SHALL BE FINAL.

**SUBCONTRACTORS:** CONTRACTOR SHALL NOT EMPLOY ANY SUBCONTRACTOR OR OTHER PERSON OR ORGANIZATION (INCLUDING THOSE WHO ARE TO FURNISH THE PRINCIPAL ITEMS OF MATERIALS OR EQUIPMENT), WHETHER INITIALLY OR AS A SUBSTITUTE, AGAINST WHOM OWNER MAY HAVE REASONABLE OBJECTION. A SUBCONTRACTOR OR OTHER PERSON OR ORGANIZATION IDENTIFIED IN WRITING TO OWNER BY CONTRACTOR PRIOR TO THE NOTICE OF AWARD AND NOT OBJECTED TO IN WRITING BY OWNER PRIOR TO THE NOTICE OF AWARD WILL BE DEEMED ACCEPTABLE TO OWNER. ACCEPTANCE OF ANY SUBCONTRACTOR, OTHER PERSON, OR ORGANIZATION BY OWNER SHALL NOT CONSTITUTE A WAIVER OF ANY RIGHT OF OWNER TO REJECT DEFECTIVE WORK OR WORK NOT IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. IF OWNER, AFTER DUE INVESTIGATION, HAS REASONABLE OBJECTION TO ANY SUBCONTRACTOR, OTHER PERSON, OR ORGANIZATION PROPOSED BY CONTRACTOR AFTER THE NOTICE OF AWARD, CONTRACTOR SHALL SUBMIT AN ACCEPTABLE SUBSTITUTE AND THE CONTRACT PRICE SHALL BE INCREASED OR DECREASED BY THE DIFFERENCE IN COST OCCASIONED BY SUCH SUBSTITUTION AND AN APPROPRIATE CHANGE ORDER SHALL BE ISSUED. CONTRACTOR SHALL NOT BE REQUIRED TO EMPLOY ANY SUBCONTRACTOR, OTHER PERSON, OR ORGANIZATION AGAINST WHOM HE HAS REASONABLE OBJECTION. CONTRACTOR SHALL NOT WITHOUT THE CONSENT OF OWNER MAKE ANY SUBSTITUTION FOR ANY SUBCONTRACTOR, OTHER PERSON, OR ORGANIZATION WHO HAS BEEN ACCEPTED BY OWNER.

**ADDITIONAL BONDS AND INSURANCE:** PRIOR TO DELIVERY OF THE EXECUTED AGREEMENT BY OWNER TO CONTRACTOR, OWNER MAY REQUIRE CONTRACTOR TO FURNISH SUCH OTHER BONDS AND SUCH ADDITIONAL INSURANCE, IN SUCH FORM AND WITH SUCH SURETIES OR INSURERS, AS OWNER MAY REQUIRE. IF SUCH OTHER BONDS OR SUCH OTHER INSURANCE ARE SPECIFIED BY WRITTEN INSTRUCTIONS GIVEN PRIOR TO OPENING OF BIDS, THE PREMIUMS SHALL BE PAID BY CONTRACTOR; IF SUBSEQUENT THERETO, THEY SHALL BE PAID BY OWNER.

**GOVERNING LAW:** THE BID, TERMS AND CONDITIONS, AND THE CONTRACT DOCUMENTS SHALL BE GOVERNED BY THE LAWS OF THE STATE OF NEW MEXICO, AND IN ACCORDANCE WITH 57-28A-1 NMSA 1978.



8. List name and construction experience of the principals in your organization, including officers:
  
9. List the states and categories of construction in which you organization is legally qualified to do business:
  
10. List name, address, and telephone number of an individual who represents each of the following and who may be contacted for a financial reference:
  - a. A surety: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_
  
  - b. A bank: \_\_\_\_\_  
 CREDIT AVAILABLE: \$ \_\_\_\_\_
  
  - c. A major material supplier: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Dated this \_\_\_\_\_ day of \_\_\_\_\_ 20 \_\_\_\_\_

Bidder: \_\_\_\_\_  
 (Print or Type Name of Bidder)

By: \_\_\_\_\_

Title: \_\_\_\_\_

Seal of Corporation

**CITY OF GALLUP  
SUBCONTRACTOR LISTING  
Formal Bid No. 1621**

The Subcontractor Listing Threshold For This Project Is \$5,000, And Attached To The Bid In Compliance With 13-4-32 Thru 13-4-43 NMSA 1978, Together With The City Or County Location Of Their Place Of Business Listed. The Following Subcontractors Will Work On The Construction Of The Project If My Proposal Is Accepted. List only one Entry for each category of work as defined by Contractor.

Bidder Represents That He Is Licensed And Qualified To Perform 100% Of The Category Of Work For Which No Subcontractor Is Listed. D.W.S. Registration Number Required If Amount Of Work Exceeds \$60,000.

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/County: \_\_\_\_\_ State: \_\_\_\_\_  
Work to be Performed: \_\_\_\_\_  
Amount (\$): \_\_\_\_\_  
License No.: \_\_\_\_\_  
DWS Registration No. \_\_\_\_\_

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/County: \_\_\_\_\_ State: \_\_\_\_\_  
Work to be Performed: \_\_\_\_\_  
Amount (\$): \_\_\_\_\_  
License No.: \_\_\_\_\_  
DWS Registration No. \_\_\_\_\_

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/County: \_\_\_\_\_ State: \_\_\_\_\_  
Work to be Performed: \_\_\_\_\_  
Amount (\$): \_\_\_\_\_  
License No.: \_\_\_\_\_  
DWS Registration No. \_\_\_\_\_

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/County: \_\_\_\_\_ State: \_\_\_\_\_  
Work to be Performed: \_\_\_\_\_  
Amount (\$): \_\_\_\_\_  
License No.: \_\_\_\_\_  
DWS Registration No. \_\_\_\_\_

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/County: \_\_\_\_\_ State: \_\_\_\_\_  
Work to be Performed: \_\_\_\_\_  
Amount (\$): \_\_\_\_\_  
License No.: \_\_\_\_\_  
DWS Registration No. \_\_\_\_\_

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/County: \_\_\_\_\_ State: \_\_\_\_\_  
Work to be Performed: \_\_\_\_\_  
Amount (\$): \_\_\_\_\_  
License No.: \_\_\_\_\_  
DWS Registration No. \_\_\_\_\_

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/County: \_\_\_\_\_ State: \_\_\_\_\_  
Work to be Performed: \_\_\_\_\_  
Amount (\$): \_\_\_\_\_  
License No.: \_\_\_\_\_  
DWS Registration No. \_\_\_\_\_

Company Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
City/County: \_\_\_\_\_ State: \_\_\_\_\_  
Work to be Performed: \_\_\_\_\_  
Amount (\$): \_\_\_\_\_  
License No.: \_\_\_\_\_  
DWS Registration No. \_\_\_\_\_

-No Contractor whose Proposal is accepted shall permit any subcontract to be voluntarily assigned or transferred or allow it to be performed by anyone other than the original subcontractor listed in the original Proposal without the consent of the using agency.

-No Contractor whose Proposal is accepted, other than in the performance of change orders causing changes or deviations from the original contract, shall sublet or subcontract any portion of the work in excess of the listing threshold as to which his original Proposal did not designate a Subcontractor unless:

(1) the Contractor fails to receive a Proposal from a category of work. Under such circumstances, the contractor may subcontract. The Contractor shall designate on the listing form that **no Proposal was received** or;

(2) the Contractor fails to receive more than one Proposal for a category of work. Under such circumstances, the Contractor may subcontract. The Contractor shall state on the listing form that **only one Subcontractor's Proposal was received**, together with the name of the Subcontractor. This designation shall not occur more than one time on the Subcontractor list.

**ADDITIONAL COPIES MAY BE MADE IF NECESSARY**

**CITY OF GALLUP  
PROPOSAL FORM FOR CONTRACT  
Formal Bid No. 1621**

Project: Construction of Oliva Park at Basilio Drive

Proposal of \_\_\_\_\_ (hereinafter called the bidder), a corporation, organized and existing under the laws of the State of New Mexico, a partnership or an individual doing business as

\_\_\_\_\_ to the City of Gallup (hereinafter called the Owner).

Gentlemen: The bidder in compliance with your invitation for bids for the above-named project, has examined bidding documents and the site of the proposed work, and being familiar with all of the existing building and conditions surrounding the construction of the proposed project, including the availability of materials and supplies and to construct the project in accordance with the contract documents within the time set forth and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this proposal is a part, including any applicable building permit or other fees.

**Bid Security:** Shall be submitted with the bid and made payable to the owner in the amount of five percent (5%) of the bid sum. Security shall be by cash, certified or cashiers' check or a bid bond prepared on a form acceptable to the owner, issued by a surety licensed to do business in the state where the project is located. The Owner will retain these securities for 45 days or until a contract has been entered into, whichever is shorter. Should the low bidder refuse to enter into a contract, the owner will retain his security as liquidated damages, not as a penalty. If the lowest bidder fails to enter into a contract, then the next lowest bidder will be considered as the lowest bidder.

**Performance and Payment Bond:** In addition the successful bidder shall execute a performance bond and a payment bond each with a corporate surety authorized to do business in the State of New Mexico and said surety to be approved in Federal Circular 570 as published by the U.S. Treasury Department, each in the sum of 100% of the total bid price, within Fifteen (15) days of Notice of Award.

**Liquidated Damages:** Liquidated damages in the amount of \$500.00 per day shall be assessed for every calendar day past the stated completion date.

**Taxes:** The proposal total shall exclude all applicable taxes. The City will pay any taxes due on the contract based upon billing submitted by the contractor, at the applicable tax rate. Taxes shall be shown as a separate amount on any billing or request for payment.

Bidder hereby agrees to commence work under this contract on the date specified in the Notice to Proceed. Bidder shall provide a certificate of insurance in compliance with the State of New Mexico Construction Industries Division rules and regulation and the terms of this bid. If required by law, bidder shall provide evidence of Workmen's Compensation Insurance

Wages will be paid in accordance with the State of New Mexico wage rates as required by statute.

**ADDENDA: BIDDER ACKNOWLEDGES RECEIPT OF THE FOLLOWING AMENDMENTS:**

AMENDMENT No. 1:            <sup>Initials</sup> Date \_\_\_\_\_

AMENDMENT No. 2 : \_\_\_\_\_ Date \_\_\_\_\_

AMENDMENT No. 3 : \_\_\_\_\_ Date \_\_\_\_\_

AMENDMENT No. 4 : \_\_\_\_\_ Date \_\_\_\_\_

AMENDMENT No. 5 : \_\_\_\_\_ Date \_\_\_\_\_

AMENDMENT No. 6 : \_\_\_\_\_ Date \_\_\_\_\_

FAILURE TO ACKNOWLEDGE RECEIPT AS PROVIDED ABOVE MAY BE SUFFICIENT GROUNDS FOR DISQUALIFICATION OF THE BIDDER AND REJECTION OF HIS PROPOSAL. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO BECOME FULLY ADVISED OF ALL ADDENDA PRIOR TO SUBMITTING A BID.

**Bidder's Checklist of Required Documents**

- Bidder's Qualification Statement, Pages \_\_\_\_\_
- Subcontractor's Listing (1 Page, attach additional pages if needed), Page \_
- Proposal Form for Contract (2 Pages), Pages \_\_\_\_\_
- Price Proposal Forms, Pages, \_\_\_\_\_
- Bid Bond (5%) (2 Pages), \_\_\_\_\_
- Bidders must include a Copy of New Mexico Resident Contractors Certificate or New Mexico Resident Veteran Contractors Certificate (if applicable, to qualify for application of State Preference to the bid)
- Acknowledge Receipts of Amendments (if any), This Page \_\_\_\_\_

**BID PROPOSAL FORM**  
**FORMAL BID NO. 1621**  
(FOR LUMP SUM CONTRACT ONLY)

THE BIDDER AGREES TO PERFORM ALL THE WORK AS DESCRIBED IN THE GENERAL CONDITIONS AND PLANS TO PROVIDE \_\_\_\_\_ FOR THE FOLLOWING LUMP SUM:

BASE BID (**EXCLUDING TAXES**):

\_\_\_\_\_ \$ \_\_\_\_\_

(SHOW AMOUNTS IN FIGURES AND WORDS)

PLUS NEW MEXICO GROSS RECEIPTS TAX (@ 8.3125%)

\_\_\_\_\_ \$ \_\_\_\_\_

(SHOW AMOUNTS IN FIGURES AND WORDS)

**TOTAL BID (INCLUDING TAXES)**

\_\_\_\_\_ \$ \_\_\_\_\_

(SHOW AMOUNTS IN FIGURES AND WORDS)

IN THE CASE OF A DISCREPANCY, THE AMOUNTS SHOWN IN WORDS SHALL GOVERN.

**ALTERNATE NO. 1: DUAL-HEAD SITE LIGHTING (EXCLUDING TAXES):**

\_\_\_\_\_ \$ \_\_\_\_\_

(SHOW AMOUNTS IN FIGURES AND WORDS)

PLUS NEW MEXICO GROSS RECEIPTS TAX (@ 8.3125%)

\_\_\_\_\_ \$ \_\_\_\_\_

(SHOW AMOUNTS IN FIGURES AND WORDS)

SUBMITTED BY: Business Name \_\_\_\_\_

SIGNED By: \_\_\_\_\_

Authorized Signature

\_\_\_\_\_  
Name Printed or Typed

\_\_\_\_\_  
Title

\_\_\_\_\_  
Date

\_\_\_\_\_  
Address

\_\_\_\_\_  
Phone & Fax Number

\_\_\_\_\_  
Email Address

\_\_\_\_\_  
City, State, Zip

\_\_\_\_\_  
D.W.S. Registration No.

\_\_\_\_\_  
N.M. Contractor's License No.



2. Default of Bidder shall occur upon the failure of Bidder to deliver within the time required by the bidding Documents (or any extension thereof agreed to in writing by OWNER) the executed Agreement required by the Bidding Documents and any performance and payment Bonds required by the Bidding Documents.
3. This obligation shall be null and void if:
  - 3.1 OWNER accepts Bidder's Bid and Bidder delivers within the time required by the Bidding Documents (or any extension thereof agreed to in writing by OWNER) the executed Agreement required by the Bidding Documents and any performance and payment Bonds required by the Bidding Documents, or
  - 3.2 All Bids are rejected by OWNER, or
  - 3.3 OWNER fails to issue a Notice of Award to Bidder within the time specified in the Bidding Documents (or any extension thereof agreed to in writing by Bidder and, if applicable, consented to by Surety when required by paragraph 5 hereof).
4. Payment under this Bond will be due and payable upon default by Bidder and within 30 calendar days after receipt by Bidder and Surety of written notice of default from OWNER, which notice will be given with reasonable promptness, identifying this Bond and the Project and including a statement of the amount due.
5. Surety waives notice of any and all defenses based on or arising out of any time extension to issue Notice of Award agreed to in writing by OWNER and Bidder, provided that the total time for issuing Notice of Award including extensions shall not in the aggregate exceed 120 days from Bid due date without Surety's written consent.
6. No suit or action shall be commenced under this Bond prior to 30 calendar days after the notice of default required in paragraph 4 above is received by Bidder and Surety and in no case later than one year after Bid due date.
7. Any suit or action under this Bond shall be commenced only in a court of competent jurisdiction located in the state in which the Project is located.
8. Notices required hereunder shall be in writing and sent to Bidder and Surety at their respective addresses shown on the face of this Bond. Such notices may be sent by personal delivery, commercial courier or by United States Registered or Certified Mail, return receipt requested, postage pre-paid, and shall be deemed to be effective upon receipt by the party concerned.
9. Surety shall cause to be attached to this Bond a current and effective Power of Attorney evidencing the authority of the officer, agent or representative who executed this Bond on behalf of Surety to execute, seal and deliver such Bond and bind the Surety thereby.
10. This Bond is intended to conform to all applicable statutory requirements. Any applicable requirements of any applicable statute that has been omitted from this Bond shall be deemed to be included herein as if set forth at length. If any provision of this Bond conflicts with any applicable statute, then the provision of said statute shall govern and the remainder of this Bond that is not in conflict therewith shall continue in full force and effect.
11. The term "Bid" as used herein includes a Bid, offer or proposal as applicable.

**CONTRACT**

THIS AGREEMENT, made this day of \_\_\_\_\_, 20\_\_, by and between \_\_\_\_\_, hereinafter called the "OWNER" and \_\_\_\_\_, hereinafter called the "CONTRACTOR".

WITNESSETH: That for and in consideration of the payment and agreements hereinafter mentioned, to be made and performed by the OWNER, the CONTRACTOR hereby agrees with the OWNER to commence and complete the construction described as follows:

\_\_\_\_\_ hereinafter called the project, for the sum of:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_) and all work in connection therewith, under the terms as stated in the Terms, Conditions and Plans of the bid and this Contract; and at his (its or their) own proper cost and expense to furnish all the materials, supplies, machinery, equipment, tools, labor, insurance and other accessories and services necessary to complete the said project in accordance with the conditions and prices stated in the Proposal, the Terms and Conditions of the bid and the Contract, the plans, specifications and contract documents herefore as prepared by \_\_\_\_\_ and the City of Gallup, all of which are made a part hereof and collectively constitute the Contract.

The Contractor hereby agrees to commence work under this Contract on or before a date to be specified in a written "*Notice to Proceed*" of the OWNER and to fully complete the project within \_\_\_\_\_ ( ) consecutive calendar days thereafter. The CONTRACTOR further agrees to pay, as liquidated damages, the sum of \_\_\_\_\_ Dollars (\$\_\_\_\_\_) for each consecutive calendar day thereafter as hereinafter provided in the Special and General Conditions.

IN WITNESS WHEREOF, the parties to these presents have executed this Contract in four (4) counterparts, each of which shall be deemed an original, in the year and day first above mentioned.

(SEAL)  
ATTEST: \_\_\_\_\_

\_\_\_\_\_  
OWNER  
BY:  
\_\_\_\_\_  
SIGNATURE  
\_\_\_\_\_  
NAME TYPED OR PRINTED  
\_\_\_\_\_  
TITLE

(CORPORATE SEAL)

\_\_\_\_\_  
CONTRACTOR  
BY:  
\_\_\_\_\_  
SIGNATURE  
\_\_\_\_\_  
NAME TYPED OR PRINTED  
\_\_\_\_\_  
TITLE

**CITY OF GALLUP**

**PAYMENT BOND**

KNOW ALL MEN BY THESE PRESENT: That we, the undersigned \_\_\_\_\_  
\_\_\_\_\_ hereinafter called "*Principal*" and \_\_\_\_\_ a  
corporation authorized under the laws of the State of New Mexico, hereinafter called the Surety, are held and firmly bound  
unto the City of Gallup as Obligee, hereinafter called "*OWNER*" in the penal sum \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_) in lawful money of the United States, for payment of which sum well and truly  
to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these  
present.

THE CONDITION OF THIS OBLIGATION is such that whereas, the Principal entered into a written contract with  
the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_\_, a copy of which is hereto attached and made a part thereof for the construction of: \_\_\_\_\_

NOW THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors and  
corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any  
authorized extension or modification thereof, Including all amounts due for materials, lubricants, oil, gasoline, repairs on  
machinery, equipment and tools, consumed or used in connection with the construction of such work whether by subcontractor  
or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

The right to sue on this bond accrues only to the Owner and the parties to whom New Mexico Statutes Annotated,  
1978, 13-4-18 through 13-4-20, as amended, grant such right; and any such right shall be exercised only in accordance with the  
provisions and limitations of said statutes. Venue upon any suit brought upon this bond shall be in the District Court of  
McKinley County, New Mexico.

PROVIDE FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension  
of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications  
accompanying the same in any way affect its obligations or this bond, and it does hereby waive notice of any such change,  
extension of time, alteration or addition to the terms of the contract or to the work to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the contractor shall abridge the right of any  
beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executing in four (4) counterparts, each one of which shall be deemed an  
original, this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal) Secretary

SEAL

\_\_\_\_\_  
Witness as to Principal

\_\_\_\_\_  
Address

\_\_\_\_\_  
City State Zip

ATTEST:

\_\_\_\_\_  
(Surety) Secretary

SEAL

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_  
Address

\_\_\_\_\_  
City State Zip

\_\_\_\_\_  
Principal

By: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_  
City State Zip

\_\_\_\_\_  
Surety

By: \_\_\_\_\_  
Attorney-in-Fact

\_\_\_\_\_  
Address

\_\_\_\_\_  
City State Zip

**CITY OF GALLUP**  
**PERFORMANCE BOND**

KNOW ALL MEN BY THESE PRESENT: That we, the undersigned \_\_\_\_\_  
\_\_\_\_\_ hereinafter called "*Principal*" and \_\_\_\_\_ a  
corporation authorized under the laws of the State of New Mexico, hereinafter called the Surety, are held and firmly bound  
unto the City of Gallup as Obligee, hereinafter called "*OWNER*" in the penal sum \_\_\_\_\_  
\_\_\_\_\_ Dollars (\$\_\_\_\_\_) in lawful money of the United States, for payment of which sum well and truly  
to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these  
presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a written contract with  
the Owner, dated the \_\_\_\_\_ day of \_\_\_\_\_,  
20\_\_\_\_\_, a copy of which is hereto attached and made a part thereof for the construction of: \_\_\_\_\_

NOW THEREFORE, if the Principal shall will, truly and faithfully perform its duties, all the undertakings, covenants, terms,  
conditions, and agreements of said contract during the original term thereof, and any extensions thereof which may be granted  
by the Owner with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under such contract,  
and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to  
do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any  
default, and shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or  
performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification  
thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs on machinery, equipment and tools, consumed  
or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor,  
performed in such work whether by subcontractor or otherwise, and if the said principal shall for a period of one (1) year from  
and immediately following the completion of said contract and acceptance thereof by the Owner guarantee all work performed  
under the contract against faulty or defective materials and workmanship at his own expense and at no cost to the Owner, then  
this obligation shall be void; otherwise to remain in full force and effect.

Whenever Contractor shall be, and declared by Owner to be in default under the agreement, the Owner having  
performed the Owner's obligations thereunder, the Surety will promptly remedy the default.

PROVIDE FURTHER, that the said Surety, for value received, hereby stipulates and agrees that no change, extension  
of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications  
accompanying the same in any way affect its obligations or this bond, and it does hereby waive notice of any such change,  
extension of time, alteration or addition to the terms of the contract or to the work to the specifications.

PROVIDED, FURTHER, that no final settlement between the Owner and the contractor shall abridge the right of way  
beneficiary hereunder, whose claim may be unsatisfied.

VENUE upon any suit brought upon this bond shall be in the District Court of McKinley County, New Mexico.

IN WITNESS WHEREOF, this instrument is executing in four (4) counterparts, each one of which shall be deemed an  
original, this the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

ATTEST:

\_\_\_\_\_  
(Principal) Secretary

\_\_\_\_\_  
Principal

By: \_\_\_\_\_

Address: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_  
City State Zip

SEAL

\_\_\_\_\_  
Witness as to Principal

\_\_\_\_\_  
Address

\_\_\_\_\_  
City State Zip

ATTEST:

\_\_\_\_\_  
(Surety) Secretary

\_\_\_\_\_  
Surety

By: \_\_\_\_\_  
Attorney-in-Fact

\_\_\_\_\_  
Address

\_\_\_\_\_  
City State Zip

SEAL

\_\_\_\_\_  
Witness as to Surety

\_\_\_\_\_  
Address

\_\_\_\_\_  
City State Zip

## NOTICE OF AWARD

Dated: \_\_\_\_\_

TO: \_\_\_\_\_  
(BIDDER)

ADDRESS: \_\_\_\_\_

Contract: City of Gallup,  
(Insert name of Contract as it appears in the Bidding Documents)

Project: City of Gallup,

OWNER's Contract No. City of Gallup,

---

You are notified that your Bid dated \_\_\_\_\_ for the above Contract has been considered. You are the apparent Successful Bidder and have been awarded a Contract City of Gallup,

---

(Indicate total Work, alternates or sections or Work awarded)

The Contract Price of your Contract is \_\_\_\_\_

5 copies of each of the proposed Contract Documents (except Drawings) accompany this Notice of Award. 5 sets of the Drawings will be delivered separately or otherwise made available to you immediately.

You must comply with the following conditions precedent within Fifteen (15) days of the date of this Notice of Award, that is by \_\_\_\_\_

1. Deliver to the OWNER 5 fully executed counterparts of the Contract Documents. Each of the Contract Documents must bear your signature
2. Deliver with the executed Contract Documents the Contract security (Performance and Payment Bonds) as specified in the General Conditions
3. Before you may start any Work at the Site, the General Conditions provide that you must deliver to the OWNER (with copies to Engineer and other identified additional insured's) certificates of insurance with the City named as additional insured which you are required to purchase and maintain in accordance with the Contract Documents.
4. Before starting work, have or obtain a valid City of Gallup Business License
5. Furnish a current IRS form W-9 bearing an original signature
6. Furnish a copy of the Statement of Intent to Pay Prevailing Wages **from your firm and from all subcontractors, to the City of Gallup.**

Failure to comply with these conditions within the time specified will entitle OWNER to consider your Bid in default, to annul this Notice of Award and to declare your Bid security forfeited.

Within ten days after you comply with the above conditions, OWNER will return to you one fully executed counterpart of the Contract Documents.

\_\_\_\_\_  
City of Gallup

(OWNER)

By: \_\_\_\_\_

(AUTHORIZED SIGNATURE)

\_\_\_\_\_  
(TITLE)

# NOTICE TO PROCEED

Dated: \_\_\_\_\_

TO: \_\_\_\_\_  
(CONTRACTOR)

ADDRESS<sup>1</sup>: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Contract: \_\_\_\_\_  
(Insert name of Contract as it appears in the Bidding Documents)

Project: \_\_\_\_\_

OWNER's Contract No. \_\_\_\_\_

---

You are notified that the Contract Times under the above contract will commence to run on \_\_\_\_\_. By that date, you are to start performing your obligations under the Contract Documents.

Also, before you may start any Work at the Site, you must  
(add other requirements)

\_\_\_\_\_  
(OWNER)

By: \_\_\_\_\_  
(AUTHORIZED SIGNATURE)

\_\_\_\_\_  
(TITLE)

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**SECTION 01 1000****SUMMARY****PART 1 - GENERAL****1.1 SUMMARY**

## A. Section includes:

1. General description of Work and Contractor's duties.
2. Work by others.
3. Contractor use of site.
4. Definitions.

## B. Related documents and sections:

1. Section 01 2300 - Alternates: Alternates which increase scope of Project.

**1.2 WORK COVERED BY CONTRACT DOCUMENTS**

- A. Work of this Contract covers construction of an approximately on-half acre park. New addition will be a combination of masonry veneer/phenolic wall panel, light gauge steel load bearing stud assemblies, and steel rigid frame superstructure. Work shall be delivered in three phases, each with separate Substantial Completion date and each with a temporary Certificate of Occupancy allowing the Owner to move in while other parts of the facility are being constructed.

**1.3 CONTRACTOR'S DUTIES**

- A. Except as noted, provide and pay for all labor, materials, and equipment.
- B. Pay required sales, gross receipts, and other taxes. Owner will pay Contractor applicable New Mexico gross receipts tax including local option tax and any increase in tax becoming effective after Contract date.
- C. Secure and pay for permits (including plan checking fees), fees, and licenses necessary for execution of Work as applicable at time of receipt of bids or as otherwise required in other sections of the Specifications.
- D. Give required notices.
- E. Comply with current codes, ordinances, regulations, and other legal requirements of public authorities which bear on performance of Work.
- F. Request required inspections from public authorities, correct any noted deficiencies, and obtain certifications of satisfactory inspection. Deliver certificates to Owner in accordance with Section 01 7800 - Closeout Submittals.

#### **1.4 WORK BY OTHERS**

- A. Items noted "NOT IN CONTRACT" (NIC) will be supplied and installed by Owner:
- B. Owner's responsibilities:
  - 1. Schedule and inform Contractor in coordination of work by Owner's own forces.
- C. Contractor's responsibilities:
  - 1. Participate in coordination of work with other installers, including Owner's own forces.
  - 2. Review shop drawings, product data, and installation instructions; coordinate installation with other work; and provide blocking and other preparation required for Owner supplied products.
  - 3. Repair or replace items damaged after receipt.

#### **1.5 CONTRACTOR USE OF SITE**

- A. Contractor will have full use of project site.
- B. Existing adjacent residences will be occupied during construction. Cooperate with Owner to minimize conflict.
- C. Contractor will be prohibited to use adjacent site:
  - 1. Parking: Contractor and work force shall not congest existing roads.
  - 2. Construction activities shall be limited to areas of actual construction.
  - 3. Unless otherwise agreed to in advance by Owner, construction shall be performed only during these time periods:
    - a. Normal weekday work hours.
- D. Do not allow dust and debris to blow onto adjacent or restricted areas.
- E. Provide 72 hours notice to Owner for any work that may interrupt or otherwise impact the surrounding area's normal operations including noisy and dust or odor producing activities.
- F. Utility outages and shutdowns:
  - 1. Maximum allowable duration: As approved in advance by Owner.
  - 2. Coordinate all utility shutdowns which affect the operation of the neighbors with the Owner and any entity having jurisdiction over or ownership of impacted public or private utility infrastructure.
  - 3. Submit written request for outage to Architect 72 hours before anticipated outage. Outage must be approved in writing by Design Professional.

## 1.6 CONTRACTOR'S PERSONNEL JOBSITE RESTRICTIONS

- A. Contractor shall enforce the following requirements on his entire workforce throughout the progress of the Work:
1. All personnel on site, directly or indirectly in the employ of Contractor, are restricted from any interaction with any Owner, Owner's staff, or other members of the public while on, or adjacent to Owner's property except through jobsite meetings or as otherwise determined by the Owner.
  2. Contractor's personnel shall remain in their designated work areas. Communications with any non-project related persons on or near the site shall be through Project Superintendent.
  3. No firearms or other types of weapons, of any sort are allowed on site. If member of the Contractor's workforce is found to be in possession of a firearm, of any kind, they will be directed to leave immediately and will not be allowed to return. This includes firearms found in company or private vehicles, tool boxes, or brought on site in any other manner;
  4. Smoking shall be limited to designated areas, if allowed in advance by Owner.
  5. There shall be no use, possession, sale, and distribution of alcohol, drugs, or other controlled substances on its premises. The Contractor shall also prohibit the presence of an individual with such substances in their body from the workplace.
  6. Any employee who is found in violation of requirements of these restrictions, or of any others within the Contract Documents, or who refuses to permit inspection shall be barred from the Project site at the discretion of the Owner.

## 1.7 IDENTIFICATION OF ENTITIES

- A. Where the term "Design Professional" is used in the Contract Documents it is defined as the authorized representative designated by Owner and acting within the scope of the particular duties entrusted to such representative.
2. Design Professional: Huitt-Zollars, Inc.
  3. Project Manager: Joseph M. Gallegos, AIA, LEED BD+C
  4. 6501 Americas Parkway NE, Suite 550, Albuquerque, NM 87110
  5. Telephone number: 505-883-8114
  6. Fax number: 505-883-5022
  7. E-mail address: jgallegos@huitt-zollars.com
- B. Where the term "Owner" is used in the Contract Documents, it is defined as the City of Gallup, Public Works Department.
1. Public Works Department Contact: Mr. Stanley Henderson, Public Works Director

- a. 110 West Aztec, Gallup NM 87301
- b. Telephone number: 505-863-1290
- c. FAX number: 505-726-2043
- d. E-mail address: [shenderson@GallupNM.gov](mailto:shenderson@GallupNM.gov)

**1.11 DEFINITIONS**

- A. Additional terms used within Specifications but not defined by Document 00 7200 - General Conditions shall have the following definitions:
  - 1. Products: Materials, manufactured items, components, fixtures, machinery, equipment, or systems forming the Work but not including machinery, equipment, and other aids used for preparing, fabricating, conveying, and installing the Work.
  - 2. Supply: Furnish, deliver, and unload at Project site. Same meaning as furnish.
  - 3. Furnish: Supply, deliver, and unload at Project site. Same meaning as supply.
  - 4. Install: Operations at Project site to incorporate products into the Work such as unpacking, assembling, anchoring, erecting, applying, placing, curing, finishing, and preparing for use.
  - 5. Provide: To supply or furnish a product and to also install it.
  - 6. Execution: Operations at Project site including preparatory actions, installing, and post-installation adjusting, testing, cleaning, and demonstrating.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

Not used.

**END OF SECTION 01 1000**

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**SECTION 01 2300****ALTERNATES****PART 1 - GENERAL****1.1 SUMMARY**

- A. Section includes: Procedures and descriptions for alternates which decrease or increase scope of project, or determine cost of separate agreements.

**1.2 CONDITIONS**

- A. All requirements of General and Supplementary Conditions, applicable sections of Specifications, and applicable portions of Drawings shall govern scope, quality, and execution of alternates.
- B. Alternates will be selected in order listed on Bid Form and as allowed by available funding.

**1.3 ADDITIVE ALTERNATE NO. 1 - Dual-Head Site Lighting**

- A. Alternate requires providing a cost for using a dual-head light fixture at the location shown on the Drawings.

**1.4 PROCEDURES**

- A. Consider all work that must be accomplished for complete incorporation of alternates including modifications to Base Bid items and work to be performed under separate contract.
- B. Include in lump sum prices for alternates all costs of labor, materials, equipment, permits, fees, insurance, bonds, overhead, and profit.
- C. Immediately after award of Contract, advise all necessary personnel and suppliers as to which alternates have been selected by Owner. Use all means necessary to alert those personnel and suppliers involved as to all changes in the work caused by Owner's selection or rejection of alternates.
- D. Coordinate related work and modify surrounding work to integrate work of each alternate.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

Not used.

**END OF SECTION**

**SECTION 01 3100****PROJECT MANAGEMENT AND COORDINATION****PART 1 - GENERAL****1.1 SUMMARY****A. Section includes:**

1. General requirements for coordination of Work.
2. Field engineering.
3. Requirements for participation in and administration of:
  - a. Progress meetings.
  - b. Pre-installation conferences.
4. Progress schedule.

**B. Related documents and sections:**

1. Section 01 1000 - Summary: Work by others.
2. Section 01 4000 – Quality Requirements: Coordination with Owner’s project roof observer.
3. Section 01 1500 – Temporary Facilities and Controls

**1.2 SUBMITTALS****A. Provide in accordance with Section 01 3300 - Submittal Procedures:**

1. Site mobilization plan (See Section 01 1500.
  - a. Submit for Owner’s approval prior to start of Work.
  - b. Update as necessary during progress of Work to adjust for changed conditions and as approved by Owner.
2. Coordination drawings:
  - a. Provide where coordination is critical for installation of components fabricated off site and where space is limited and maximum utilization of space is required.
  - b. Show relationship and integration of components and construction entities, required installation sequence, dimensions, and tolerances.

**B. Staff assignment list and emergency contact information:**

1. Prior to Construction, provide to Design Professional a list of Contractor's principal staff assignments for Project. Indicate names, duties and responsibilities, addresses, emergency contact information and telephone numbers. Include resume of proposed Project Superintendent showing prior experience as superintendent on projects of similar size and scope. Naming more than one Project Superintendent to be in charge depending which is present at the site will not be acceptable. Design Professional shall

be informed in writing prior to any proposed change in Project Superintendent during the progress of the Work.

2. Distribute contact information and post in field office coordination.

### **1.3 GENERAL COORDINATION REQUIREMENTS**

- A. Scheduling: Coordinate scheduling, submittals and work of various specification sections to ensure efficient and orderly sequence of installation of interdependent construction elements. Ensure that work of one specification section is not installed in such a manner as to limit, preclude, or restrict work of another section.
- B. Coordinate completion and clean up of work of separate specification sections in preparation for final inspection specified in Section 01 7700 - Closeout Procedures.
- C. After acceptance of Work, coordinate access for required maintenance, monitoring, adjusting, and correcting deficiencies to manner to minimize disruption of Owner's activities.
- D. Coordinate with Owner regarding work of Owner's forces. Ensure coordination of such work with Project Schedule.

### **1.4 FIELD ENGINEERING**

- A. Existing control datum for field engineering is indicated on Drawings.
- B. Locate or establish survey control and reference points prior to starting site construction. Protect points during construction and record locations with horizontal and vertical data on Project Record Documents in accordance with Section 01 7800 - Closeout Submittals.
- C. Prior to start of construction, verify location of control points and layout information on Drawings relative to property, setback, and easement lines.
- D. Provide competent field engineering services. Establish elevations, lines, and levels utilizing recognized engineering survey practices. Periodically verify layouts.
- E. Promptly replace dislocated control and reference points based on original survey control.
- A.

### **1.5 PROGRESS MEETINGS**

- A. Progress meetings will be held as required.

### **1.8 PRE-INSTALLATION CONFERENCES**

- A. When required by an individual specification section, convene a pre-installation conference at site.
- B. Require attendance of entities directly concerned with item of work.

- C. Notify Design Professional 4 days in advance of meeting.
- D. Prepare agenda and preside at conference. Record minutes, and distribute copies within 3 days to participants and Design Professional.
- E. At meeting, review conditions of installation, preparation and installation procedures, and coordination with related work.

## **1.9 PROGRESS SCHEDULE**

- A. Prior to commencement of Work, provide a project schedule to the Owner and Design Professional.

## **PART 2 - PRODUCTS**

### **2.1 EQUIPMENT**

- A. Verify utility requirements and characteristics of equipment are compatible with facility utilities. Coordinate work of various specification sections having interdependent requirements for installing, connecting to, and placing in service such equipment.

## **PART 3 - EXECUTION**

Not Used

**END OF SECTION**

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**SECTION 01 3300**

**SUBMITTAL PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section includes submittal procedures for:

1. Shop drawings.
2. Product data.
3. Samples.
4. Manufacturer's instructions.
5. Design data and calculations.
6. Manufacturer's certificates.
7. Reports for testing, inspecting, and demonstrating.

B. Related documents and sections:

1. Section 01 3100 - Project Management and Coordination: Submittal of Progress Schedule and coordination drawings.
2. Section 01 4000 - Quality Requirements: Manufacturers' field services and reports.
3. Section 01 6300 - Product Substitution Procedures: Submittal of substitution requests.
4. Section 01 7800 - Closeout Submittals: Submittal of project record drawings, operation and maintenance manuals, warranties, certifications of inspection, extra materials, and other closeout submittals.
5. Refer to individual specification sections for unique submittal requirements related to a specific product, system, or procedure.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**

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**SUBMITTAL TRANSMITTAL FORM**

The undersigned, as Contractor for the above project, submits the following and certifies that submittal has been reviewed and it conforms with requirements of Contract Documents except as noted.

SUBMITTAL NUMBER: \_\_\_\_\_ RESUBMITTAL: YES NO

DATE: \_\_\_\_\_ NUMBER OF COPIES SUBMITTED: \_\_\_\_\_

DESCRIPTION: \_\_\_\_\_

ASSOCIATED SPECIFICATION SECTION NO: \_\_\_\_\_

REFERENCED DRAWING SHEET NO: \_\_\_\_\_

NAME OF SUBCONTRACTOR/SUPPLIER: \_\_\_\_\_

SUBMITTED

BY: \_\_\_\_\_ DATE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

● \*\*\*\*\*

DATE RECEIVED BY DESIGN PROFESSIONAL: \_\_\_\_\_

DISTRIBUTED TO:

OWNER CIVIL LANDSCAPE STRUCTURAL MECHANICAL ELECTRICAL

OTHER: \_\_\_\_\_

\*\*\*\*\*

ACTION:	No exceptions taken	[ ]
	Make corrections noted	[ ]
	Revise and resubmit	[ ]
	Rejected	[ ]

COMMENTS:

\_\_\_\_\_  
\_\_\_\_\_

Submittal review corrections and comments by Design Professional do not relieve Contractor from compliance with Contract Documents. Review is only for general conformance with design concept and general compliance with information given in Contract Documents. Contractor is responsible for verifying dimensions, selecting fabrication processes and techniques of construction, coordination with other trades, and performing work in safe and satisfactory manner.

REVIEWED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

SIGNATURE: \_\_\_\_\_

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**SECTION 01 4000**

**QUALITY REQUIREMENTS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section includes:

1. Inspection and testing laboratory services.

B. Related requirements:

1. Section 01 3100 – Project Management and Coordination: Requirements for coordination with Owner’s separate contractors.
2. Section 01 6000 - Product Requirements: Requirements for material and product quality.

**1.2 INSPECTION AND TESTING LABORATORY SERVICES**

A. Unless required otherwise in the Contract, Owner shall appoint, employ, and pay for services of an independent firm to perform routine inspections and compliance for:

1. Other materials, components, and systems where routine testing to determine compliance with Contract Documents is required.

B. Testing firm shall perform inspections, tests, and other services specified in individual specification sections and as required.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

Not used.

**END OF SECTION**

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**SECTION 01 5000****TEMPORARY FACILITIES AND CONTROLS****PART 1 - GENERAL****1.1 SUMMARY**

## A. Section includes:

1. Site mobilization plan.
2. Temporary services: Electrical.
3. Fencing, barriers, and other temporary controls.
4. Temporary erosion and sediment controls including NPDES-SWPPP requirements.
5. Construction facilities: Temporary buildings, sanitary facilities, access, and parking.
6. Protection of Work and existing facilities.
7. Project sign.
8. Bulletin board.

## B. Related documents and sections:

1. Section 01 3100: Project Management and Coordination
2. Section 01 7000 - Execution Requirements: Progress cleaning.

**1.2 REFERENCES**

- A. NFPA 10 - Standard for Portable Fire Extinguishers.
- B. NFPA 241 - Safeguarding Building Construction, Alterations, and Demolition Operations.

**1.3 SITE MOBILIZATION PLAN**

- A. Coordinate locations for temporary facilities with Design Professional and Owner.
- B. Based upon information indicated on Drawings, prepare site mobilization plan showing:
  1. Field office.
  1. Storage areas, sheds, and fencing.
  2. Project identification sign.
  3. Access routes.
  4. Temporary utility routes and connections.
  5. Sanitary facilities.
  6. Trash and rubbish receptacles.
  7. Parking arrangements.
- C. Present 3 copies of plan to Owner and Design Professional in accordance with Section 01 3100 - Project Management and Coordination.
- D. Prior to mobilization, revise and resubmit to Design Professional site mobilization plan incorporating final revisions made approved by Design Professional and Owner.

**1.4 TEMPORARY ELECTRICITY**

- A. Provide and pay for temporary electricity used during construction. Provide service disconnect and overcurrent protection. Provide temporary feeder as required.
- B. Provide power outlets for construction operations with branch wiring, distribution boxes, and flexible power cords as required.
- C. Permanent convenience receptacles may be utilized during construction.

### **1.5 TEMPORARY LIGHTING**

- A. Provide lighting for construction operations as required. Lighting levels shall be appropriate for type and difficulty of work. Use these minimums as guidelines:
- B. After dark, provide security lighting for interior and exterior work and storage areas.
- C. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.
- D. Maintain lighting and provide routine repairs.

### **1.6 TEMPORARY WATER SERVICE**

- A. Provide, maintain, and pay for suitable quality water service required for construction operations.
- B. Assume responsibility for temporary connections and water lines. Upon completion, remove temporary facilities.

### **1.7 COMMUNICATIONS**

- A. Provide, maintain, and pay for telephone service to field office.
- B. Provide, maintain, and pay for facsimile service to field office.

### **1.8 FENCING**

- A. Provide temporary fencing around new building and materials storage site. Completely separate construction from existing facilities, pathways and related areas.
- B. Type: Panelized 6 foot high commercial grade chain link fence. Equip with vehicular and pedestrian gates with locks.

### **1.9 BARRIERS AND PROTECTION**

- A. Security: Provide to protect Work from unauthorized entry, vandalism, and theft. Coordinate with Owner's security program and personnel.
- B. Barriers: Provide to prevent unauthorized entry to construction areas and to protect adjacent properties from construction operations.

- C. Barricades and covered walkways: As required by Design Professional, Owner and governing authorities for safe public access to existing site.

#### **1.10 PROTECTION OF EXISTING AND INSTALLED WORK**

- A. Protect installed Work. Control activity in immediate work area.
- B. Provide temporary and removable protection for installed products.

#### **1.11 TEMPORARY FIRE PROTECTION**

- A. Install and maintain temporary fire protection components. Establish and follow procedures to protect against fire losses. Comply with NFPA 241.
- B. Fire extinguishers: Provide hand carried, portable, UL rated fire extinguishers of type and size recommended by NFPA 10 for exposure conditions. Place in accessible, convenient locations in clear view.
- C. Access: Maintain unobstructed access to any fire hydrants, water supply, fire extinguishers, and access routes for fighting fires.
- D. Store combustible materials in fire-safe containers.
- E. Volatile products: Do not store paints, varnishes, paint removers, solvents, adhesives, cleaning rags, and other volatile products in building. Take precautionary measures to prevent fire hazards and spontaneous combustion.
- F. Cutting and welding: Approve in advance use of open flame cutting, welding, and soldering equipment. Ensure that safe conditions exist before granting approval.

#### **1.13 TEMPORARY EROSION AND SEDIMENT CONTROLS**

- A. Prevent temporary collection of sediment on sidewalks, parking lots, streets and driveways. Clean such surfaces promptly if such conditions exist due to the Work.
- B. National Pollution Discharge Elimination System (NPDES) permit and procedures for preparing a Storm Water Pollution Prevention Plan (SWPPP).
  - 1. Contractor shall determine whether Project requires an EPA NPDES storm water discharge permit in conformance with all regulations governing the disturbance of construction site areas.
  - 2. If storm water discharge permit is required, then both Contractor and Owner shall be designated as separate permittees and the Contractor shall do the following:
    - a. Prepare a Storm Water Pollution Prevention Plan (SWPPP) document as necessary to ensure compliance with any and all NPDES construction storm water permitting

plan requirements.

- b. Prepare and submit all EPA documentation and forms required of Contractor for permit.
  - c. Assist Owner with preparation and submittal of all EPA documentation and forms specifically required of Owner for permit. Provide all required project-related information to Owner as necessary.
  - d. At Final Completion of Project, Contractor shall complete and submit documentation to EPA as required and to Design Professional as part of Project Closeout documentation package. See Section 01 78 00 of Specifications.
3. If a storm water discharge permit is not required, then the Contractor shall submit to the Design Professional and Owner prior to mobilization a signed statement containing specific written justification why such permit is not required on the Project.
  4. The Contractor shall manage the discharge of storm water from the site in accordance with NPDES permit and the provisions of the SWPPP. The Contractor shall be responsible for installing and maintaining any necessary storm water control measures in accordance with control device manufacturer's recommendations and the provisions of the SWPPP. The Contractor shall monitor the suitability of the designated control measures and management practices to achieve the storm water quality provisions of the NPDES permit, and shall make any necessary changes to the controls and practices in order to meet the permit requirements. The Contractor shall be responsible for updating the SWPPP and maintaining all records related to the SWPPP. A copy of the approved SWPPP shall be kept on the jobsite at all times. Contractor shall be liable for all fines and construction delays resulting from any governmental agency enforcement action due to failure by the Contractor to satisfy the above requirements.
  5. Contractor is responsible for payment of all applicable fees and permits related to SWPPP approval process and for full cost of control measures for the Project.

#### **1.14 ACCESS**

- A. Refer to Drawings for location of acceptable access routes and site entrances. Protect existing curbs and walks traversed by construction vehicles from damage.
- B. Identify access to Contractor's work and office area with appropriate signs so that delivery personnel and others may contact Contractor.

#### **1.15 FIELD FACILITIES**

- A. Provide and maintain a weathertight, fully equipped field office.
- B. Provide space for project meetings with table and chairs to accommodate 6-8 persons.
- C. Provide and maintain storage sheds and other facilities as required.

- D. Arrange for parking for work force in manner approved by Owner. Do not limit Owner's requirements for parking.

#### **1.16 TEMPORARY SANITARY FACILITIES**

- A. Provide and maintain required sanitary facilities for work force.
- B. New and existing toilet facilities shall not be used by work force.

#### **1.17 DRINKING WATER**

- A. Provide independent source of drinking water for workforce.

#### **1.18 PROJECT SIGNS**

- A. Construction Sign
  - 1. Furnish project sign and erect on site at location designated by Design Professional.
  - 2. Construction: 4 by 5 feet constructed of 3/4 inch exterior plywood bolted to 4 by 4 inches treated wood posts.
  - 3. Sign shall be prepared by professional sign painter using either painted exhibit lettering or die cut adhesive applied letters.
  - 4. Allow no other signs to be displayed without approval of Design Professional or as required by Owner.
    - a. Design Professional to send design of sign to Contractor after award.

#### **1.18 BULLETIN BOARD**

- A. Furnish and maintain bulletin board adjacent to field office. Display the following throughout construction period:
  - 2. State wage rates.
  - 3. Safety requirements.
  - 4. Official notices and announcements.

#### **1.19 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS**

- A. Remove temporary above grade and buried utilities, equipment, facilities, and excess materials prior to final inspection.
- B. Clean and repair damage caused by installation of temporary facilities.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

Not used.

**END OF SECTION**

**SECTION 01 6300**

**PRODUCT SUBSTITUTION PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section includes requirements for product options and substitution procedures.

**1.2 SUBSTITUTIONS**

- A. During bidding, Design Professional will consider written requests from qualified bidders, subcontractors, and manufacturers for substitutions.
  - 1. Submit separate request for each substitution with Form 01 6301 - Prior Approval Substitution Request Form. Copy of form follows this Section.
  - 2. Submit substitution request in accordance with procedures and time limitations stated in Document 00 2118 - Instructions to Offerors.
  - 3. Substitutions approved during bidding will be listed in Addenda.
- B. After Contract award:
  - 1. After signing of Agreement Between Owner and Contractor, Design Professional will consider written requests for substitutions.
  - 2. Submit separate request for each substitution with Form 01 6302 - Contractor Substitution Request Form. Copy of form follows this Section. Provide data documenting need for substitution and substantiating compliance of proposed product with Contract Documents. Include proposed changes to contract amount and time if substitution is accepted.

**PART 2 - PRODUCTS**

Not used.

**PART 3 - EXECUTION**

Not used.

**END OF SECTION - FORMS FOLLOW**

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**PRIOR APPROVAL SUBSTITUTION REQUEST FORM**

The undersigned, qualified bidder, subcontractor, manufacturer, or supplier requests that the following product be accepted for use in the Project

PRODUCT: \_\_\_\_\_

MODEL NO.: \_\_\_\_\_

MANUFACTURER: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

The above product would be used in lieu of

PRODUCT: \_\_\_\_\_

specified in

SECTION: \_\_\_\_\_

PARAGRAPH: \_\_\_\_\_

Attached are the following circled items:

1. Product description including specifications, performance and test data, and applicable reference standards.
2. Drawings.
3. Photographs.
4. Samples.
5. Tabulated comparison with specified product.
6. For items requiring color selections, full range of manufacturer's color samples.
7. Other: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

The undersigned certifies that the following statements are correct. Explanations for all items which are **not** true are attached.

- 1. Proposed substitution has been thoroughly investigated and function, appearance, and quality meet or exceed that of specified product. TRUE FALSE
- 2. Same warranty will be provided for substitution as for specified product. TRUE FALSE
- 3. **No** aspect of Project will require re-design. TRUE FALSE
- 4. Use of substitution will **not** adversely affect:
  - a. Dimensions shown on Drawings. TRUE FALSE
  - b. Construction schedule and date of completion. TRUE FALSE
  - c. Work of other trades. TRUE FALSE
- 5. Maintenance service and replacement parts for proposed substitution will be readily available in [Las Cruces] [El Paso] [Roswell] [Albuquerque] [Southern New Mexico] [Northern New Mexico] [\_\_\_\_\_] area. TRUE FALSE
- 6. Proposed substitution does **not** contain asbestos in any form. TRUE FALSE

Submitted By:

COMPANY: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

NAME OF PERSON SUBMITTING REQUEST: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

**CONTRACTOR SUBSTITUTION REQUEST FORM**

The undersigned, as Contractor for the above Project, requests that the following product be accepted for use in the Project

PRODUCT: \_\_\_\_\_

MODEL NO.: \_\_\_\_\_

MANUFACTURER: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

The above product would be used in lieu of

PRODUCT: \_\_\_\_\_

specified in

SECTION: \_\_\_\_\_

PARAGRAPH: \_\_\_\_\_

Reason for substitution request: \_\_\_\_\_

\_\_\_\_\_

Attached are the following circled items:

1. Product description including specifications, performance and test data, and applicable reference standards.
2. Drawings.
3. Photographs.
4. Samples.
5. Tabulated comparison with specified product.
6. For items requiring color selections, full range of manufacturer's color samples.
7. Documentation of reason for request.
8. Cost data for comparing proposed substitution with specified product.

9. Other: \_\_\_\_\_

The undersigned certifies that the following statements are correct. Explanations for all items which are **not** true are attached.

- 1. Proposed substitution has been thoroughly investigated and function, appearance, and quality meet or exceed that of specified product. TRUE FALSE
- 2. Same warranty will be provided for substitution as for specified product. TRUE FALSE
- 3. **No** aspect of Project will require re-design. TRUE FALSE
- 4. Use of substitution will **not** adversely affect:
  - a. Dimensions shown on Drawings. TRUE FALSE
  - b. Construction schedule and date of completion. TRUE FALSE
  - c. Work of other trades. TRUE FALSE
- 5. Maintenance service and replacement parts for proposed substitution will be readily available in [Las Cruces] [El Paso] [Roswell] [Albuquerque] [Southern New Mexico] [Northern New Mexico] [\_\_\_\_\_] area. TRUE FALSE
- 6. Proposed substitution does **not** contain asbestos in any form. TRUE FALSE
- 7. All changes to Contract Sum related to use of proposed substitution are included in price listed below. Contractor waives claims for additional costs related to acceptance of substitution which may subsequently become apparent. TRUE FALSE
- 8. Costs of modifying project design caused by use of proposed substitution which subsequently become apparent will be paid for by Contractor. TRUE FALSE

If substitution request is accepted:

Contract Sum will be [decreased] [increased] by \$ \_\_\_\_\_

Contract Time will be [decreased] [increased] by \_\_\_\_\_ calendar days.

Submitted By:

CONTRACTOR: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

TELEPHONE NUMBER: \_\_\_\_\_

NAME OF PERSON SUBMITTING REQUEST: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

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**SECTION 01 7000****EXECUTION REQUIREMENTS****PART 1 - GENERAL****1.1 SUMMARY****A. Section includes:**

1. Basic requirements for examination, preparation and installation.
2. Requirements and limitations for cutting and patching incidental to work, including excavation and backfilling, and as required making several parts fit together.
3. Progress cleaning.

**B. Related documents and sections:**

1. Section 01 5000 - Temporary Facilities and Controls: Temporary barriers and enclosures.
2. Section 01 7700 - Closeout Procedures: Final cleaning.
3. Section 02 4119 - Selective Structure Demolition: Minor demolition required to accommodate new construction and renovation
4. Section 07 9000 - Joint Protection: Sealing of conduits, piping, and other items penetrating structure.

**1.2 LOCATION OF UNDERGROUND UTILITIES**

- A. The Contractor shall arrange for all spotting of lines by New Mexico One Call in advance of any excavation work.

**PART 2 - PRODUCTS****2.1 MATERIALS**

- A. Patching and replacement materials: Those used for original installation.
- B. Product substitutions: For any proposed change in patching materials, submit request for substitution in accordance with Section 01 6300 - Product Substitution Procedures.

**PART 3 - EXECUTION****3.1 EXAMINATION****A. Prior to commencing a portion of Work:**

1. Verify that existing site conditions and substrate surfaces are acceptable for subsequent Work.
2. Verify that existing substrate is capable of structural attachment of new Work being applied or attached and that required blocking is in place.

3. Verify that existing substrate is compatible with, properly prepared, and otherwise ready to receive subsequent applications and finishes. Ensure that existing conditions conform to requirements of manufacturers of products to be applied.
  4. Verify that utility services are available, of correct characteristics, and in correct location.
- B. Beginning of removals, cutting, patching, and new Work implies acceptance of existing conditions.

### **3.2 PREPARATION**

- A. Clean substrate surfaces prior to applying next material or substance.
- B. Seal cracks and openings in substrate prior to applying next material or substance.
- C. Apply manufacturer required substrate primer, sealer, and conditioner prior to applying new material or substance to substrate.

### **3.3 INSTALLATION**

- A. Install, construct, erect, assemble, and apply products in accordance with manufacturer's recommendations and instructions and specified requirements. Notify Architect where manufacturer's instructions conflict with specifications. Do not proceed until clarification is received.
- B. Install products secure, rigid, plumb, and level within specified or industry acceptable tolerances.
- C. Remove excess materials such as adhesive, grout, mortar, and sealants, from finished surfaces in a manner which does not stain, corrode, disfigure, or otherwise damage finished surface.
- D. Adjust working parts for smooth, proper operation.
- E. Replace deformed, scratched, cracked, broken, or otherwise damaged products as result of installation.
- F. After installation is complete, protect installed products and finished surfaces from subsequent construction operations in accordance with Section 01 5000 - Temporary Facilities and Controls. Replace or repair subsequently damaged products and surfaces.
- G. Clean and maintain installed products in accordance with manufacturer's recommendations and specifications until Substantial Completion.

### **3.4 CUTTING AND PATCHING**

- A. Execute cutting, fitting, patching, excavation, and fill as required to:
  - 5. Install new work into existing construction.
  - 6. Fit products together and to integrate them with other work.
  - 7. Uncover work to correct incomplete or deficient work.
  - 8. Remove and replace defective and non-conforming work.
  - 9. Remove samples of installed work for testing.
  - 10. Provide openings for penetrations for electrical, and other work.
- B. Provide temporary supports to ensure structural integrity. Provide devices and methods to protect other portions of Project from damage.
- C. Provide protection from elements for areas which may be exposed by cutting operations.
- D. Method: Execute work by methods to avoid damage to existing building systems and other work and in a manner which will provide appropriate surfaces to receive patching and finishing.
- E. Cutting:
  - 1. Cut rigid materials using masonry saw or core drill. Pneumatic tools are not allowed without prior approval.
  - 2. Size openings to exactly fit penetrating item plus allowance for sealant. Form edges of hole even and smooth.
  - 3. Drill penetrations through concrete for conduit and piping.
  - 4. Drill round holes and saw cut rectangular openings in concrete unit masonry units. Where block is broken or chipped in process, remove complete face of exposed block and replace with partial block.
- F. Patching:
  - 1. Restore work with new products meeting requirements of Contract Documents.
  - 2. Fit work tight to pipes, sleeves, ducts, conduits, and other elements penetrating surfaces.
- G. Finishing: Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

### **3.5 ASPHALT PAVEMENT**

- A. Where existing or new pavement is damaged from construction operations, cut to install new underground utilities and where existing items are removed from paved areas:
  - 1. Cut pavement with saw or other means to provide neat, straight joints.
  - 2. Where existing pavement is damaged by removals, remove additional pavement to allow clean cuts.
  - 3. Backfill and sufficiently compact removal area prior to placement of pavement.
  - 4. Place pavement to match existing materials and thickness.

- B. Immediately after placement, protect new pavement from mechanical damage.

### **3.6 PROGRESS CLEANING**

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove waste materials, debris, and rubbish from site weekly and legally dispose of off-site.
- C. Washing of concrete trucks and dumping of excess cementitious material on site is not allowed. All such materials and contaminated soil shall be removed.
- D. Soils and other site material contaminated by paint residues, oils, fuels, and other construction products shall be removed and replaced with equivalent soil or material.
- E. Existing lawns, landscaped areas, and areas for future landscaping affected by construction operations shall be raked to remove stones, mortars, aggregates, and other construction debris in excess of 3/4 inch diameter.
- F. Clean mud and sediment resulting from Contractor's operations or traffic from all sidewalks, public streets and parking areas.

**END OF SECTION 01 7000**

**SECTION 01 7500**

**STARTING AND ADJUSTING**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section includes: General procedures for starting, monitoring, and adjusting items of equipment and complete systems.

B. Related sections:

1. Section 01 7800 - Closeout Submittals: Operation and maintenance manuals

**PART 2- PRODUCTS**

Not used.

**PART 3 - EXECUTION**

**3.1 STARTING OF SYSTEMS**

A. Submit written Construction Checklists in accordance with Section 01 3300 - Submittal Procedures that equipment and systems have been properly installed and are functioning correctly.

**END OF SECTION**

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**SECTION 01 7700**

**CLOSEOUT PROCEDURES**

**PART 1 - GENERAL**

**1.1 SUMMARY**

A. Section includes:

1. Closeout procedures.
2. Final cleaning.
3. Final inspection.
4. Inspection held immediately prior to end of one year correction period.

B. Related documents and sections:

1. Section 01 7000 - Execution Requirements: Progress cleaning.
2. Section 01 7500 – Starting and Adjusting: Starting and adjusting items of equipment and complete systems.
3. Section 01 7800 - Closeout Submittals: Submittal of project record documents, operation and maintenance manuals, warranties, certificates of inspection, extra materials, and keys.

**1.2 SUBSTANTIAL COMPLETION PROCEDURES**

A. Prior to or in conjunction with submission of Contractor's request for Substantial Completion, submit the items specified in Section 01 7800 - Closeout Procedures:

**1.3 FINAL CLEANING**

A. Execute final cleaning prior to final inspection by methods and with materials and equipment suitable for commercial/institutional building maintenance.

**PART 2 - PRODUCTS**

Not Used.

**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**

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**SECTION 01 7800****CLOSEOUT SUBMITTALS****PART 1 – GENERAL****1.1 SUMMARY**

- A. Section includes procedures for preparing and submitting closeout submittals:
1. Project Record Documents.
  2. Operation and maintenance manuals and data.
  3. Warranties.
  4. Insurance information.
  5. Certificates of inspection and compliance.
  6. Maintenance tools.
  7. Extra materials.
- B. Related documents and sections:
1. Section 01 3300 - Submittal Procedures: Submittal of shop drawings, product data, samples, installation instruction, reports and other submittals during construction prior to closeout.
  2. Section 01 7500 – Starting and Adjusting: Starting and adjusting items of equipment and complete systems.
  3. Section 01 7700 – Closeout Procedures: Requirements for achieving Substantial Completion and Final Completion.

**1.2 PROJECT RECORD DOCUMENTS**

- A. Maintain on site, one set of the following record documents; record actual revisions to Work:
1. Contract Drawings.
  2. Specifications.
  3. Addenda.
  4. Change Orders and other modifications to the Contract.
  5. Reviewed Submittals.
- B. Store Record Documents separate from documents used for construction. Label “PROJECT RECORD DOCUMENTS”.
- C. Record information concurrent with construction progress. Use erasable colored pencil. Date all entries. Call attention to entry by bubbling area affected.
- D. Specifications: Legibly mark and record in each section description of actual products installed, including the following:

1. Manufacturer's name and product number and model number.
  2. Product substitutions or alternates utilized.
  3. Changes made by Addenda and modifications.
- E. Contract Drawings and shop drawings: Legibly mark each item to record actual construction including:
1. Actual items of equipment and system components installed.
  2. Actual locations of components and routing of piping and raceways.
  3. Measured horizontal and vertical locations or underground water, sewer, irrigation, electrical, and other utilities and appurtenances, referenced to permanent surface improvements.
  4. Measured locations of piping, raceways, and other items concealed in construction, referenced to visible and accessible features.
  5. Field changes of dimension and detail.
  6. Details not on original Contract Drawings.
- F. Documents will be reviewed by Design Professional at each submittal of Application for Payment to ensure that entries are current.
- G. Submit documents to Design Professional prior to or in conjunction with submission of Contractor's request for Substantial Completion and in accordance with Owner's procedures.

### **1.3 OPERATION AND MAINTENANCE DATA**

- A. Provide operation and maintenance data for:
1. Landscaping specified in Sections 32 9000 - Planting.
  2. Other equipment and systems for which operation and maintenance data is requested in individual specification sections.
- C. Submission:
1. Submit data to Design Professional in one or more binders.
  2. Submit for review one draft copy 30 days prior to need date or as otherwise specified. This copy will be returned after review with Design Professional's comments. Revise content as required.
  3. Once approved, submit copies of final operation and maintenance manuals as follows:
    - a. 1 hard copy and one 1 electronic disk of entire manual to District.
    - b. One (1) electronic disk of entire manual to PSFA.
  4. All manuals shall be submitted prior to or in conjunction with Contractor's request for Substantial Completion and prior to demonstration and training session.
- D. Contents:
1. Appropriate design criteria.

2. Equipment parts list.
3. Equipment inventory data (on Owner-provided electronic forms) and parts lists.
4. Operating instructions.
5. Maintenance instruction for equipment and finishes.
6. Shop drawings and product data.
7. Written sequence of operations for each automated building system including those related to the following:
8. Copies of warranties.
9. Other material and information as indicated in individual specification sections and as necessary for operation and maintenance by Owner's personnel.

E. Form:

1. Hard copies of manuals shall be 8-1/2 x 11 inch text pages bound in three ring expansion binders with a hard durable plastic cover. All documents to be originals unless otherwise noted.
2. Prepare binder covers with printed subject title of manual, title of project, date, and volume number when multiple binders are required. Printing shall be on face and spine.
3. Internally subdivide the binder contents with divider sheets with typed tab titles under reinforced plastic tabs. Place dividers at beginning of each chapter, part, section, and appendix.
4. Provide a table of contents for each volume.
5. Provide directory listing as appropriate with names addresses, and telephone numbers of Design Professional, Contractor, subcontractors, equipment suppliers, and nearest service representatives. Provide emergency 24-hour service contact information for all subcontractors, service contractors and principal vendors.
6. Provide electronic data disk(s) with each manual including all data required to be submitted electronically. Include hard copy with each manual.

#### **1.4 WARRANTIES**

- A. Provide duplicate notarized copies of special and extended warranties as required by individual specifications sections.
- B. Submit warranties to Design Professional prior to or in conjunction with submission of Notice of Substantial Completion.
- C. Execute and assemble warranties from subcontractors, suppliers, and manufacturers.
- D. Provide Table of Contents and assemble in three ring binder with a hard durable plastic cover. Internally subdivide the binder contents with permanent page dividers, with tab titling clearly typed under reinforced laminated plastic tabs.
- E. For items of work delayed beyond date of Substantial Completion, provide updated warranty submittal within ten days after acceptance, listing date of acceptance as start of warranty period.

#### **1.5 CERTIFICATES OF INSPECTION AND COMPLIANCE**

- F. For inspections throughout the construction period required by regulatory agencies, obtain and maintain certificates issued to show compliance.
- G. Assemble certificates and any formal written evidence of regulatory compliance in three ring binder with table of contents and submit to Design Professional prior to or in conjunction with submission of Notice of Substantial Completion.
- H. Certificate of Occupancy: Prior to Substantial Completion, obtain from authorities having jurisdiction Certificate of Occupancy. Submit with Notice for Substantial Completion.

## **1.6 INSURANCE INFORMATION**

- I. Submit prior to or in conjunction with submission of Contractor's request for Substantial Completion information regarding insurance including change over requirements and insurance extensions.

## **1.7 MAINTENANCE TOOLS**

- A. Provide any hardware and software tools (including software keys) that are proprietary to the mechanical systems and that may be necessary for service during their lifecycle.
- B. Tools shall be as provided or recommended by manufacturers of installed equipment and systems. Types and sizes shall be as specifically required for installed products.
- C. Tools shall be available and their use demonstrated during training sessions specified in Section 01 75 00 - Starting, Adjusting, and Demonstrating.
- D. Prior to, or concurrent with Contractor's request for Substantial Completion, deliver maintenance tools to Owner's representative. Prepare inventory of tools provided and obtain receipt from Owner's representative.

## **1.8 EXTRA MATERIALS**

- A. Provide spare parts and maintenance materials in quantities specified in individual sections.
- B. Extra materials shall be produced by the same manufacturer of and compatible with the installed products.
- C. Prior to or concurrent with submission of Notice of Substantial Completion deliver extra materials in unopened containers to Owner's representative at designated storage area at project site and place in location as directed. Obtain receipt from Owner's representative.
- D. During one year correction period:
  - 1. Extra materials may be used by Contractor to replace expendable and normally worn parts.

2. Extra materials used by Contractor for replacement of defective products shall be replaced at no additional cost to Owner.

**PART 2 - PRODUCTS**

Not Used.

**PART 3 - EXECUTION**

Not Used.

**END OF SECTION**

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**SECTION 02 9999****STORM WATER POLLUTION PREVENTION PLAN PREPARATION  
AND MAINTENANCE****PART 1 – GENERAL**

## 1.1 SECTION INCLUDES

## A. Storm Water Pollution Prevention Plan Preparation for Construction Activities

1. SWPPP is a document that contains an information sheet and the following forms; Inspection, NOI, Storm Water Program, Storm Water Management, NPDES General Construction Storm Water Permit Checklist, and Contractor Certification for NPDES General Permit for Storm Water Discharges from Construction Sites. The information sheet encompasses site description and NOI inputs and general notes; this sheet is included in the construction plan. In accordance with the provisions of the National Pollutant Discharge Elimination System (NPDES) General Permit, issued by the Environmental Protection Agency (EPA), construction projects with one acre or more of earth disturbance will require an SWPPP and submittal of Notice of Intent (NOI).
2. Temporary Erosion and Sediment Control Plan (TESCP). The TESCP is a set of sheets that depict location, type, and length of temporary erosion control measures. The TESCP shall define all erosion and sediment control measures to be constructed by the Contractor and in place until **Physical Completion** of the project. The Contractor will prepare and maintain a TESCP based on his or her construction phasing and schedule. The Contractor's TESCP shall define all erosion and sediment control measures to be constructed, their locations, and their dates of placement and removal, by phase or major construction activity. This TESCP shall be kept current to reflect field modifications of control measures. The TESCP shall be considered part of the project SWPPP. **The bid form includes an allowance for the contractor to prepare or hire an Engineer to prepare the TESCP and SWPPP.**

## B. Maintenance of Temporary Erosion and Sediment Control Plan

## 1.2 SUBMITTALS

## A. SWPPP

## B. Maintenance Reports

**PART 2 – PRODUCTS**

NOT USED

**PART 3 - EXECUTION****3.1 SWPPP**

- A. The Contractor shall submit to the Project Manager, prior to initial soil disturbance, an SWPPP based on the planned phasing and schedules of construction. Amendments to the SWPPP shall be made as work progresses or as the Contractor proposes phasing/scheduling changes. The SWPPP shall specifically define all required control measures for each construction phase, shall comply with the provisions of the NPDES General Permit, and shall include but not be limited to the following items or activities:
- TESCP;
  - The dates and locations of planned and actual clearing and grubbing activities, earthwork activities, and construction of permanent erosion control features;
  - A description of permanent best management practices, when, where, and why;
  - A description of control practices used to divert flows from exposed soils, when, where, and why;
  - A description of construction waste materials stored on site and controls used to minimize pollution from these materials; and
  - Preparation of a spill prevention and response plan.
- B. The SWPPP shall also include proposed methods to minimize or eliminate pollution of streams, lakes, reservoirs, canals, and other impoundments, from the discharge of storm water associated with construction activities. Information required to develop the SWPPP is provided in the construction plans or may be obtained from the Project Manager within five working days of the request. No earth-disturbing activities shall commence until the Project Manager has accepted the SWPPP in writing.
- C. The SWPPP shall be developed using a combination of structural, non-structural, and vegetative Best Management Practices (BMPs) to adequately control erosion and sedimentation and manage storm water. The SWPPP shall be modified as needed to address changes in the field that develop during construction.
- D. The Contractor shall be responsible for maintaining the SWPPP in compliance with the NPDES General Permit until the Physical Completion of the project.

**3.2 RETENTION OF RECORDS**

- A. The SWPPP is a dynamic document. The Contractor shall retain and maintain all changes made to the SWPPP as required by the NPDES General Permit. This will be the official record. The Contractor shall retain and place in the SWPPP a copy of the permit language and all inspection and maintenance reports. Inspection and maintenance reports shall be prepared by the Contractor from the commencement of earthwork disturbance activities to the Physical Completion of the project. The Contractor shall submit the official SWPPP to

the Project Manager at the completion of the project. These records shall be available to the public at all times.

### 3.3 NOTICE OF INTENT (NOI).

- A. The NOI shall meet the National Pollutant Discharge Elimination System (NPDES) General Permit requirements for the discharge of storm water associated with construction activities.
- B. The Notices of Intent shall be submitted to the Environmental Protection Agency (EPA), designating the status of owner/operator. The NOI shall be accepted by the EPA and a permit tracking number issued prior to the start of any earth-disturbing construction activities on the project. A copy of the Contractor's NOI shall be submitted to the Project Manager.

### 3.4 NOTICE OF TERMINATION (NOT).

- A. The Contractor shall prepare and submit to the EPA an NOT within 30 days after the Physical Completion of the project, to indicate that the Contractor is no longer the operator of the project. A copy of the submittal shall be provided to the Project Manager.

### 3.5 OFF-SITE POLLUTION PREVENTION PLAN

- A. The Contractor shall prepare and submit an SWPPP and NOI, if required, to the appropriate agencies for all related work to take place outside the project right-of-way. The Contractor shall be responsible for filing the NOT for the off-site locations. A copy of each submittal shall be provided to the Project Manager. The Contractor shall be responsible for complying with all NPDES requirements for off-site locations.

**END OF SECTION**

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**SECTION 15030****CONSTRUCTION SURVEY AND STAKING****PART 1 – GENERAL**

## 1.1 DESCRIPTION OF WORK

- A. The work under this section includes furnishing the necessary labor and material to supplement existing horizontal and vertical control and to layout and locate the facilities in accordance with the drawings. Also, any boundary of property surveys as required due to destruction of existing monuments shall meet the “Minimum Standards for Land Surveying in New Mexico” as adopted by the New Mexico State Board of Registration for Professional Engineers and Surveyors and as required hereinafter. The definitions, conditions, and requirements of Supplementary Condition (SC) 4.4 shall also be followed as if contained herein. In case of discrepancy, the requirements of the Supplementary Conditions shall be followed.

**PART 2 – PRODUCTS/MATERIALS**

No products or materials are described in this section.

**PART 3 – EXECUTION**

## 3.1 LAYOUT

- A. The Contractor will be responsible for all surveys, and layout of the construction described herein. Layout includes location of the centerlines of construction, limits of work, reference points, all structural elements, and project features.
- B. Benchmarks will be provided for construction layout and Contractor should survey on elevation datum provided. The layout survey shall establish positions in accordance with the drawings. Any series of observations and measurements made for the purpose of restoring any real property boundary, including easements, rights-of-way, and work limits shall be performed by a Professional Surveyor registered in New Mexico in accordance with the New Mexico Engineering and Surveying Practice Act.
- C. The drawings include horizontal and vertical “reference monuments” which may be used in the layout of the project. The successful bidder (the Contractor) will be provided with electronic data in AutoCAD 2000 format that provides control data and line locations as shown. The Contractor is cautioned that the use of single horizontal or vertical “reference monument” may not be accurate due to disturbance of said monuments or misidentification.
- D. All vertical surveys and layouts by the Contractor, or his agents, shall be considered invalid unless at least two vertical “reference monuments” are utilized in a closed level circuit. No horizontal or vertical “reference monuments” shall be utilized until the Contractor, or his agents, has satisfied himself/themselves that the stated data for the monuments is consistent with the horizontal and vertical datum for the project. The Contractor, or his agents, may establish additional “reference monuments” for his/their use, provided that accuracy of these

monuments is in accordance with minimum accuracy standards for land surveys in New Mexico.

### 3.2 QUALIFICATION OF SURVEY AND LAYOUT PERSONNEL AND PROCEDURES

- A. Prior to commencement of any boundary or right-of-way survey, the Contractor shall notify the Owner and Engineer of names and qualifications of the personnel who will perform all layout and survey work. The notification shall include the following:
1. Name and New Mexico registration number of the Professional Surveyor who will be in responsible charge of the work.
  2. Name and experience of field personnel.
  3. Types of equipment and accuracy of equipment to be used in the horizontal and vertical layout and surveys.
  4. Schedule of time and manpower requirements to be utilized for layout and surveys.
  5. Certification that work will be accomplished in accordance with the "Minimum Standards for Surveying in New Mexico".

## **PART 4 – MEASUREMENT AND PAYMENT**

### 4.1 MEASUREMENT AND PAYMENT OF CONSTRUCTION STAKING (SURVEY LAYOUT)

- A. Payment shall be made on a lump sum basis for all work under this section and all requirements under Supplementary Condition (SC) 4.4. All labor, materials, fees, and incidentals as required to produce a complete and finished product are to be merged into the lump sum provided in the Bid Form.

**END OF SECTION**

**SECTION 031000****CONCRETE FORMWORK****PART 1 - GENERAL**

## 1.1 RELATED WORK SPECIFIED ELSEWHERE:

- A. Submittals: SECTION 013300.
- B. Quality Control: SECTION 014000.
- C. Earthwork: SECTION 310000.
- D. Concrete Reinforcement: SECTION 032000.
- E. Cast-in-Place Concrete: SECTION 033000.

## 1.2 QUALITY ASSURANCE:

- A. Codes and Standards: Comply with the following codes and standards including current editions, revisions, and supplements.
  - 1. International Code Council – International Building Code.
  - 2. ACI 347, Recommended Practices for Concrete Formwork.
  - 3. PS 1 Construction and Industrial Plywood.
  - 4. PS 20 American Softwood Lumber Standard.
  - 5. ACI 301, Specifications for Structural Concrete for Buildings.
- B. Inspection: Forms and Formwork are subject to inspection by Architect. Notify Architect prior to placing concrete. Damaged or improperly installed formwork will be rejected.
- C. Coordination: Coordinate with other trades, installing all inserts, conduits, sleeves, anchors, etc., properly prior to placement of concrete.

**PART 2 - PRODUCTS**

## 2.1 FORM MATERIALS:

- A. Forms for Exposed Finish Concrete:
  - 1. General: Construct all formwork for cast-in-place concrete with plywood, metal, metal-framed plywood-faced or other acceptable panel-type materials to provide continuous, straight, smooth, exposed surfaces. Provide form material in the largest practicable sizes to minimized number of joints.
  - 2. Plywood: Use B-B plyform, sanded, Class 1, EXTDFPA grade trademarked of the American Plywood Association, PS 1-66.

3. Lumber: For forming studs and walers, use 2" nominal thickness, construction grade Douglas Fir. For concealed concrete surfaces, use construction grade Douglas Fir, shiplap or tongue and groove, nominal 1" thickness.
  4. Concrete Column Forms: Sonotube Finish Free Concrete Forms with Duraglas Coating.
- B. Forms for Architectural Finish Cast-in-Place Concrete: Forms for architectural finish shall produce the finish and texture indicated on the Drawings and approved by the Architect.
  - C. Forms for Unexposed Finish Concrete: Use plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.
  - D. Form Coatings: Form coating compounds shall be first quality of their respective kinds and shall be non-staining, non-grain raising, free of mineral oils and other non-drying ingredients, and leaving no bond-inhibiting residues on concrete. The following products are acceptable form coatings and require no further approval.
  - E. Chamfer Strips: 3/4" by 3/4" wood, PVC, or rubber.
  - F. Expansion Joint Material: Asphalt saturated fiberboard, 1/2" thick, meeting the requirements of ASTM D 1751.
  - G. Felt: Asphalt-saturated organic felt, weighing 30 pounds per 100 square feet, meeting the requirements of ASTM D 226.
- 2.2 TIES AND SPREADERS:
- A. Form ties and spreaders shall be prefabricated, rod, architectural snap types, flat band or threaded internal disconnecting type, of sufficient strength to resist all imposed loads of fresh concrete and with external holding devices of adequate bearing area. Ties shall permit tightening and spreading of forms and leave no metal closer than one (1) inch from surfaces. All form ties shall be a type which does not leave an open hole through the concrete and which permits neat and solid patching at every hole.
  - B. Wire ties and wood spreaders shall not be used.

2.3 ROUGH HARDWARE:

- A. Accessories: Furnish and install all bolts, anchors, expansion joints and bolts, strap anchors, etc., required for all embedded work.

### PART 3 - EXECUTION

3.1 FORM TYPES:

- A. Concealed Surfaces: For footings, foundation walls, grade beams and surfaces indicated to be covered by other materials, use boards, plywood, reinforced plastic, sonotubes or metal forms as specified in paragraph 2.1 above.
- B. Exposed Surfaces: Use plywood or metal forms as specified in paragraph 2.1 above.

### 3.2 INSTALLATION:

- A. General:
  - 1. Install in accordance with ACI 301, Chapter 4.
  - 2. Construct forms to exact shapes, sizes, lines and dimensions as required to obtain accurate alignment, location and grades, and level and plumb work in finished structure. Provide for openings, offsets, recesses, moldings, blocking, bulkheads, anchorages and other required features. Make forms easily removable without hammering or prying against concrete. Use metal spreaders to provide accurate spreading of forms. Construct forms so that no sagging, leakage or displacement occurs during and after pouring of concrete.
  - 3. Install form liner at retaining wall in full conformance with manufacturer's recommendations and established procedures. If form liner becomes displaced during concrete placement, resulting in poor aesthetic quality of retaining wall surface, retaining wall shall be removed and reinstalled at Contractor's expense.

### 3.3 EMBEDDED ITEMS AND ROUGH HARDWARE:

- A. Conduits, electrical under floor ducts or Pipes shall be located to avoid reducing the strength of the construction, and in no case shall pipes other than conduits be placed in a slab 4-1/2" or less in thickness. Conduit buried in concrete slabs shall not have an outside diameter greater than 1/4 of the thickness of the slab nor be placed over top reinforcing steel.
- B. Pipe Sleeves may pass through slabs or walls, provided that they are not exposed to rusting or other deterioration and are of uncoated or galvanized iron or steel. Sleeves shall be large enough to pass any hub or coupling on the pipe line. Coordinate with DIVISION 15 – MECHANICAL, for special sleeves.
- C. Conduits may be embedded in walls provided they are not larger in outside diameter than 1/3 the thickness of the wall, are not spaced closer than three diameters on center, and do not impair the strength of the structure.

**END OF SECTION 031000**

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**SECTION 032000****CONCRETE REINFORCEMENT****PART 1 - GENERAL**

## 1.1 RELATED WORK SPECIFIED ELSEWHERE:

- |                            |                 |
|----------------------------|-----------------|
| A. Submittals:             | SECTION 013300. |
| B. Quality Control:        | SECTION 014000. |
| C. Concrete Formwork:      | SECTION 031000. |
| D. Cast-in-Place Concrete: | SECTION 033000. |

## 1.2 QUALITY ASSURANCE:

- A. Codes and Standards: Comply with the following codes and standards including current editions, revisions and supplements.
1. ACI 315, Manual of Standard Practice for Detailing Reinforced Concrete.
  2. ACI 318, Building Code Requirements for Reinforced Concrete.
  3. Concrete Reinforcing Steel Institute, Manual of Standard Practice.

## 1.3 SUBMITTALS:

- A. Reinforcement: In advance of fabrication, complete Shop Drawings necessary for the fabrication of each component part of the concrete reinforcing including, but not necessarily limited to, the following:
1. Bar schedules.
  2. Stirrup spacing.
  3. Diagrams of bent bars.
  4. Arrangements and assemblies required for the fabrications and placement of concrete reinforcement and embedded rough hardware.
  5. Special reinforcement at openings through concrete structures.

**PART 2 - PRODUCTS**

## 2.1 MATERIALS:

- A. Reinforcement:
1. Deformed Steel Reinforcing Bars: ASTM A 615, Grade 60. Ties and stirrups may be

- Grade 40. The surface of reinforcement and accessories shall be clean and free of any oil, grease, grit, dust or other surface contaminants at time of coating.
2. Supports for Reinforcing Bars and Welded Wire Fabric: CRSI MSP-1, hot-dipped galvanized. Supports shall include bolsters, chairs, spacers and all other devices necessary for proper spacing, supporting, and fastening reinforcing bars and wire fabric in place. Precast blocks with integral tie wire may be used for supporting reinforcing in bottom of mat of footings.
  3. Tie Wires: ASTM A 82, annealed steel, 16 gage steel minimum.

### PART 3 - EXECUTION

#### 3.1 FABRICATION:

- A. General: Shop fabricate reinforcing bars to conform to required shapes and dimensions, with fabrication tolerances complying with ACI 315. In case of fabricating errors, do not re-bend or straighten reinforcement in a manner that will injure or weaken the material.
- B. Unacceptable Materials: Reinforcement with the following defects will not be permitted in the Work:
  1. Bar lengths, depths and bends exceeding specified fabrication tolerances, unless approved by Engineer.
  2. Bends or kinks not indicated on Drawings or final Shop Drawings.
  3. Bars with reduced cross-section due to excessive rusting or other cause.

#### 3.2 CONCRETE COVER: Install reinforcement to achieve the following minimum coverage of concrete, unless noted otherwise on the Drawings:

	Minimum Cover, Inches
A. Concrete cast against and permanently exposed to earth:	3
B. Concrete exposed to earth or weather:	
1. No. 6 through No. 18 bar:	2
2. No. 5 bar, W31 or D31 wire, and smaller:	1-1/2
C. Concrete not exposed to weather or in contact with ground:	
1. Slabs, walls, joists:	
a. No. 11 bar and smaller	3/4
2. Beams, columns:	
a. Primary reinforcement, ties, stirrups, spirals:	1-1/2

#### 3.3 INSTALLATION:

## A. General:

1. Comply with the specified codes and standards and Concrete Reinforcing Steel Institute recommended practice for "Placing Reinforcing Bars", for details and methods of reinforcement placement and supports, and as herein specified.
2. Clean reinforcement to remove loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

## B. Reinforcement:

1. Position, support and secure reinforcement against displacement by formwork, construction or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers, as required.
  - a. Hold reinforcement steel in slabs above substrate using metal chair spacers of quality required to hold steel at proper height and alignment.
  - b. Hold welded wire fabric in slabs using plastic or metal chairs with sand plates designed for use with welded wire fabric to hold at proper height and alignment. Pulling in place welded wire fabric with a hooked-bar shall not be used and is not an acceptable means of properly setting fabric in place, and shall be reason for rejection and removal of slab.
  - c. Dowels shall be installed and secured prior to pour. Wet setting of dowels is unacceptable and reason for rejection.
2. Place reinforcement to obtain the minimum coverage for concrete protection. Arrange, space, and securely tie bars and bar supports together with 16 gage wire to hold reinforcement accurately in position during concrete placement operations. Set wire ties so that ends are directed away from exposed concrete surfaces.
3. Provide sufficient numbers of supports and of strength to carry reinforcement. Do not place reinforcing bars more than two (2) inches beyond last leg of any continuous bar support. Do not use supports as bases for runways for concrete conveying equipment and similar construction loads.
4. Splices: Provide standard reinforcement splices by lapping ends, placing bars in contact and tightly wire tying lap splices 36 bar diameters for #6 and smaller, 48 bar diameters for #7 and larger or 24 inches minimum, unless greater splice length is shown on Drawings. Comply with requirements of ACI 318 for minimum lap of spliced bars.

**END OF SECTION 032000**

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**SECTION 03 3000****CAST-IN-PLACE CONCRETE****PART 1 - GENERAL****1.1 RELATED WORK SPECIFIED ELSEWHERE:**

- A. Submittals: SECTION 013300.
- B. Quality Control: SECTION 014000.
- C. Concrete Formwork: SECTION 031000.
- D. Concrete Reinforcement: SECTION 032000.
- E. Structural Steel: SECTION 051200.

**1.2 QUALITY ASSURANCE:**

- A. Qualification of Manufacturer: Manufacturer of ready mix concrete shall show experience of producing concrete for similar size projects for a minimum of 5 years and shall conform to ASTM C 94.
- B. Codes and Standards: Comply with the following codes and standards including current editions, revisions and supplements.
  - 1. ACI 301, Specifications for Structural Concrete for Buildings.
  - 2. ACI 306.1, Standard Specification for Cold Weather Concreting.
  - 3. ACI 315, Manual of Standard Practice for Detailing Reinforced Concrete Structures.
  - 4. ACI 318, Building Code Requirements for Reinforced Concrete.
  - 5. International Code Council – International Building Code.
- C. Quality Control: Testing Laboratory, test costs, and test reports in accordance with SECTION 014000 QUALITY CONTROL and Paragraph 3.1 below.

**1.3 SUBMITTALS:**

- A. Manufacturer's Literature: Description and recommended installation/application instructions for admixtures, curing compounds, sealers/hardeners, coatings, patching compounds, grouts, filler strips, leveling compounds, etc.
- B. Test Reports: Reports of concrete compression, yield, air content, and slump tests. Testing Laboratory shall submit two copies of the report to Architect and one copy to the Contractor.

- C. Design Mix: Mix design shall conform to the requirements of ACI 301, Section 4. Submit design mix prior to placing any concrete, with the following information:
1. Material content per cubic yard of each class of concrete furnished.
  2. Results of laboratory tests performed within past six months indicating that aggregate from the proposed source meet requirements of ASTM C 33.
  3. Dry weights of cement, saturated surface-dried weights of fine and coarse aggregate, quantities, type and name of admixtures, weight of water, ready-mix delivery tickets, ASTM C 94, design mix certification that mix designs conform to specification by Testing Laboratory.
  4. All flyash shall conform to Class F.
- D. Exterior Concrete: All exterior concrete shall contain between six (6) and eight (8) percent entrained air.
- E. Shop Drawings: Submit shop drawings indicating dimensions drawn to a minimum scale of  $1/8" = 1'-0"$  with reinforcing requirements shown. Contractor shall be responsible for verifying dimensions. Photocopy of structural plan will not be acceptable.

## PART 2 - PRODUCTS

### 2.1 MATERIALS:

- A. Portland Cement: ASTM C 150, Types I or II, low alkali. Use only one brand and supplier throughout the Project. Do not change brand without prior approval.
- B. Aggregates: ASTM C 33. Furnish clean, crushed rock or washed gravel coarse aggregate.
- C. Water Reducing Admixtures: ASTM C 494, Type A.
- D. Air-Entraining Admixtures: ASTM C 260, CRD C 13, AASHTO M 154.
- E. Water Reducing and Retarding Admixture: ASTM C 494, Type D.
- F. High Range Water Reducing Admixture: ASTM C 494, Type F.
- G. Water: Potable.
- H. Concrete Patching Compound:
1. Description: Fast setting, non-shrink patching material used for repairing/patching honeycomb, spalls, cracks, holes left by tie wires or spreaders and construction faults in concrete.
- I. Non-Shrink Grout: Corps of Engineers CRD-C 588.
- J. Curing Sheet: ASTM C 171, polyethylene, non-staining white types.

- K. Floor Filling/Leveling Materials: Cement based, self leveling.
- L. Filler Strips: Provide widths and depths as indicated on the Drawings.
  - 1. Bituminous Type: ASTM D 1751, non-extruding, resilient type, for exterior use as required.
  - 2. Non-Bituminous Type: ASTM D 1752, Type I or II, non-extruding, resilient type, for interior use where expansion material is required.
- M. Curing-Sealing-Hardener Compound: ASTM C 309, FS TT-C-00800A.
- N. Curing Compound: ASTM C 309 and ASTM C 156, clear, non-staining and non-discoloring, non-residual cure for concrete to receive toppings or adhered-type floor covering.

## 2.2 PROPORTIONING AND DESIGN OF MIXES:

- A. Prepare design mixes for each type on concrete. Admixtures shall not be used for cement replacement to reduce minimum cement content.
- B. Concrete:
  - 1. See General Structural Notes on the Contract Drawings for 28 day compressive strength requirements.
- C. Basis of Mix Designs:
  - 1. Control concrete mixes in accordance with Section 4, Specification for Reinforced Concrete for Buildings (ACI-301).
- D. Slump Limits: Proportion and design mixes to result in concrete slump at point of placement without high range water reducer (superplasticizer) as follows:
  - 1. Concrete containing high-range water-reducing admixture (superplasticizer): Not more than nine (9) inches after adding admixture to site-verified 3-to-4 inch slump.
  - 2. Other Concrete: Not more than four (4) inches.

## PART 3 - EXECUTION

### 3.1 PREPARATION FOR CONCRETE PLACEMENT:

- A. Formwork: Comply with requirements of ACI 301, Section 2, and the completed cast-in-place shall conform to the tolerances specified in that referenced standard specification.
- B. General: Before placing concrete, inspect and verify that formwork, reinforcing steel and items to be embedded or cast-in-place have been installed. Notify other trades to complete the installation of embedded items, coordinate trades in setting such work, as required. Do

not use frozen materials or materials containing ice or snow. Do not place concrete on frozen substructure or substructure containing frozen materials. Remove excess water from forms before concrete is deposited. Remove hard concrete, debris, and foreign materials and ice from interior of forms and from inner surfaces of mixing and conveying equipment. Do not add water at job site without permission and approval by Architect or Contractor's superintendent. Report on batch ticket the amount of water added at the job site.

- C. Wetting: Wet wood forms sufficiently to tighten up cracks. Wet other materials sufficiently to reduce suction and maintain concrete workability.
- D. Earth Subgrade: Lightly dampen 24 hours in advance of concrete placing, but do not muddy. Re-roll where necessary for smoothness and remove loose material.
- E. Removing Forms:
  - 1. General: Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50 degrees F for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.
  - 2. Formwork Supporting Weight of Concrete: Such as beam soffits, joists, slabs, and other structural elements may not be removed in less than 14 days or until concrete has attained at least 75 percent of design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete locations or members.
  - 3. Form-Facing Materials: May be removed 4 days after placement only if shores and other vertical supports have been arranged to permit removal of form-facing materials without loosening or disturbing shores and supports.

### 3.2 HOT AND COLD WEATHER OPERATIONS:

- A. Hot Weather Concreting Operations:
  - 1. When concrete is placed under conditions of hot weather concreting, provide extra protection of concrete, as specified within ACI 305. Hot weather is defined as air temperatures which exceed 80 degrees F.
  - 2. During curing operation cover concrete with wet burlap or cotton mats. Keep mats constantly wet for seven (7) days minimum. Keep mats covered with sheet polyethylene. Leave mats in place for three (3) days after discontinuing wetting process.
- B. Cold Weather Concreting Operations:
  - 1. When concrete is placed under conditions of cold weather concreting (defined as a period when the mean daily temperature drops below 40 degrees F. for more than three (3) successive days), take additional precautions as specified herein and in "Specifications for Cold Weather Concreting" by American Concrete Institute (ACI 306) when placing, curing, monitoring and protecting fresh concrete.
  - 2. During the curing operation, maintain the temperature of the placed concrete as constant as possible, and protect from rapid atmospheric temperature changes.

3. Maintain the concrete in a continually moist condition during the curing process by leaving the forms in place as long as possible and by use of steam and/or moisture retaining covers on unformed surfaces.
4. Following the curing operation, avoid rapid changes in concrete temperature. Do not allow the internal temperature of the concrete to change at a rate which exceeds 50 degrees F. in any 24-hour period or 5 degrees F. in any one hour.

### 3.3 CONCRETE PLACING

#### A. Joints in Concrete:

1. Locate joints in concrete where indicated on the Drawings or at points of low stress.
2. Keep hardened concrete wet for at least 24 hours before placing new concrete.

#### B. Conveying and Placing:

1. Do not place concrete until reinforcing steel and forms have been approved by Architect and other authorities having jurisdiction.
2. Do not drop concrete from its point of release at mixer, hoppers, tremies, or conveyances more than six (6) feet for concealed concrete and three (3) feet for exposed concrete and otherwise prevent segregation of aggregate.
3. Deposit concrete so that the surface is kept level throughout, a minimum being permitted to flow from one portion to another.
4. Place concrete into forms immediately after mixing in a manner that will prevent separation of ingredients and in horizontal layers not over 18 inches thick.

#### C. Consolidating: Consolidate each layer of concrete with mechanical vibrating equipment. Transmit vibration directly to concrete, in no case through forms. Supplement vibration by forking or spading by hand adjacent to forms. Consolidate concrete into corners and angles of forms and around reinforcement and embedded fixtures.

#### D. Operation of Vibrators: Employ skilled and experienced workmen to operate vibrators. Do not transport concrete in forms with vibrators nor allow vibrator to contact forms or reinforcing. In vibrating freshly placed concrete, push the vibrator down vertically into preceding layers that are still completely plastic and slowly withdraw, producing maximum obtainable density in concrete without creating voids or segregation. Under no circumstance disturb concrete that has stiffened or partially set. Vibrate at intervals not exceeding 2/3 the effective visible vibration diameter of the submerged vibrator. Avoid excessive vibration that causes concrete segregation.

#### E. Correction of Segregation: Before placing next lift, and at top of last placement for vertical elements, remove concrete containing excess water or fine aggregate, or showing deficiency of coarse aggregate and fill the space with compacted concrete of correct proportions.

#### F. Slabs: Compact and tamp interior concrete slabs to bring 1/8" to 1/4" of mortar so surface, and wood float to straightedges and screeds. Do not use tampers on exterior slabs. Do not use steel or plastic floats of any kind for initial floating operations. Do not apply finish until surface water disappears and surface is sufficiently hardened. Remove bleed water and laitance as it appears.

1. Slab-on-Grade Areas: Slabs shall be placed in long panels as indicated on the Drawings. There shall be a minimum of one (1) day elapsed time between the placement of adjoining slabs.
2. Expansion Joints: Install in sidewalk joints and curbs and at perimeter of exterior slabs. Install expansion joint material at 20'-0" intervals and dummy joints at 5'-0" intervals.
3. Isolation Joints:
  - a. Joints shall be provided at points of contact between slabs on ground and vertical surfaces, such as column pedestals, foundation walls, grade beams, and elsewhere as indicated.
  - b. Expansion joints shall be filled with premolded joint filler strips 1/2 inch thick, extending full slab depth unless otherwise indicated. Filler strips shall be installed at proper level below finish floor elevation with slightly tapered, dress-and-oiled wood strip temporarily secured to top of filler strip to form groove not less than 3/4 inch in depth. Where joint will be sealed with sealing compound and not less than 1/4 inch in depth joint sealing is not required. Wood strip shall be removed after concrete has set. Clean groove of foreign matter and loose particles after surface has dried.
  - c. Joints where indicated on the Drawings shall be isolated with the use of 30 pounds per square roofing felt complying with F.S. HH-R-590, Type II, Class A.
4. Construction and Shrinkage Control Joints: Joints shall be provided to form panels as indicated on the Drawings.
5. Sealing of Joints: Isolation and construction joints which will not be covered with finish flooring material shall be sealed with joint sealing compound after concrete curing period. Groove shall be slightly under filled with joint sealing compound to prevent extrusion of compound. Excess material shall be removed as soon after sealing as possible.

#### 3.4 CURING FORMED CONCRETE:

- A. Maintain forms containing concrete in a thoroughly wet condition until forms are removed. Maintain concrete continuously moist for not less than seven (7) consecutive days after pouring. Keep concrete moist with fine fog spray until protected by curing materials. Use curing sheet material, or liquid membrane-forming curing compound.

#### 3.5 RUBBED CONCRETE FINISH:

- A. Preparation: Remove form marks, offsets, high spots and other defects and in uniform planes, in good condition to receive concrete coating. Fill honeycombed areas 3/8" or more in depth with concrete patching compound specified above. Surface of concrete to be coated shall be clean, free of laitance, dirt, dust, grease, form oil, efflorescence, paint and foreign materials which may be detrimental to adhesion of concrete coating.
- B. Application: Mix concrete coating materials with clean water and bonding agent following manufacturer's recommendations. Apply a light trowel coat of concrete coating compound over entire surface to be treated, making sure the material is firmly pressed into voids and

leveled. Allow this coat to cure thoroughly before applying the final trowel application. When surface is set to point where the coating will not roll or lift, float uniformly using a sponge to achieve desired texture.

### 3.6 SLAB FINISHING:

- A. Finish surfaces level or sloped as indicated with maximum deviation of 1/8 inch from a ten (10) foot straightedge on trowelled surfaces. Keep surface moist with fine fog spray of water as necessary. Dusting with cement or sand during finishing operation is not permitted. Finish exposed edge of slabs and slab joints with edging tool.

1. Steel Float Finish:

- a. Location: Exposed interior concrete and where floor coverings are indicated to be installed.
- b. Finish: After surface water disappears and floated surface is sufficiently hardened, steel trowel and retrowel to smooth surface. After concrete has set enough to ring trowel, retrowel to smooth uniform finish free of trowel marks or other blemishes. Avoid excessive troweling that may produce burnished areas.

2. Broom Finish:

- a. Location: Exposed exterior concrete walks, curbs, drive pad curb and where indicated on the Drawings (non-exposed aggregate).
- b. Finish: Prepare same as steel float finish, then apply uniform approved coarse texture by sliding broom in one direction along straightedge guide placed at right angles to direction of vehicular traffic.

3. Non-Slip Broom Finish:

- a. Apply heavy non-slip broom finish to exterior concrete handicapped ramps where indicated on Drawings. Immediately after trowel finishing, roughen concrete surface by heavy brooming with fiber bristle broom perpendicular to main pedestrian traffic route. Coordinate required final finish with Architect before application.

### 3.7 SLAB CURING AND SEALING:

- A. Apply curing after finishing operations and in any case on same day. Apply liquid compounds in accordance with manufacturer's recommendations at an application rate to achieve ASTM C 309.
1. Freshly placed concrete shall be protected from premature drying and cold or hot temperature, shall be maintained without drying at relatively constant temperature for period of time necessary for hydration of cement and proper hardening of concrete.
  2. Initial curing shall start as soon as free water has disappeared from surface of concrete

after placing and finishing. Concrete shall be kept moist for minimum 72 hours.

3. Final curing shall immediately follow initial curing and before concrete has dried. Final curing shall continue until cumulative number of hours or fraction thereof (not necessarily consecutive) during which temperature of air in contact with concrete is above 50 degrees F. has totaled 168 hours. Rapid drying at end of final curing period shall be prevented.

B. Curing Materials: Apply curing after finishing operations and in any case on same day.

1. Curing Sheet: Cover concrete surfaces with moisture-retaining cover, place material in widest practical width with sides and ends lapped at least three (3) inches and sealed with waterproof adhesive tape compatible with curing sheet membrane. Immediately repair any holes or tears during curing sheet membrane. Immediately repair any holes or tears during curing period using additional layer(s) of curing sheet and waterproof adhesive tape.
2. Restriction: Do not use liquid membrane-forming curing compound on concrete to receive subsequent concrete or mortar, or on surfaces to receive subsequent applied materials unless such use and compound used are approved by manufacturer of materials to be applied; verify with related trades.
3. Curing-Sealer-Hardener: Apply at a rate to achieve ASTM C 309. Where dustproof finish is required for either exposed concrete finish or where additional floor finish material such as resilient flooring, carpeting, etc. is specified to be installed, apply two (2) coats of specified curing-sealer-hardener in accordance with the manufacturer's recommendations; first coat applied immediately after finishing; second coat applied after clean-up prior to completion of concrete work.

### 3.8 EQUIPMENT PADS:

- A. Cast-in-place equipment pads for mechanical and electrical apparatus as indicated and/or as detailed on the Drawings. Verify exact sizes and location prior to forming concrete.

### 3.9 GROUTING:

- A. Mixing: Mix approved non-shrink grout with sufficient water to cause it to flow under its own weight for grout. Field produced grout mix where non-shrink grout is required shall conform to ASTM C 270 and be proportioned by volume as follows:

1. One (1) part Portland cement.
2. 1/2 parts Type "S" hydrated lime or lime putty.
3. 4-1/2 parts sand.

- B. Placing and Curing: Place fluid grout from one side and puddle for complete filling of voids; do not remove dams or forms until grout attains initial set. Finish exposed surfaces smooth and cure with damp burlap at least three (3) days.

### 3.10 INSPECTION AND TESTING OF CONCRETE:

- A. General:

1. The Contractor shall engage at his expense, an independent testing laboratory approved by Architect, to conduct and interpret tests and reports and retests and reports. Testing Laboratory will perform tests as specified herein and as directed by Architect. Retesting due to non-compliance shall be at Contractor's expense.
  2. Concrete will be sampled and tested for quality control during the placement of the concrete as follows:
    - a. Sampling fresh concrete ASTM C 172 except modified for slump
      - 1) As required for each test.
    - b. Slump test per ASTM C 94 ASTM C 143
      - 1) One (1) for each concrete sample at point of discharge and one (1) for each set of compressive strength tests.
    - c. Air content by ASTM C 138, C 173, or C 231
      - 1) One (1) for each set of method compressive strength tests.
    - d. Compression test specimens per ASTM C 31
      - 1) One (1) set of four (4) standard specimen cylinders for each compressive strength test.
      - 2) Quantity of testing:
        - i. One (1) set for each 25 cubic yards or fraction thereof of each concrete class placed in any one day nor less than one set for each 5000 SF of surface area for slabs-on-grade placed in any one day.
        - ii. Concrete temperature hourly when air temperature is 40 degrees F. or below and 80 degrees F. or above; each time a set of compression test specimens is made.
    - e. Compression testing per ASTM C 39
      - 1) Specimens shall be tested at following rates and intervals:
        - i. One (1) specimen at seven (7) days. Two (2) specimens at twenty-eight (28) days. One (1) specimen held for fifty-six (56) days.
- B. Batch Plant Tickets: Submit certification of ready mixed concrete. If concrete is altered by addition of water, admixtures, etc. on site, these alterations must be recorded on the batch ticket and a copy sent directly to the Architect. Other batch plant tickets shall be retained on site for review by Architect.
- C. Defective Work: Acceptance or rejection of concrete shall be based on ACI 318-05 Building Code Requirements for Reinforced Concrete.
1. Concrete proven to be defective for any reason may be ordered to be removed and replaced at discretion of Architect. If drilled core tests are required by Architect to determine exact strength of concrete in question, costs of drilling and testing will be at Contractor's expense. Indications of strength below requirements shall make it

mandatory that cement or water ratio be changed immediately to improve strength at Contractor's expense.

2. When there is evidence that strength of concrete structure in place does not meet Specification requirements, cores drilled from hardened concrete for compressive strength determination shall be made in accordance with ASTM C 42, and as follows:
  - a. At least three (3) representative cores shall be taken from each member or area of concrete-in-place that is considered potentially deficient. Location of cores will be determined by Architect.
  - b. Cores shall be tested after moisture conditioning in accordance with ASTM C 42 if concrete they represent will be more than superficially wet under service.

### 3.11 PATCHING

- A. Honeycombed Areas and Aggregate Pockets: Remove concrete down to sound concrete. Edges shall be perpendicular to surface and at least 3/8" deep. Sandblast surfaces to receive repair. Cast sandblasted surface with epoxy bonding compound. Place mortar in layers having a compacted thickness of 3/8". Scratch surface of each layer to promote bonding with next layer. Match finish on adjacent concrete and cure as specified.
- B. Spalled and Pitted Areas: Chip back to sound concrete sufficiently to obtain good mechanical bond, and filled with lean mortar.
- C. Rough Areas and High Spots: Rub or grind to match plane of adjacent surface and to an acceptable smoothness, unless otherwise approved by Architect.

**END OF SECTION 033000**

**SECTION 055000****METAL FABRICATIONS****PART 1 - GENERAL****1.1 RELATED WORK SPECIFIED ELSEWHERE:**

- A. Submittals: SECTION 013300.
- B. Quality Control: SECTION 014000.
- C. Cast-In-Place Concrete: SECTION 033000.
- D. Structural Steel: SECTION 051200.
- E. Steel Decking: SECTION 053100.
- F. Loadbearing Metal Stud System: SECTION 054100.

**1.2 QUALITY ASSURANCE:**

- A. Codes and Standards: Comply with the following codes and standards including current editions, revisions and supplements.
  - 1. A.I.S.C. "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" and including the "Commentary of the A.I.S.C. Specifications", 13<sup>th</sup> Edition.
  - 2. AWS D1.1, "Structural Welding Code".
  - 3. National Association of Architectural Metal Manufacturers (NAAMM).
- B. Welded Construction:
  - 1. Welding shall be performed in accordance with AWS Structural Welding Code.
  - 2. Welders, welding operators, and tackers, to be employed under this specification, shall have been qualified by test as prescribed in AWS Code, within the last twelve months, except that shop personnel continuously employed as welders may be accepted on basis of satisfactory reports dated not more than two (2) years prior to job.
  - 3. Evidence of welding procedure qualification by Contractor shall be submitted for approval prior to fabrication as requested by Architect.
- C. Field Measurements: Take field measurements prior to preparation of shop drawings and fabrication, where possible, to ensure proper fitting of the work. Allow for trimming and fitting wherever the taking of field measurements before fabrication might delay Work.
- D. Coordination: Provide strict coordination between the components and products of this Section and that of other trades and Sections of these Specifications. The components and products, when erected and installed, shall act as a complete integral unit.
- E. Shop Assembly: Preassemble items in the shop to the greatest extent possible, to minimize field splicing and assembly of units at the project site. Disassemble units only to the extent

necessary for shipping and handling limitations. Clearly mark units for reassembly, coordinating installation.

### 1.3 SUBMITTALS:

- A. Manufacturer's Data: Copies of manufacturer's specifications, load tables, dimensions diagrams, anchor details and installation instructions for products to be used in the fabrication of miscellaneous metal work and metal pan stairs.
- B. Shop Drawings:
  - 1. For shop fabricated and manufactured items showing details of installation, accessories, fastenings, welding and weld finishing.
  - 2. Furnish/Submit minor connections and fastenings not indicated or specified to meet required conditions.
- C. Welding Procedure: Written description if requested by Architect to illustrate each welding procedure to be performed. Contractor shall submit descriptive data for field welding equipment, including type, voltage and amperage.

## PART 2 - PRODUCTS

### 2.1 MATERIALS:

- A. General: For the fabrication of miscellaneous embedded metal work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, seam marks, roller marks, and roughness. Remove such blemished by grinding, or by welding and grinding.
- B. Types:
  - 1. Steel Shapes:
 

Wide Flange Beams	ASTM A992, Fy = 50 ksi
Channels and Angles	ASTM A36, Fy = 36 ksi
  - 2. Steel Plates: ASTM A283, A 570, or A 611, Fy = 36 ksi
  - 3. Steel Tubing: ASTM A501, Fy = 46 ksi
  - 4. Steel Pipe: ASTM A53, Fy = 35 ksi
  - 5. Steel Bars: ASTM A108, Fy = 36 ksi
  - 6. Anchor Bolts: ASTM A36, A307, F1554
- C. Anchoring and Fastening Hardware:
  - 1. Wedge anchors, drop-in sleeve anchors, expansion shields, capsule anchors, spring toggle bolts, hollow wall fasteners, etc.
- D. Miscellaneous Hardware:
  - 1. Beam Clamps, Flange Clamps, Conduit Hangers, Strut Clips, Trapeze, Bar Hangers, etc.
- E. Steel Pipe Railings: ASTM A53, with smooth, flush fittings and connector sleeves, mechanically fastened, included embedded sleeves.

- F. Nosings for Exterior Stair: Cast abrasive cross hatched for use in poured concrete stair. Nosing shall be 3 inches wide with concrete stud anchor.

## 2.2 SHOP PAINT:

- A. Shop paint miscellaneous metal work, except those members or portions of members to be embedded in concrete or masonry or coated with sprayed fireproofing material and galvanized surfaces, surfaces and edges to be field welded unless otherwise indicated.
- B. Remove scale, rust and other deleterious materials before the shop coat of paint is applied. Clean off heavy rust and loose mill scale in accordance with SSPC SP-2 "Hand Tool Cleaning", or SSPC SP-3 "Power Tool Cleaning", or SP-7 "Brush-Off Blast Cleaning". Remove oil, grease and similar contaminants in accordance with SSPC SP-1 "Solvent Cleaning".
- C. Apply one shop coat of red oxide metal primer paint to fabricated metal items, except apply two coats of paint to surfaces which are inaccessible after assembly or erection. Change color of second coat to a grey prime to distinguish it from the first.
- D. Immediately after surface preparation, brush or spray on metal primer paint, applied in accordance with manufacturer's instructions and at a rate to provide a uniform dry film thickness (DFT) of 2.0 mils for each coat. Use painting methods which will result in full coverage of joints, corner, edges and exposed surfaces with no sags or runs.

## 2.3 FABRICATION:

- A. Use material of the size and thickness shown or, if not shown, of the required size and thickness to produce adequate strength and durability in the finished product for the intended use. Work to the dimensions shown or accepted on shop drawings, using proven details of fabrication and support. Use the type of materials shown or specified for the various components of work.
- B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges. Ease exposed edges to a radius of approximately 1/32" unless otherwise shown. Form bent-metal corners to the smallest radius possible without causing grain separation or otherwise impairing the work.
- C. Weld corners and seams continuously and in accordance with the recommendations of AWS. Grind exposed welds smooth and flush to match and blend with adjoining surfaces.
- D. Form exposed connections with hairline joints which are flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of the type shown or, if not shown, use Phillips flathead (countersunk) screws or bolts. Steel railings may be plug welded.
- E. Provide for anchorage of the type shown, coordinated with the supporting structure and the progress schedule. Fabricate and space anchoring devices as shown and as required to provide adequate support for the intended use of the work.
- F. Cut, reinforce, drill and tap miscellaneous metal work as may be required to receive hardware and similar items or work.

- G. Use hot-rolled steel bars for work fabricated from bar stock, unless work is indicated to be fabricated from cold-finished or cold-rolled stock.

#### 2.4 MISCELLANEOUS METAL ITEMS:

- A. Fabricate miscellaneous units to the sizes, shapes and profiles shown. Except as otherwise shown, fabricate from structural steel shapes and plates and steel bars, of all welded construction using mitered corners welded brackets and splice plates and a minimum number of joints for field connection. Cut, drill, and tap units to receive hardware and similar items to be anchored to the work.
- B. Provide miscellaneous steel trim shapes and sizes as required for the profiles shown. Except as otherwise noted, fabricate units from structural steel shapes and plates and steel bars, with continuously welded joints and smooth exposed edges. Use concealed field splices wherever possible. Provide cutouts, fittings, and anchorages as required for coordination of assembly and installation with other work.

### PART 3 - EXECUTION

#### 3.1 INSTALLATION:

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction, including threaded fasteners for concrete and masonry inserts (provided by others), and other connectors as required.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling and fitting required for the installation of the miscellaneous metal items. Set the work accurately in location, alignment and elevation, plumb, level, true and free from rack, measured from established lines and levels. Provide temporary bracing or anchors for items which are to be built into concrete, masonry or similar construction.
- C. Fit exposed connections accurately together to form tight hairline joints. Weld connections which are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Grind joints smooth and shop paint with two (2) coats of primer as specified.

#### 3.2 WELDING;

- A. Welded construction shall be performed in accordance with AWS Structural Welding Code. Only welded joints deemed as being Pre-Qualified in accordance with AWS Code will be approved for use. Pre-Qualified joint welding procedures to be used shall be prepared by the Contractor as written procedures specifications and shall be made available to Architect.
- B. Welding Process: Welding process shall be limited to one of the following: Shielded metal arc welding, flux-cored metal arc welding, or submerged-arc welding.
- C. Preparation: Clean surfaces to be welded of paint, grease, scale, and foreign matter. Clean welds each time electrodes are changed. Chip entire area of hand guided and controlled flame cut edges before welds are deposited thereon. In general, surfaces made by automatic or mechanically guided controlled equipment need not be ground or chipped before welded thereto.

1. Joint surface shall be free from fins and tears caused by shearing.
  2. Welding equipment shall be in good working condition, capable of adjustment in full range of current setting; welding cables shall be of adequate size for currents involved, grounding methods shall be such as to assure proper machine performance. Sequence of joint welding shall be outlined and submitted to Architect for approval to control shrinkage and member alignment; this outline shall be rigidly adhered to.
- D. Procedures: Do not weld in wind until adequate protective screening has been set up. Cut out defective welds or parts of welds with a chisel or air arc and replace.
1. Cover bead or finish pass on all welds shall show a smooth and uniform surface with reinforcement of 1/16" to 1/8". (Drawings indicate areas that require weld reinforcement to be ground flush.)
  2. To insure soundness, ends of butt welds that carry stress approaching maximum allowable working stress shall be extended past edges of parts joined by means of short extension bars providing a similar joint preparation and having a width of not less than the thickness of thicker part joined. Where material is not more than 3/4" thick, extension bars may be omitted and side welds applied to fill out ends of same reinforcement as faces of welds. If extension bars are required to be removed due to fireproofing or some other matter, ends of welds shall be left smooth and flush with edges of abutting parts.
  3. No welding shall begin until joint elements are clamped on or bolted in intimate contact and adjusted to dimensions shown on Drawings. Heavy sections and those having a high degree of restraint shall be welded with low hydrogen type electrodes as directed by Architect. Do not splice members without prior approval of Architect.
  4. Align and plumb columns before welding on field connections begin.
  5. No welding shall be done when temperature of base metal is below 32° F. At temperatures between 32° F. and 40° F. surface of all areas within three (3) inches of point where weld is to be started shall be heated to temperature at least warm to the hand before welding is started. When welds are made in parts thicker than 1-1/2" temperature of base material adjacent to weld shall be at least 80° F.
  6. Ensure that workmanship and techniques conform to the AWS Code, including preheat and interpass temperatures, in accordance with process being used.
  7. No combination of bolts and welds shall be used for stress transmission in the same faying surface of any connection.
  8. Groove welds made in shop fabrication shall be terminated at the ends of a joint by the use of extension bars or run-off plates. These extensions shall be removed flush with base material edge.
  9. Full penetration groove welds shall be made with the use of steel backing bars. The backing bar shall be continuous for full length of weld. These bars shall be removed by grinding after completion of welding.
  10. Fillet welds terminating at ends or sides shall be returned continuously for a distance at least twice the normal size of weld (end returns).
  11. Welds not specified shall be continuous fillet welds, using minimum fillets as specified.
- E. Characteristics of Welds: After being deposited, welds shall be brushed with wire brushes and shall exhibit uniform section, smoothness of welded metal, feather edges without undercuts or overlays, and freedom from porosity and clinkers. Visual inspection at edges and ends of fillet welds shall indicate good fusion and penetration into base metal.

**END OF SECTION 055000**

**SECTION 07 6200****SHEET METAL FLASHING AND TRIM****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Manufactured Products:
    - a. Sheet metal panels and trim

## 1.3 PERFORMANCE REQUIREMENTS

- A. General: Sheet metal flashing and trim assemblies as indicated shall withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Completed sheet metal flashing and trim shall not rattle, leak, or loosen, and shall remain watertight.

## 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each manufactured product and accessory.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage. Store sheet metal flashing and trim materials away from uncured concrete and masonry.
- B. Protect strippable protective covering on sheet metal flashing and trim from exposure to sunlight and high humidity, except to the extent necessary for the period of sheet metal flashing and trim installation.

## PART 2 - PRODUCTS

### 2.1 SHEET METALS

- A. General: Protect mechanical and other finishes on exposed surfaces from damage by applying a strippable, temporary protective film before shipping.
- B. Galvanized metal: Commercial grade galvanized steel meeting ASTM A653-95, Coating Designation G-90 minimum.

### 2.2 MISCELLANEOUS MATERIALS

- A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation and recommended by manufacturer of primary sheet metal or manufactured item unless otherwise indicated.

### 2.3 FABRICATION, GENERAL

- A. General: Custom fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, geometry, metal thickness, and other characteristics of item indicated. Fabricate items at the shop to greatest extent possible.
  - 1. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.
  - 2. Obtain field measurements for accurate fit before shop fabrication.
  - 3. Form sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.
  - 4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces exposed to view.
- B. Fabrication Tolerances: Fabricate sheet metal flashing and trim that is capable of installation to tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of the Work.
  - 1. Verify compliance with requirements for installation tolerances of substrates.
  - 2. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 INSTALLATION, GENERAL

- A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.
  - 1. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and sealant.
  - 2. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.
  - 3. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.
  - 4. Install sealant tape where indicated or as recommended by manufacturer..
  - 5. Torch cutting of sheet metal flashing and trim is not permitted.
  - 6. Do not use graphite pencils to mark metal surfaces.
- B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by SMACNA.
  - 1. Coat back side of sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.
  - 2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene sheet.
- C. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with sealant concealed within joints.
- D. Fastener Sizes: Use fasteners of sizes that will penetrate metal decking not less than recommended by fastener manufacturer to achieve maximum pull-out resistance.

### 3.3 ERECTION TOLERANCES

- A. Installation Tolerances: Shim and align sheet metal flashing and trim within installed tolerances specified in MCA's "Guide Specification for Residential Metal Roofing."

### 3.4 CLEANING AND PROTECTION

- A. Clean off any excess sealants.

- B. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed unless otherwise indicated in manufacturer's written installation instructions. On completion of installation, remove unused materials and clean finished surfaces. Maintain in a clean condition during construction.
- C. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

**END OF SECTION 076200**

**SECTION 11 6800****PLAY FIELD EQUIPMENT AND STRUCTURES**

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Freestanding playground equipment and structures.
  - 2. Composite playground equipment and structures.
- B. Related Sections include the following:
  - 1. Division 03 Section "Cast-in-Place Concrete" for concrete footings.

## 1.3 DEFINITIONS

- A. Fall Height: According to ASTM F 1487, "the vertical distance between a designated play surface and the protective surfacing beneath it."
- B. HDPE: High-density polyethylene.
- C. IPEMA: International Play Equipment Manufacturers Association.
- D. LLDPE: Linear low-density polyethylene.
- E. MDPE: Medium-density polyethylene.
- F. Use Zone: According to ASTM F 1487, "the area beneath and immediately adjacent to a play structure that is designated for unrestricted circulation around the equipment and on whose surface it is predicted that a user would land when falling from or exiting the equipment."

## 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Show fabrication and installation details for playground equipment and structures.

- C. Coordination Drawings: Plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
  - 1. Extent of surface systems and use zones for equipment.
  - 2. Critical heights for playground surface, or fall heights for equipment.
- D. Samples for Verification: For each type of exposed finish required, prepared on Samples of size indicated below.
  - 1. Posts and Rails: Not less than 6 inches long.
  - 2. Platforms: Not less than 6 inches square.
  - 3. Molded Plastic: Not less than 3 inches square.
- E. Product Certificates: For each type of playground equipment, signed by product manufacturer.
- F. Installer Certificates: Signed by manufacturers certifying that installers comply with requirements.
- G. Qualification Data: For Installer and manufacturer.
- H. Material Certificates: For the following items, signed by manufacturers:
  - 1. Shop finishes.
- I. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for playground equipment.
- J. Maintenance Data: For playground equipment and finishes to include in maintenance manuals.
- K. Warranty: Special warranty specified in this Section.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Manufacturer Qualifications: A firm whose playground equipment components have been certified by IPEMA's third-party product certification service.
  - 1. Provide playground equipment and play structure components bearing the IPEMA Certification Seal.
- C. Testing Agency Qualifications: An independent agency qualified according to ANSI Z34.1 for testing indicated.
- D. Safety Standards: Provide playground equipment complying with or exceeding requirements in the following:
  - 1. ASTM F 1487.
  - 2. CPSC No. 325.

## 1.6 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of playground equipment that fail in materials or workmanship within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Structural failures including failures due to corrosion/natural deterioration or manufacturing defects.
    - b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 2. Warranty Period: As defined by manufacturer. Commencing from date of Substantial Completion.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
  - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.

### 2.2 EQUIPMENT

- A. Subject to compliance with requirements, products that may be incorporated into the Work included, but are not limited to, the following Basis of Design. Submit equal or better products for approval under provisions of Substitutions requirements.

### 2.3 MATERIALS

- A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
  - 1. Extruded Bars, Profiles, and Tubes: ASTM B 221.
  - 2. Cast Aluminum: ASTM B 179.
  - 3. Flat Sheet: ASTM B 209.
- B. Steel: Comply with the following:
  - 1. Steel Plates, Shapes, and Bars: ASTM A 36/A 36M.
  - 2. Steel Pipe: ASTM A 53/A 53M or ASTM A 135, standard-weight.
  - 3. Steel Tubing: ASTM A 500 or ASTM A 513, cold formed.
  - 4. Steel Sheet: ASTM A 1011/A 1011M.

5. Expanded Metal: ASTM F 1267, Type II (expanded and flattened), manufacturer's standard carbon-steel sheets, deburred after expansion.
- C. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666; Type 304.
- D. Chain and Fittings: ASTM A 467/A 467M, Class CS, 4/0 or 5/0, welded-straight-link coil chain; hot-dip galvanized. With commercial-quality, hot-dip galvanized steel connectors and swing or ring hangars.
- E. Castings and Hangers: Malleable iron, ASTM A 47/A 47M, Grade 32510, hot-dip galvanized.
- F. Post Caps: Cast aluminum or color-impregnated, UV-stabilized, mold-resistant polyethylene or polypropylene; color to match posts.
- G. Platform Clamps and Hangers: Cast aluminum or zinc-plated steel, not less than 0.105-inch-nominal thickness.
- H. Hardware: Manufacturer's standard; commercial-quality; corrosion-resistant; hot-dip galvanized steel and iron, stainless steel, or aluminum; of a secure and vandal-resistant design.
- I. Fasteners: Manufacturer's standard; corrosion-resistant; hot-dip galvanized or plated steel and iron, or stainless steel; permanently capped, and theft resistant.
- J. Opaque Plastic: Color impregnated, UV stabilized, and mold resistant.
  1. Polyethylene: Fabricated from plastic resin; rotationally molded HDPE, LLDPE, or MDPE with not less than 1/4-inch wall thickness.
- K. Transparent Plastic: Abrasion-resistant, UV-stabilized monolithic polycarbonate sheet; clear, colorless; not less than 3/16 inch thick.

## 2.4 PLAYGROUND EQUIPMENT FABRICATION

- A. Assemble items in the shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation. Use connections that maintain structural value of joined pieces.
- B. Metal Frame: Fabricate main-frame upright support posts from metal pipe or tubing with cross-section profile and dimensions as indicated. Form metal to required shapes and sizes, true to line and level with true curves and accurate angles and surfaces. Finish exposed surfaces to smooth, sharp, well-defined lines and arris.
  1. Fabricate secondary frame members, bracing, and connections from either steel or aluminum. Unless otherwise indicated, provide each pipe or tubing main-frame member with manufacturer's standard drainable bottom plate or support flange.
  2. Form simple and compound curves in bars and extruded shapes by bending members in jigs to produce uniform curvature for each configuration required; maintain cross section of member throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces.

3. Cut, drill, and punch metals cleanly and accurately. Remove sharp or rough areas on exposed surfaces.
  4. Mill joints to a tight, hairline fit. Cope or miter corner joints. Fabricate connections that will be exposed to weather in a manner to exclude water.
  5. Comply with AWS recommended practices for shop welding and brazing. Weld and braze behind finished surfaces without distorting or discoloring exposed side. Clean exposed welded and brazed joints of flux, and dress exposed and contact surfaces.
  6. Provide weep holes where water may accumulate.
- C. Provide necessary rebates, lugs, and brackets to assemble units and to attach to other work. Cut, reinforce, drill, and tap to receive finish hardware, screws, and similar items, unless otherwise indicated.
- D. Provide castings that are sound and free of warp, cracks, blowholes, or other defects that impair strength or appearance. Grind, wire brush, sandblast, and buff castings to remove seams, gate marks, casting flash, and other casting marks.
- E. Composite Frame: Fabricate main-frame upright support posts from metal and plastic with profile and dimensions as indicated. Fabricate secondary frame members, bracing, and connections from either steel or aluminum.
- F. Play Surfaces: Provide manufacturer's standard elevated drainable decks, platforms, landings, walkways, ramps, and similar transitional play surfaces, designed to withstand loads; fabricated from perforated or expanded metal or molded plastic or plastic panel or plank made into floor units with slip-slip-resistant foot surfaces. Fabricate units in manufacturer's standard modular sizes and shapes to form assembled play surfaces indicated.
- G. Elevated Play Surfaces: Guardrails or protective barriers completely surround elevated play surface except for access openings, if play-surface heights above protective surfacing exceed the following for use by age group indicated:
1. Elevated surface greater than 20 inches intended for use by children aged 2 through 5.
  2. Elevated surface greater than 30 inches intended for use by children aged 5 through 12.
- H. Stepped Play Surfaces: Provide manufacturer's standard infill between stepped platforms according to referenced standards.
- I. Protective Barriers and Guardrails: Fabricate according to ASTM F 1487 and as follows:
1. Welded metal pipe or tubing with vertical bars.
  2. Steel sheet with openings for vision and ventilation.
  3. Welded metal-pipe or -tubing frame with woven wire mesh infill panels.
  4. Transparent, solid plastic panels with openings.
- J. Handrails: Welded metal pipe or tubing, OD 1.25 inches. Provide handrails at height for use by age group indicated below:
1. Ages: Between 2 and 5 and 5 and 12 years.
  2. Height of Top Surface: 29 inches intended for use by children aged 2 through 5 and 38 inches intended for use by children aged 5 through 12.
  3. Close exposed ends of handrails with returns with clearance of 1/4 inch or less.

- K. Roofs and Canopies: Manufacturer's standard plastic.

## 2.5 PLAYGROUND EQUIPMENT

### A. Play Structures:

1. Basis of Design: GameTime Model #8533, "Single Tower Challenge Station Climber".
  - a. Or Approved Equal.
  - b. Color: As selected by Architect from manufacturer's full range.
2. Basis of Design: GameTime Model #11897, "Somerset".
  - a. Or Approved Equal
  - b. Color: As selected by Architect from manufacturer's full range.

### B. Balance Event:

1. Basis of Design: GameTime Model #4625 "Balance Beam".
  - a. Or Approved Equal.
  - b. Color: As selected by Architect from manufacturer's full range.
2. Basis of Design: GameTime Model #6141 "Mini Toadstool".
  - a. Or Approved Equal.
  - b. Color: As selected by Architect from manufacturer's full range.
3. Basis of Design: Play and Park Structures Model #66546 "Horse Bouncer".
  - a. Or Approved Equal.
  - b. Color: As selected by Architect from manufacturer's full range.

### C. Swings, Single or Multiple Axis:

1. Basis of Design: GameTime Model #81751 "Double Bay Single Post Swing".
  - a. Or Approved Equal.
2. Frame: Galvanized steel pipe or tubing connected frame sections and straight, single-leg, upright end supports.
  - a. Color: As selected by Architect from manufacturer's full range.
3. Chain: Manufacturer's standard.
  - a. Color: As selected by Architect from manufacturer's full range.
4. Swing Connector: Manufacturer's standard.
5. Swing Hanger: Manufacturer's standard.
6. Swing Seats, Accessible Swing:
  - a. Basis of Design: GameTime Model #8531 "Adaptive Swing Seat"
  - b. Or Approved Equal
  - c. Color: As selected by Architect from manufacturer's full range.

7. Swing Seats, Toddler:
  - a. Basis of Design: GameTime Model #1469 “Enclosed Tot Swing Seat”
  - b. Or Approved Equal
  - c. Color: As selected by Architect from manufacturer’s full range.
8. Swing Seats, Belt Swing:
  - a. Basis of Design: GameTime Model #1481 “Belt Swing Seat”.
  - b. Or Approved Equal
  - c. Color: As selected by Architect from manufacturer’s full range.
- D. Spinning Event: Rotating, fully-enclosed spinning mechanism on fixed post.
  1. Basis of Design: GameTime Model #6143 “Whirlwind Seat”.
    - a. Or Approved Equal
    - b. Color: As selected by Architect from manufacturer's full range.
- E. Basketball Equipment:
  1. Basis of Design: Custom Playground Equipment #PFE-304 “Triple Toss Fun Hoop – Galvanized Post”. Available from
    - a. Or Approved Equal
    - b. Color: As selected by Architect from manufacturer’s full range.
  2. Basis of Design: GameTime Model #203SS “Offset Gooseneck Post, White Backboard Double Rim”. Includes post, backboard, goal and chain net.
    - a. Or Approved Equal
    - b. Color: As selected by Architect for manufacturer’s full range.
- F. Site Furnishings:
  1. Litter Receptacles:
    - a. Basis of Design: GameTime Model #28027 “Tuffclad Series Litter Receptacle with Cover”.
    - b. Or Approved Equal
    - c. Color: As selected by Architect from manufacturer’s full range.
  2. Bike Rack:
    - a. Basis of Design: GameTime Model #7700 “Loop Bicycle Rack”.
    - b. Or Approved Equal
    - c. Color: As selected by Architect from manufacturers’ full range.
  3. Benches:
    - a. Basis of Design: GameTime Model #26003 “Tuffclad Bench”.
    - b. Or Approved Equal
    - c. Color: As selected by Architect from manufacturers’ full range.

4. Park Tables:
  - a. Basis of Design: GameTime Model #28021 "Single Pedestal Tuffclad Series ADA Accessible Food Court Table". Inground Mount.
  - b. Or Approved Equal
  - c. Color: As selected by Architect from manufacturers' full range.
5. Grills:
  - a. Basis of Design: GameTime Model #51 "Standard Stove Grill".
  - b. Or Approved Equal
  - c. Color: As selected by Architect from manufacturer's full range.

## 2.6 CAST-IN-PLACE CONCRET

- A. Concrete Materials and Properties: Comply with requirements in Division 03 Section "Cast-in-Place Concrete" and ACI 301 to produce normal-weight concrete with a minimum 28-day compressive strength of 3000 psi, 3-inch slump, and 1-inch-maximum-size aggregate.
- B. Concrete Materials and Properties: Dry-packaged concrete mix complying with ASTM C 387 and mixed at site with potable water, according to manufacturer's written instructions, to produce normal-weight concrete with a minimum 28-day compressive strength of 3000 psi (20.7 MPa), 3-inch (75-mm) slump, and 1-inch- (25-mm-) maximum-size aggregate.

## 2.7 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
- B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

## 2.8 ALUMINUM FINISHES

- A. Baked-Enamel Finish: Prepare, treat, and coat metal to comply with paint manufacturer's written instructions and as follows:
  1. Thermosetting, modified-acrylic enamel primer/topcoat system complying with AAMA 2603 except with a minimum dry film thickness not less than 1.5 mils, medium gloss.
- B. PVC Finish: Manufacturer's standard, UV-stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on, PVC-plastisol finish, with flame retardant added, complying with coating manufacturer's written instructions for pretreatment, application, and minimum dry film thickness of 80 mils.

- C. Color: As selected by Architect from manufacturer's full range.

## 2.9 IRON AND STEEL FINISHES

- A. Galvanizing: Hot-dip galvanize products made from rolled-, pressed-, and forged-steel shapes, castings, plates, bars, and strips indicated to be galvanized to comply with ASTM A 123/A 123M.
  - 1. Hot-dip galvanized steel and iron hardware indicated to be galvanized to comply with ASTM A 153/A 153M.
  - 2. Galvanized Steel Sheet: Commercial steel sheet, hot-dip galvanized, complying with ASTM A 653/A 653M for not less than G60 (Z180) coating designation; mill phosphatized.
- B. Powder-Coat Finish: Prepare, treat, and coat ferrous metal to comply with resin manufacturer's written instructions and as follows:
  - 1. Apply thermosetting polyester or acrylic urethane powder coating with cured-film thickness not less than 1.5 mils (0.04 mm).
- C. Baked-Enamel Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat. Comply with paint manufacturer's written instructions for applying and baking to achieve a minimum dry film thickness of 2 mils (0.05 mm).
- D. PVC Finish: Manufacturer's standard, UV-stabilized, mold-resistant, slip-resistant, matte-textured, dipped or sprayed-on, PVC-plastisol finish, with flame retardant added, complying with coating manufacturer's written instructions for pretreatment, application, and minimum dry film thickness of 80 mils.
- E. Color: As selected by Architect from manufacturer's full range.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, site surface and subgrade drainage, and other conditions affecting performance.
  - 1. Do not begin installation before final grading required for placing protective surfacing is completed, unless otherwise permitted by Architect.
  - 2. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Verify locations of playground perimeter and pathways. Verify that playground layout and equipment locations comply with requirements for each type and component of equipment.

### 3.3 INSTALLATION, GENERAL

- A. General: Comply with manufacturer's written installation instructions, unless more stringent requirements are indicated. Anchor playground equipment securely, positioned at locations and elevations indicated.
  - 1. Maximum Equipment Height: Coordinate installed heights of equipment and components with finished elevations of protective surfacing. Set equipment so fall heights and elevation requirements for age group use and accessibility are within required limits. Verify that playground equipment elevations comply with requirements for each type and component of equipment.
- B. Post and Footing Excavation: Excavate holes for posts and footings as indicated in firm, undisturbed or compacted subgrade soil.
- C. Post Set with Concrete Footing: Comply with ACI 301 for measuring, batching, mixing, transporting, forming, and placing concrete.
  - 1. Set equipment posts in concrete footing. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at the correct angle, alignment, height, and spacing.
    - a. Place concrete around posts and vibrate or tamp for consolidation. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.
  - 2. Embedded Items: Use setting drawings and manufacturer's written instructions to ensure correct installation of anchorages for equipment.
  - 3. Concrete Footings: Smooth top, and shape to shed water.

### 3.4 FIELD QUALITY CONTROL

- A. Arrange for playground equipment manufacturer's technical personnel to inspect playground and playground equipment and components at final completion and to certify compliance with the following:
  - 1. ASTM F 1487.
  - 2. CPSC No. 325.

**END OF SECTION 11 6800**

**SECTION 31 1000****SITE CLEARING****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

## A. Section Includes:

1. Removing existing vegetation.
2. Temporary erosion and sediment control.
3. Existing utilities.
4. Clearing and grubbing.
5. Site Improvements.
6. Disposal of Surplus waste materials.
7. Temporary erosion- and sedimentation-control measures.

## B. Related Sections:

1. Division 01 Section "Temporary Facilities and Controls" for temporary utility services, construction and support facilities, security and protection facilities.
2. Division 01 Section "Execution" for field engineering and surveying.

## 1.3 DEFINITIONS

- A. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- B. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil; but in disturbed areas such as urban environments, the surface soil can be subsoil.
- C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil and is the zone where plant roots grow.
- D. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

## 1.4 MATERIAL OWNERSHIP

- A. All material is the owner's property.

## 1.5 SUBMITTALS

- A. Record Drawings: Identifying and accurately showing locations of capped utilities and other subsurface structural, electrical, and mechanical conditions.

## 1.6 QUALITY ASSURANCE

- A. Preinstallation Conference: Conduct conference at Project site.

## 1.7 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing site clearing indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
  - 1. Do not proceed with work on adjoining property until directed by Architect.
- C. Utility Locator Service: Notify **New Mexico One Call** (phone number is 811) for area where Project is located before site clearing.
- D. Do not commence site clearing operations until temporary erosion- and sedimentation-control measures are in place.
- E. Soil Stripping, Handling, and Stockpiling: Perform only when the topsoil is dry or slightly moist.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

- 1. The Pueblo has available borrow material offsite.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.

- B. Protect existing site improvements to remain from damage during construction.
  - 1. Restore damaged improvements to their original condition, as acceptable to Owner.

### 3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

- A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings prepared by Contractor and approved by Owner prior to commencement of construction activities.
- B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.
- C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.
- D. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### 3.3 EXISTING UTILITIES

- A. Locate, identify, disconnect, and seal or cap utilities indicated to be removed.
  - 1. Arrange with utility companies to shut off indicated utilities.
  - 2. Owner will arrange to shut off indicated utilities when requested by Contractor.
- B. Locate, identify, and disconnect utilities indicated to be abandoned in place.
- C. Excavate for and remove underground utilities indicated to be removed.

### 3.4 CLEARING AND GRUBBING

- A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.
  - 1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
  - 2. Grind down stumps and remove roots, obstructions, and debris to a depth of 18 inches below exposed subgrade.
  - 3. Use only hand methods for grubbing within protection zones.
  - 4. Chip removed tree branches.
- B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.
  - 1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.
  - 2. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.5 SITE IMPROVEMENTS

- A. Remove existing above- and below-grade improvements as indicated and necessary to facilitate new construction.

3.6 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus soil material, unsuitable topsoil, obstructions, demolished materials, and waste materials including trash and debris, and legally dispose of them off Owner's property.

**END OF SECTION 311000**

**SECTION 31 2000****EARTH MOVING****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

## A. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for pavements & landscape.
3. Excavating and backfilling for buildings and structures.
4. Drainage course for concrete slabs-on-grade.
5. Subbase course for concrete pavements.
6. Subbase course and base course for asphalt paving.
7. Subsurface drainage backfill for walls and trenches.
8. Excavating and backfilling trenches for utilities and pits for buried utility structures.
9. Excavating well hole to accommodate elevator-cylinder assembly.

## B. Related Requirements:

1. Section 013200 "Construction Progress Documentation" for recording preexcavation and earth-moving progress.
2. Section 033000 "Cast-in-Place Concrete" for granular course if placed over vapor retarder and beneath the slab-on-grade.
3. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
4. Section 312319 "Dewatering" for lowering and disposing of ground water during construction.
5. Section 315000 "Excavation Support and Protection" for shoring, bracing, and sheet piling of excavations.
6. Section 316329 "Drilled Concrete Piers and Shafts" for excavation of shafts and disposal of surplus excavated material.
7. Section 329200 "Turf and Grasses" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.
8. Section 329300 "Plants" for finish grading in planting areas and tree and shrub pit excavation and planting.

## 1.3 DEFINITIONS

- A. Backfill: Soil material or controlled low-strength material used to fill an excavation.

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
  2. Final Backfill: Backfill placed over initial backfill to fill a trench.
- B. Base Course: Aggregate layer placed between the subbase course and hot-mix asphalt paving.
- C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.
- D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.
- E. Drainage Course: Aggregate layer supporting the slab-on-grade that also minimizes upward capillary flow of pore water.
- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Architect. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- G. Fill: Soil materials used to raise existing grades.
- H. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.
- I. Subbase Course: Aggregate layer placed between the subgrade and base course for hot-mix asphalt pavement, or aggregate layer placed between the subgrade and a cement concrete pavement or a cement concrete or hot-mix asphalt walk.
- J. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage course, or topsoil materials.
- K. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.
- 1.4 PREINSTALLATION MEETINGS
- A. Preinstallation Conference: Conduct preexcavation conference at Project site.
1. Review methods and procedures related to earthmoving, including, but not limited to, the following:
    - a. Personnel and equipment needed to make progress and avoid delays.
    - b. Coordination of Work with utility locator service.
    - c. Coordination of Work and equipment movement with the locations of tree- and plant-protection zones.
    - d. Extent of trenching by hand or with air spade.
    - e. Field quality control.

## 1.5 ACTION SUBMITTALS

- A. Product Data: For each type of the following manufactured products required:
  - 1. Geotextiles.
  - 2. Controlled low-strength material, including design mixture.
  - 3. Geofam.
  - 4. Warning tapes.

## 1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified testing agency.
- B. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:
  - 1. Classification according to ASTM D 2487.
  - 2. Laboratory compaction curve according to [ASTM D 698] [ASTM D 1557].
- C. Preexcavation Photographs or Videotape: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by earth-moving operations. Submit before earth moving begins.

## 1.7 FIELD CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.
- B. Improvements on Adjoining Property: Authority for performing earth moving indicated on property adjoining Owner's property will be obtained by Owner before award of Contract.
  - 1. Do not proceed with work on adjoining property until directed by Architect.
- C. Utility Locator Service: Notify New Mexico One Call for area where Project is located before beginning earth-moving operations.
- D. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 311000 "Site Clearing" are in place.
- E. Do not commence earth-moving operations until plant-protection measures specified in Section 015639 "Temporary Tree and Plant Protection" are in place.
- F. The following practices are prohibited within protection zones:
  - 1. Storage of construction materials, debris, or excavated material.

2. Parking vehicles or equipment.
  3. Foot traffic.
  4. Erection of sheds or structures.
  5. Impoundment of water.
  6. Excavation or other digging unless otherwise indicated.
  7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.
- G. Do not direct vehicle or equipment exhaust towards protection zones.
- H. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

## PART 2 - PRODUCTS

### 2.1 SOIL MATERIALS

- A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.
- B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487 in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.
- C. Unsatisfactory Soils: Soil Classification [Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487] [Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145], or a combination of these groups.
1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.
- D. Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- E. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 294/D 2940M 0; with at least 95 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- F. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; with at least 90 percent passing a 1-1/2-inch (37.5-mm) sieve and not more than 12 percent passing a No. 200 (0.075-mm) sieve.
- G. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; except with 100 percent passing a 1-inch (25-mm) sieve and not more than 8 percent passing a No. 200 (0.075-mm) sieve.
- H. Drainage Course: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel; ASTM D 448; coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2-inch (37.5-mm) sieve and zero to 5 percent passing a No. 8 (2.36-mm) sieve.

- I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch (25-mm) sieve and zero to 5 percent passing a No. 4 (4.75-mm) sieve.
- J. Sand: ASTM C 33/C 33M; fine aggregate.
- K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

## 2.2 ACCESSORIES

- A. Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility; colored as follows:
  - 1. Red: Electric.
  - 2. Yellow: Gas, oil, steam, and dangerous materials.
  - 3. Orange: Telephone and other communications.
  - 4. Blue: Water systems.
  - 5. Green: Sewer systems.
- B. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches (150 mm) wide and 4 mils (0.1 mm) thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches (750 mm) deep; colored as follows:
  - 1. Red: Electric.
  - 2. Yellow: Gas, oil, steam, and dangerous materials.
  - 3. Orange: Telephone and other communications.
  - 4. Blue: Water systems.
  - 5. Green: Sewer systems.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.
- B. Protect and maintain erosion and sedimentation controls during earth-moving operations.
- C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

### 3.2 DEWATERING

- A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.
- B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

### 3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.
- B. Explosives: Obtain written permission from authorities having jurisdiction before bringing explosives to Project site or using explosives on Project site.
  - 1. Perform blasting without damaging adjacent structures, property, or site improvements.
  - 2. Perform blasting without weakening the bearing capacity of rock subgrade and with the least-practicable disturbance to rock to remain.

### 3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Architect. The Contract Sum will be adjusted for rock excavation according to unit prices included in the Contract Documents. Changes in the Contract Time may be authorized for rock excavation.
  - 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; and soil, boulders, and other materials not classified as rock or unauthorized excavation.
    - a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.

### 3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch (25 mm). If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.
  - 1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.
  - 2. Pile Foundations: Stop excavations 6 to 12 inches (150 to 300 mm) above bottom of pile cap before piles are placed. After piles have been driven, remove loose and displaced material. Excavate to final grade, leaving solid base to receive concrete pile caps.
  - 3. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch (25 mm). Do not disturb bottom of excavations intended as bearing surfaces.
- B. Excavations at Edges of Tree- and Plant-Protection Zones:
  - 1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
  - 2. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

### 3.6 EXCAVATION FOR WALKS AND PAVEMENTS

- A. Excavate surfaces under walks and pavements to indicated lines, cross sections, elevations, and subgrades.

### 3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
  - 1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.
- B. Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches (300 mm) higher than top of pipe or conduit unless otherwise indicated.
  - 1. Clearance: [12 inches (300 mm) each side of pipe or conduit] [As indicated].
- C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches (150 mm) in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
  2. For pipes and conduit 6 inches (150 mm) or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
  3. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
  4. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- D. Trench Bottoms: Excavate trenches 4 inches (100 mm) deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.
1. Excavate trenches 6 inches (150 mm) deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.
- E. Trenches in Tree- and Plant-Protection Zones:
1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
  2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
  3. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

### 3.8 SUBGRADE INSPECTION

- A. Notify Architect when excavations have reached required subgrade.
- B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.
- C. Proof-roll subgrade below the building slabs and pavements with a pneumatic-tired [and loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons (13.6 tonnes) to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
1. Completely proof-roll subgrade in one direction. Limit vehicle speed to 3 mph (5 km/h).
  2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

### 3.9 UNAUTHORIZED EXCAVATION

- A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill, with 28-day compressive strength of 2500 psi (17.2 MPa), may be used when approved by Architect.
  - 1. Fill unauthorized excavations under other construction, pipe, or conduit as directed by Architect.

### 3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.11 BACKFILL

- A. Place and compact backfill in excavations promptly, but not before completing the following:
  - 1. Construction below finish grade including, where applicable, subdrainage, dampproofing, waterproofing, and perimeter insulation.
  - 2. Surveying locations of underground utilities for Record Documents.
  - 3. Testing and inspecting underground utilities.
  - 4. Removing concrete formwork.
  - 5. Removing trash and debris.
  - 6. Removing temporary shoring, bracing, and sheeting.
  - 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.
- B. Place backfill on subgrades free of mud, frost, snow, or ice.

### 3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
- C. Trenches under Footings: Backfill trenches excavated under footings and within 18 inches (450 mm) of bottom of footings with satisfactory soil; fill with concrete to elevation of bottom of footings. Concrete is specified in Section 033000 "Cast-in-Place Concrete."
- D. Trenches under Roadways: Provide 4-inch- (100-mm-) thick, concrete-base slab support for piping or conduit less than 30 inches (750 mm) below surface of roadways. After installing and testing, completely encase piping or conduit in a minimum of 4 inches (100 mm) of concrete

before backfilling or placing roadway subbase course. Concrete is specified in Section 033000 "Cast-in-Place Concrete."

- E. Backfill voids with satisfactory soil while removing shoring and bracing.
- F. Initial Backfill:
  - 1. Soil Backfill: Place and compact initial backfill of satisfactory soil, free of particles larger than 1 inch (25 mm) in any dimension, to a height of 12 inches (300 mm) over the pipe or conduit.
    - a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.
  - 2. Controlled Low-Strength Material: Place initial backfill of controlled low-strength material to a height of 12 inches (300 mm) over the pipe or conduit. Coordinate backfilling with utilities testing.
- G. Final Backfill:
  - 1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation.
  - 2. Controlled Low-Strength Material: Place final backfill of controlled low-strength material to final subgrade elevation.
- H. Warning Tape: Install warning tape directly above utilities, 12 inches (300 mm) below finished grade, except 6 inches (150 mm) below subgrade under pavements and slabs.

### 3.13 SOIL FILL

- A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.
- B. Place and compact fill material in layers to required elevations as follows:
  - 1. Under grass and planted areas, use satisfactory soil material.
  - 2. Under walks and pavements, use satisfactory soil material.
  - 3. Under steps and ramps, use engineered fill.
  - 4. Under building slabs, use engineered fill.
  - 5. Under footings and foundations, use engineered fill.
- C. Place soil fill on subgrades free of mud, frost, snow, or ice.

### 3.14 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.

1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.
2. Remove and replace, or scarify and air dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

### 3.15 COMPACTION OF SOIL BACKFILLS AND FILLS

- A. Place backfill and fill soil materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.
- C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:
  1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches (300 mm) of existing subgrade and each layer of backfill or fill soil material at 95 percent.
  2. Under walkways, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 95 percent.
  3. Under turf or unpaved areas, scarify and recompact top 6 inches (150 mm) below subgrade and compact each layer of backfill or fill soil material at 85 percent.
  4. For utility trenches, compact each layer of initial and final backfill soil material at 85 percent.

### 3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  1. Provide a smooth transition between adjacent existing grades and new grades.
  2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Rough Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:
  1. Turf or Unpaved Areas: Plus or minus 1 inch (25 mm).
  2. Walks: Plus or minus 1 inch (25 mm).
  3. Pavements: Plus or minus 1/2 inch (13 mm).
- C. Grading inside Building Lines: Finish subgrade to a tolerance of [1/2 inch (13 mm) when tested with a 10-foot (3-m) straightedge.

### 3.17 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

- A. Place subbase course and base course on subgrades free of mud, frost, snow, or ice.
- B. On prepared subgrade, place subbase course and base course under pavements and walks as follows:
  - 1. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
  - 2. Place base course material over subbase course under hot-mix asphalt pavement.
  - 3. Shape subbase course and base course to required crown elevations and cross-slope grades.
  - 4. Place subbase course and base course]6 inches (150 mm) or less in compacted thickness in a single layer.
  - 5. Place subbase course and base course that exceeds 6 inches (150 mm) in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches (150 mm) thick or less than 3 inches (75 mm) thick.
  - 6. Compact subbase course and base course]at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.
- C. Pavement Shoulders: Place shoulders along edges of subbase course and base course to prevent lateral movement. Construct shoulders, at least 12 inches (300 mm) wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

### 3.18 FIELD QUALITY CONTROL

- A. Special Inspections: Owner will engage a qualified special inspector to perform the following special inspections:
  - 1. Determine prior to placement of fill that site has been prepared in compliance with requirements.
  - 2. Determine that fill material classification and maximum lift thickness comply with requirements.
  - 3. Determine, during placement and compaction, that in-place density of compacted fill complies with requirements.
- B. Testing Agency: Owner will engage a qualified geotechnical engineering testing agency to perform tests and inspections.
- C. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.
- D. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

- E. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:
  - 1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. (186 sq. m) or less of paved area or building slab but in no case fewer than three tests.
  - 2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for every 100 feet (30 m) or less of wall length but no fewer than two tests.
  - 3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet (46 m) or less of trench length but no fewer than two tests.
- F. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

### 3.19 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.
  - 1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.
- C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.
  - 1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

### 3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Remove surplus satisfactory soil and waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.
- B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.
  - 1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

**END OF SECTION 312000**

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**SECTION 32 0000**

**GRAVEL (LANDSCAPE)**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. This work consists of installing landscape gravel in miscellaneous areas.

**1.2 SUBMITTALS**

- A. Submit the following items for approval:
  - 1. Product Data: A copy of the manufacturer's product sheet together with instructions for installation of filter fabric 5 days before installation.

**PART 2 - PRODUCTS**

**2.1 MATERIAL**

- A. Filter Fabric: Filter fabric must be non-plastic and approved by engineer.
- B. Staples: Staples must be 2 inches in width, 6 inches in length and 11-gauge wire.
- C. Gravel: Gravel must consist of crushed rock and must comply with the following:

**Grading Requirements**

Sieve Size	Percent Passing
1-inch	100
3/4-inch	90-100
No. 4	35-60
No. 30	10-30
No. 200	2-9

The color of gravel will be owner specified.

**PART 3 - EXECUTION**

**3.1 CONSTRUCTION**

- A. Earthwork: Earthwork must comply with “Earthwork” section of the Standard Specification and these special provisions. After clearing, excavate areas to receive gravel. Where gravel is to be placed adjacent to an existing curb, dike, pavement, sidewalk or soundwall excavate so that the finished gravel elevation adjacent to those items will maintain planned flow lines, slope gradient and contours of the project site. After excavation, grade areas to receive gravel to a smooth, uniform surface and compact to not less than 90 percent relative compaction.

- B. Filter Fabric: Surfaces to receive filter fabric, immediately prior to placing, shall be free to loose or extraneous material and sharp objects that may damage the filter fabric during installation. The fabric shall be aligned and placed in a wrinkle-free manner. Adjacent rolls of the fabric shall be overlapped from 12 inches to 18 inches. The preceding roll shall overlap the following roll in the direction the material is being spread. Fabric shall be held in place with staples or stakes that are flush with the fabric and prevent movement of fabric during or after placement of gravel. Should the fabric be damaged during placing, the torn or punctured section shall be either completely replaced or shall be repaired by placing a piece of fabric that is large enough to cover the damaged area and to meet the overlap requirement. Damage to the fabric resulting from the Contractor's vehicles, equipment or operations shall be replaced or repaired by the Contractor at the Contractor's expense.
- C. Gravel Installation. Compact gravel to a relative compaction of not less than 90 percent. When work is complete; the surface must be smooth and uniform; maintaining original flow lines, slope gradient and contours of the project site.

### 3.2 MEASUREMENT AND PAYMENT

- A. Gravel (Miscellaneous areas) will be measured by lump sum as determined from actual measurements made parallel to the ground slope. The contract unit price paid per lump sum for gravel (miscellaneous areas) includes full compensation for furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work involved in gravel (miscellaneous areas), complete in place, including site preparation, earthwork, soil treatment, aggregate base, landscape fabric, and edging, as shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer

**END OF SECTION 32 0000**

**SECTION 32 1123****AGGREGATE AND/OR GRADED-CRUSHED AGGREGATE BASE COURSE****PART 1 GENERAL**

## 1.1 UNIT PRICES

## 1.1.1 Measurement - Lump Sum

## 1.1.1.1 Area - Lump Sum

## 1.1.2 Payment for Quantities - Lump Sum

## 1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION  
OFFICIALS (AASHTO)

AASHTO T 180 (2010) Standard Method of Test for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop

AASHTO T 224 (2010) Standard Method of Test for Correction for Coarse Particles in the Soil Compaction Test

ASTM INTERNATIONAL (ASTM)

ASTM C117 (2004) Standard Test Method for Materials Finer than 75-um (No. 200) Sieve in Mineral Aggregates by Washing

ASTM C127 (2007) Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate

ASTM C128 (2007a) Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Fine Aggregate

ASTM C131 (2006) Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine

ASTM C136 (2006) Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

ASTM C29/C29M	(2009) Standard Test Method for Bulk Density ("Unit Weight") and Voids in Aggregate
ASTM C88	(2005) Standard Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM D 1556	(2007) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(2009) Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft <sup>3</sup> ) (2700 kN-m/m <sup>3</sup> )
ASTM D 2167	(2008) Density and Unit Weight of Soil in Place by the Rubber Balloon Method
ASTM D 2487	(2011) Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 4318	(2010) Liquid Limit, Plastic Limit, and Plasticity Index of Soils
ASTM D 5821	(2001; R 2006) Standard Test Method for Determining the Percentage of Fractured Particles in Coarse Aggregate
ASTM D 6938	(2010) Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
ASTM D 75/D 75M	(2009) Standard Practice for Sampling Aggregates
ASTM E 11	(2010a) Wire Cloth and Sieves for Testing Purposes

### 1.3 DEFINITIONS

For the purposes of this specification, the following definitions apply.

#### 1.3.1 Aggregate Base Course

Aggregate base course (ABC) is well graded, durable aggregate uniformly moistened and mechanically stabilized by compaction.

#### 1.3.2 Graded-Crushed Aggregate Base Course

Graded-crushed aggregate (GCA) base course is well graded, crushed, durable aggregate uniformly moistened and mechanically stabilized by compaction. GCA is similar to ABC, but it has more stringent requirements and it produces a base course with higher strength and stability.

#### 1.3.3 Degree of Compaction

Degree of compaction required, except as noted in the second sentence, is expressed as a percentage of the maximum laboratory dry density obtained by the test procedure presented in ASTM D 1557 abbreviated as a percent of laboratory maximum dry density. Since ASTM D 1557 applies only to soils that have 30 percent or less by weight of their particles retained on the 3/4 inch sieve, the degree of compaction for material having more than 30 percent by weight of their particles retained on the 3/4 inch sieve are expressed as a percentage of the laboratory maximum dry density in accordance with AASHTO T 180 Method D and corrected with AASHTO T 224.

#### 1.4 SYSTEM DESCRIPTION

All plant, equipment, and tools used in the performance of the work will be subject to approval before the work is started and shall be maintained in satisfactory working condition at all times. Submit a list of proposed equipment, including descriptive data. Provide adequate equipment having the capability of producing the required compaction, meeting grade controls, thickness control, and smoothness requirements as set forth herein.

#### 1.5 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for Contractor Quality Control approval. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

##### SD-03 Product Data

Plant, Equipment, and Tools; G  
Waybills and Delivery Tickets; G

##### SD-06 Test Reports

Sampling and Testing; G  
Field Density Tests; G

#### 1.6 QUALITY ASSURANCE

Sampling and testing are the responsibility of the Contractor and performed by a testing laboratory approved in accordance with Section 01 45 00.00 10 QUALITY CONTROL. Work requiring testing will not be permitted until the testing laboratory has been inspected and approved. Test the materials to establish compliance with the specified requirements; perform testing at the specified frequency. The Contracting Officer may specify the time and location of the tests. Furnish copies of test results to the Contracting Officer within 24 hours of completion of the tests.

##### 1.6.1 Sampling

Take samples for laboratory testing in conformance with ASTM D 75/D 75M. When deemed necessary, the sampling will be observed by the Contracting Officer.

##### 1.6.2 Tests

Perform the following tests in conformance with the applicable standards listed.

#### 1.6.2.1 Sieve Analysis

Make sieve analysis in conformance with ASTM C117 and ASTM C136. Sieves shall conform to ASTM E 11. .

#### 1.6.2.2 Liquid Limit and Plasticity Index

Determine liquid limit and plasticity index in accordance with ASTM D 4318.

#### 1.6.2.3 Moisture-Density Determinations

Determine the laboratory maximum dry density and optimum moisture content in accordance with ASTM D 1557 .

#### 1.6.2.4 Field Density Tests

Measure field density in accordance with ASTM D 1556, ASTM D 2167 or ASTM D 6938.

- a. Submit certified copies of test results for approval not less than 30 days before material is required for the work.
- b. Submit calibration curves and related test results prior to using the device or equipment being calibrated.
- c. Submit copies of field test results within 24 hours after the tests are performed.

#### 1.6.2.5 Wear Test

Perform wear tests on GCA course material in conformance with ASTM C131.

#### 1.6.2.6 Soundness

Perform soundness tests on GCA in accordance with ASTM C88.

#### 1.6.2.7 Weight of Slag

Determine weight per cubic foot of slag in accordance with ASTM C29/C29M on the GCA course material.

### 1.6.3 Testing Frequency

#### 1.6.3.1 Initial Tests

Perform one of each of the following tests, on the proposed material prior to commencing construction, to demonstrate that the proposed material meets all specified requirements when furnished. If materials from more than one source are going to be utilized, this testing shall be completed for each source.

- a. Sieve Analysis [including the No. 635 sieve].
- b. Liquid limit and plasticity index.

- c. Moisture-density relationship.
- d. Wear.
- e. Soundness.

#### 1.6.3.2 In Place Tests

Perform each of the following tests on samples taken from the placed and compacted GCA. Samples shall be taken and tested at the rates indicated.

- a. Perform density tests on every lift of material placed and at a frequency of one set of tests for every 350 square yards or portion thereof, of completed area.
- b. Perform sieve analysis on every lift of material placed and at a frequency of one sieve analysis for every 250 square yards or portion thereof, of material placed.
- c. Perform liquid limit and plasticity index tests at the same frequency as the sieve analysis.
- d. Measure the total thickness of the base course at intervals, in such a manner as to ensure one measurement for each 300 square yards of base course. Measurements shall be made in 3 inch diameter test holes penetrating the base course.

#### 1.6.4 Approval of Material

Select the source of the material 45 days prior to the time the material will be required in the work. Tentative approval of material will be based on initial test results. Final approval of the materials will be based on sieve analysis, liquid limit, and plasticity index tests performed on samples taken from the completed and fully compacted course(s).

### 1.7 ENVIRONMENTAL REQUIREMENTS

Perform construction when the atmospheric temperature is above 35 degrees F. When the temperature falls below 35 degrees F, protect all completed areas by approved methods against detrimental effects of freezing. Correct completed areas damaged by freezing, rainfall, or other weather conditions to meet specified requirements.

## **PART 2 PRODUCTS**

### 2.1 AGGREGATES

Provide GCA consisting of clean, sound, durable particles of crushed stone, crushed slag, crushed gravel, angular sand, or other approved material. GCA shall be free of silt and clay as defined by ASTM D 2487, organic matter, and other objectionable materials or coatings. The portion retained on the No. 4 sieve is known as coarse aggregate; that portion passing the No. 4 sieve is known as fine aggregate.

### 2.1.1 Coarse Aggregate

Provide coarse aggregates with angular particles of uniform density. When the coarse aggregate is supplied from more than one source, aggregate from each source shall meet the specified requirements and shall be stockpiled separately.

- a. Crushed Gravel: Crushed gravel shall be manufactured by crushing gravels, and shall meet all the requirements specified below.
- b. Crushed Stone: Provide crushed stone consisting of freshly mined quarry rock, meeting all the requirements specified below.
- c. Crushed Recycled Concrete: Provide crushed recycled concrete consisting of previously hardened portland cement concrete or other concrete containing pozzolanic binder material. The recycled material shall be free of all reinforcing steel, bituminous concrete surfacing, and any other foreign material and shall be crushed and processed to meet the required gradations for coarse aggregate. Reject recycled concrete aggregate exceeding this value. Crushed recycled concrete shall meet all other applicable requirements specified below.
- d. Crushed Slag: Crushed slag shall be an air-cooled blast-furnace product having an air dry unit weight of not less than 70 pcf as determined by ASTM C29/C29M, and shall meet all the requirements specified below.

#### 2.1.1.2 Graded-Crushed Aggregate Base Course

GCA coarse aggregate shall not show more than 50 percent loss when subjected to the Los Angeles abrasion test in accordance with ASTM C131. GCA coarse aggregate shall not exhibit a loss greater than 18 percent weighted average, at five cycles, when tested for soundness in magnesium sulfate, or 12 percent weighted average, at five cycles, when tested in sodium sulfate in accordance with ASTM C88. The amount of flat and elongated particles shall not exceed 20 percent for the fraction retained on the 1/2 inch sieve nor 20 percent for the fraction passing the 1/2 inch sieve. A flat particle is one having a ratio of width to thickness greater than 3; an elongated particle is one having a ratio of length to width greater than 3. In the portion retained on each sieve specified, the crushed aggregate shall contain at least 90 percent by weight of crushed pieces having two or more freshly fractured faces determined in accordance with ASTM D 5821. When two fractures are contiguous, the angle between planes of the fractures must be at least 30 degrees in order to count as two fractured faces. Crushed gravel shall be manufactured from gravel particles 90 percent of which by weight are retained on the maximum size sieve listed in TABLE 1.

### 2.1.2 Fine Aggregate

Fine aggregates shall be angular particles of uniform density. When the fine aggregate is supplied from more than one source, aggregate from each source shall meet the specified requirements.

#### 2.1.2.1 Graded-Crushed Aggregate Base Course

Provide GCA fine aggregate consisting of angular particles produced by crushing stone, slag, or gravel that meets the requirements for wear and soundness specified for GCA coarse aggregate.

### 2.1.3 Gradation Requirements

Apply the specified gradation requirements to the completed base course. The aggregates shall be continuously well graded within the limits specified in TABLE 1. Sieves shall conform to ASTM E 11.

TABLE 1. GRADATION OF AGGREGATES

Percentage by Weight Passing Square-Mesh Sieve

Sieve Designation	No. 1	No. 2	No. 3
2 inch	100	----	----
1-1/2 inch	70-100	100	----
1 inch	45-80	60-100	100
1/2 inch	30-60	30-65	40-70
No. 4	20-50	20-50	20-50
No. 10	15-40	15-40	15-40
No. 40	5-25	5-25	5-25
No. 200	0-8	0-8	0-8

NOTE 1: Particles having diameters less than No. 635 shall not be in excess of 3 percent by weight of the total sample tested.

NOTE 2: The values are based on aggregates of uniform specific gravity. If materials from different sources are used for the coarse and fine aggregates, they shall be tested in accordance with ASTM C127 and ASTM C128 to determine their specific gravities. If the specific gravities vary by more than 10 percent, the percentages passing the various sieves shall be corrected as directed by the Contracting Officer.

2.2 LIQUID LIMIT AND PLASTICITY INDEX

Apply liquid limit and plasticity index requirements to the completed course and to any component that is blended to meet the required gradation. The portion of any component or of the completed course passing the No. 40 sieve shall be either nonplastic or have a liquid limit not greater than 25 and a plasticity index not greater than 5.

**PART 3 EXECUTION**

3.1 GENERAL REQUIREMENTS

When the GCA is constructed in more than one layer, clean the previously constructed layer of loose and foreign matter by sweeping with power sweepers or power brooms, except that hand brooms may be used in areas where power cleaning is not practicable. Provide adequate drainage during the entire period of construction to prevent water from collecting or standing on the working area. Provide line and grade stakes as necessary for control. Grade stakes shall be in lines parallel to the centerline of the area under construction and suitably spaced for string lining.

3.4 PREPARATION OF UNDERLYING COURSE

Prior to constructing the base course(s), the underlying course or subgrade shall be cleaned of all foreign substances. At the time of construction of the base course(s), the underlying course shall contain no frozen material. The surface of the underlying course or subgrade shall meet specified compaction and surface tolerances. The underlying course shall conform to Section 31 00 00 EARTHWORK. Ruts or soft yielding spots in the underlying courses, areas having inadequate compaction, and deviations of the surface from the requirements set forth herein shall be corrected by loosening and removing soft or unsatisfactory material and by adding approved material, reshaping to line and grade, and recompacting to specified density requirements. For cohesionless underlying courses containing sands or gravels, as defined in ASTM D 2487, the surface shall be stabilized prior to placement of the base course(s). Stabilization shall be accomplished by mixing GCA into the underlying course and compacting by approved methods. The stabilized material shall be considered as part of the underlying course and shall meet all requirements of the underlying course. The finished underlying course shall not be disturbed by traffic or other operations and shall be maintained in a satisfactory condition until the base course is placed.

### 3.5 INSTALLATION

#### 3.5.1 Placing

Place the mixed material on the prepared subgrade or subbase in layers of uniform thickness with an approved spreader. When a compacted layer 6 inches or less in thickness is required, place the material in a single layer. When a compacted layer in excess of 6 inches is required, place the material in layers of equal thickness. No layer shall be thicker than 6 inches or thinner than 3 inches when compacted. The layers shall be so placed that when compacted they will be true to the grades or levels required with the least possible surface disturbance. Where the base course is placed in more than one layer, the previously constructed layers shall be cleaned of loose and foreign matter by sweeping with power sweepers, power brooms, or hand brooms, as directed. Such adjustments in placing procedures or equipment shall be made as may be directed to obtain true grades, to minimize segregation and degradation, to adjust the water content, and to insure an acceptable base course.

#### 3.5.2 Grade Control

The finished and completed base course shall conform to the lines, grades, and cross sections shown. Underlying material(s) shall be excavated and prepared at sufficient depth for the required base course thickness so that the finished base course and the subsequent surface course will meet the designated grades.

#### 3.5.3 Edges of Base Course

The base course(s) shall be placed so that the completed section will be a minimum of 2 feet wider, on all sides, than the next layer that will be placed above it. Additionally, place approved fill material along the outer edges of the base course in sufficient quantities to compact to the thickness of the course being constructed, or to the thickness of each layer in a multiple layer course, allowing in each operation at least a 2 foot width of this material to be rolled and compacted simultaneously with rolling and compacting of each layer of base course. If this base course material is to be placed adjacent to another pavement section, then the layers for both of these sections shall be placed and compacted along this edge at the same time.

#### 3.5.4 Compaction

Compact each layer of the base course, as specified, with approved compaction equipment. Maintain water content during the compaction procedure to within plus or minus 2 percent of the optimum water content determined from laboratory tests as specified in this Section. Begin rolling at the outside edge of the surface and proceed to the center, overlapping on successive trips at least one-half the width of the roller. Alternate trips of the roller shall be slightly different lengths. Speed of the roller shall be such that displacement of the aggregate does not occur. In all places not accessible to the rollers, the mixture shall be compacted with hand-operated power tampers. Continue compaction until each layer has a degree of compaction that is at least 100 percent of laboratory maximum density through the full depth of the layer. Make such adjustments in compacting or finishing procedures as may be directed to obtain true grades, to minimize segregation and degradation, to reduce or increase water content, and to ensure a satisfactory base course. Any materials that are found to be unsatisfactory shall be removed and replaced with satisfactory material or reworked, as directed, to meet the requirements of this specification.

### 3.5.5 Thickness

Construct the compacted thickness of the base course as indicated. No individual layer shall be thicker than 6 inches nor be thinner than 3 inches in compacted thickness. The total compacted thickness of the base course(s) shall be within 1/2 inch of the thickness indicated. Where the measured thickness is more than 1/2 inch deficient, correct such areas by scarifying, adding new material of proper gradation, reblading, and recompacting as directed. Where the measured thickness is more than 1/2 inch thicker than indicated, the course shall be considered as conforming to the specified thickness requirements. Average job thickness shall be the average of all thickness measurements taken for the job, but shall be within 1/4 inch of the thickness indicated. The total thickness of the base course shall be measured at intervals in such a manner as to ensure one measurement for each 300 square yards of base course. Measurements shall be made in 3 inch diameter test holes penetrating the base course.

### 3.5.6 Proof Rolling

Proof rolling of the areas indicated shall be in addition to the compaction specified and shall consist of the application of 10 coverages with a heavy pneumatic-tired roller having four or more tires, each loaded to a minimum of 30,000 pounds and inflated to a minimum of 125 psi. In areas designated, apply proof rolling to the top of the underlying material on which the base course is laid and to each layer of base course. Maintain water content of the underlying material at optimum or at the percentage directed from start of compaction to completion of proof rolling of that layer. Water content of each layer of the base course shall be maintained at the optimum percentage directed from start of compaction to completion of proof rolling. Any base course materials or any underlying materials that produce unsatisfactory results by proof rolling shall be removed and replaced with satisfactory materials, recompacted and proof rolled to meet these specifications.

### 3.5.7 Finishing

The surface of the top layer of base course shall be finished after final compaction and proof rolling by cutting any overbuild to grade and rolling with a steel-wheeled roller. Thin layers of material shall not be added to the top layer of base course to meet grade. If the elevation of the top layer of base course is 1/2 inch or more below grade, then the top layer should be scarified to a depth of at least 3 inches and new material shall be blended in compacted and proof rolled to bring to grade. Adjustments to rolling and finishing procedures shall be made as directed to minimize segregation and degradation, obtain grades, maintain moisture content, and insure an acceptable base course. Should the surface become rough, corrugated, uneven in texture, or traffic marked prior to completion, the unsatisfactory portion shall be scarified, reworked and recompacted or it shall be replaced as directed.

### 3.5.8 Smoothness

The surface of the top layer shall show no deviations in excess of 3/8 inch when tested with a 12 foot straightedge. Take measurements in successive positions parallel to the centerline of the area to be paved. Measurements shall also be taken perpendicular to the centerline at 25 foot intervals. Deviations exceeding this amount shall be corrected by removing material and replacing with new material, or by reworking existing material and compacting it to meet these specifications.

### 3.6 TRAFFIC

Do not allow traffic on the completed base course.

### 3.7 MAINTENANCE

Maintain the base course in a satisfactory condition until the full pavement section is completed and accepted. Maintenance shall include immediate repairs to any defects and shall be repeated as often as necessary to keep the area intact. Any base course that is not paved over prior to the onset of winter, shall be retested to verify that it still complies with the requirements of this specification. Any area of base course that is damaged shall be reworked or replaced as necessary to comply with this specification.

### 3.8 DISPOSAL OF UNSATISFACTORY MATERIALS

Any unsuitable materials that must be removed shall be disposed of in waste disposal areas indicated. No additional payments will be made for materials that must be replaced.

**END OF SECTION 321123**

**SECTION 32 1216****ASPHALT PAVING****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY****A. Section Includes:**

- 1. Hot-mix asphalt paving.
- 2. Pavement-marking paint.

**B. Related Sections:**

- 1. Division 32 Sections for other paving installed as part of crosswalks in asphalt pavement areas.
- 2. Division 32 Section "Concrete Paving Joint Sealants" for joint sealants and fillers at paving terminations.

**1.3 DEFINITION**

- A. Hot-Mix Asphalt Paving Terminology: Refer to ASTM D 8 for definitions of terms.

**1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
  - 1. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
  - 2. Job-Mix Designs: For each job mix proposed for the Work.
- B. Shop Drawings: Indicate pavement markings, lane separations, and defined parking spaces. Indicate, with international symbol of accessibility, spaces allocated for people with disabilities.
- C. Material Certificates: For each paving material, from manufacturer.
- D. Material Test Reports: For each paving material.

## 1.5 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** A paving-mix manufacturer registered with and approved by authorities having jurisdiction.
- B. **Testing Agency Qualifications:** Qualified according to ASTM D 3666 for testing indicated.
- C. **Regulatory Requirements:** Comply with materials, workmanship, and other applicable requirements of New Mexico Standards for Public Works Construction for asphalt paving work.
  - 1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.
- D. **Pre-installation Conference:** Conduct conference at Project site.
  - 1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
    - a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
    - b. Review condition of subgrade and preparatory work.
    - c. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
    - d. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.
- B. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.

## 1.7 PROJECT CONDITIONS

- A. **Environmental Limitations:** Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
  - 1. **Prime Coat:** Minimum surface temperature of 60 deg F.
  - 2. **Asphalt Base Course:** Minimum surface temperature of 40 deg F and rising at time of placement.
  - 3. **Asphalt Surface Course:** Minimum surface temperature of 60 deg F at time of placement.
- B. **Pavement-Marking Paint:** Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 deg F for oil-based materials, 55 deg F for water-based materials, and not exceeding 95 deg F.

## PART 2 - PRODUCTS

### 2.1 AGGREGATES

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.
- B. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel, or cured, crushed blast-furnace slag.
- C. Fine Aggregate: ASTM D 1073 sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
  - 1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.
- D. Mineral Filler: ASTM D 242, rock or slag dust, hydraulic cement, or other inert material.

### 2.2 ASPHALT MATERIALS

- A. Asphalt Binder:
- B. Prime Coat: ASTM D 2027, medium-curing cutback asphalt, MC-30 or MC-70.
- C. Water: Potable.

### 2.3 AUXILIARY MATERIALS

- A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.
- B. Sand: ASTM D 1073 Grade Nos. 2 or 3.
- C. Pavement-Marking Paint: Conform to the requirements of the NMDOT for white and Blue Traffic line Paints (combination Alkyd & Hypalon – fast drying type).
  - 1. Color: White, Blue As indicated.
- D. Glass Beads: AASHTO M 247, Type 1.
- E. Wheel Stops: Precast, air-entrained concrete, 2500-psi minimum compressive strength, 4-1/2 inches high by 9 inches wide by 72 inches long. Provide chamfered corners, drainage slots on underside, and holes for anchoring to substrate.
  - 1. Dowels: Galvanized steel, 3/4-inch diameter, 10-inch minimum length.

## 2.4 MIXES

- A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and complying with the following requirements:
1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
  2. Base Course: Type 1.
  3. Surface Course: SP IV.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
  2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
  3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- C. Proceed with paving only after unsatisfactory conditions have been corrected.
- D. Verify that utilities, traffic loop detectors, and other items requiring a cut and installation beneath the asphalt surface have been completed and that asphalt surface has been repaired flush with adjacent asphalt prior to beginning installation of imprinted asphalt.

### 3.2 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
- B. Herbicide Treatment: Apply herbicide according to manufacturer's recommended rates and written application instructions. Apply to dry, prepared subgrade or surface of compacted-aggregate base before applying paving materials.
1. Mix herbicide with prime coat if formulated by manufacturer for that purpose.
- C. Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd.. Apply enough material to penetrate and seal but not flood surface. Allow prime coat to cure.

1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
2. Protect primed substrate from damage until ready to receive paving.

### 3.3 HOT-MIX ASPHALT PLACING

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
  1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
  2. Place hot-mix asphalt surface course in single lift.
  3. Spread mix at minimum temperature of 250 deg F.
  4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
  5. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.
- B. Place paving in consecutive strips not less than 10 feet wide unless infill edge strips of a lesser width are required.
  1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.
- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

### 3.4 JOINTS

- A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.
  1. Clean contact surfaces and apply tack coat to joints.
  2. Offset longitudinal joints, in successive courses, a minimum of 6 inches.
  3. Offset transverse joints, in successive courses, a minimum of 24 inches.
  4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."
  5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
  6. Compact asphalt at joints to a density within 2 percent of specified course density.

### 3.5 COMPACTION

- A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.
  - 1. Complete compaction before mix temperature cools to 185 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
  - 1. Average Density: 96 percent of reference laboratory density according to ASTM D 6927, but not less than 94 percent nor greater than 100 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while asphalt is still hot; compact thoroughly.
- F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.
- G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.
- H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

### 3.6 INSTALLATION TOLERANCES

- A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
  - 1. Base Course: Plus or minus 1/2 inch.
  - 2. Surface Course: Plus 1/4 inch, no minus.
- B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:
  - 1. Base Course: 1/4 inch.
  - 2. Surface Course: 1/8 inch .
  - 3. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

### 3.7 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow paving to age for 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.
  - 1. Broadcast glass beads uniformly into wet pavement markings at a rate of 6 lb/gal.

### 3.8 WHEEL STOPS

- A. Install wheel stops in bed of adhesive as recommended by manufacturer.
- B. Securely attach wheel stops to pavement with not less than two galvanized-steel dowels embedded at one-quarter to one-third points. Securely install dowels into pavement and bond to wheel stop. Recess head of dowel beneath top of wheel stop.

### 3.9 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
- B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.
- C. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to ASTM D 979.
  - 1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
  - 2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
    - a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, with no fewer than 3 cores taken.
    - b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
- D. Replace and compact hot-mix asphalt where core tests were taken.
- E. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

3.10 DISPOSAL

- A. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an EPA-approved landfill.
  - 1. Do not allow milled materials to accumulate on-site.

**END OF SECTION 321216**

**SECTION 32 1313****CONCRETE PAVING****PART 1 - GENERAL****1.1 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.2 SUMMARY****A. Section Includes:**

- 1. Curbs and gutters.
- 2. Walks.

**B. Related Sections:**

- 1. Division 03 Section "Cast-in-Place Concrete" for general building applications of concrete.

**1.3 DEFINITIONS**

- A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash and other pozzolans, and ground granulated blast-furnace slag.

**1.4 SUBMITTALS**

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: Indicate pavement markings, lane separations, and defined parking spaces. Indicate, with international symbol of accessibility, spaces allocated for people with disabilities.
- C. Samples for Initial Selection: For each type of product, ingredient, or admixture requiring color selection.
- D. Samples for Verification: For each type of product or exposed finish, prepared as Samples of size indicated below:
  - 1. Wheel Stops: 6 inches long showing cross section; with fasteners.
- E. Other Action Submittals:

1. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- F. Qualification Data: For qualified ready-mix concrete manufacturer.
- G. Material Certificates: For the following, from manufacturer:
1. Cementitious materials.
  2. Steel reinforcement and reinforcement accessories.
  3. Curing compounds.
  4. Applied finish materials.
  5. Bonding agent or epoxy adhesive.
- H. Material Test Reports: For each of the following:
1. Aggregates.
- I. Field quality-control reports.
- 1.5 QUALITY ASSURANCE
- A. Detectable Warning Installer Qualifications: An employer of workers trained and approved by manufacturer of stamped concrete paving systems.
- B. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.
1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").
- C. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.
1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
- D. Concrete Testing Service: Engage a qualified testing agency to perform material evaluation tests and to design concrete mixtures.
- E. ACI Publications: Comply with ACI 301 unless otherwise indicated.

## PART 2 - PRODUCTS

### 2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.
  - 1. Use flexible or uniformly curved forms for curves with a radius of 100 feet or less.
- B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

### 2.2 STEEL REINFORCEMENT

- A. Plain-Steel Welded Wire Reinforcement: ASTM A 185/A 185M.
- B. Reinforcing Bars: ASTM A 615/A 615M, Grade 60 deformed.
- C. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:
  - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
  - 2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

### 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source throughout Project:
  - 1. Portland Cement: ASTM C 150, gray portland cement Type I.
    - a. Fly Ash: ASTM C 618, Class C.
    - b. Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
- B. Normal-Weight Aggregates: ASTM C 33, Class 4S, uniformly graded. Provide aggregates from a single source.
  - 1. Maximum Coarse-Aggregate Size: 1-1/2 inches nominal.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: Potable and complying with ASTM C 94/C 94M.
- D. Air-Entraining Admixture: ASTM C 260.

- E. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.
  - 3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
  - 4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
  - 5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
  - 6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

## 2.4 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 3 or burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.
  - 1. Products: Provide Lambert Corporation; LAMBCO skin, or approved equal, as required.
- E. Clear, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 1, Class B, dissipating.
  - 1. Products: Lambert Corporation; AQUA KURE - CLEAR or approved equal.
- F. White, Waterborne, Membrane-Forming Curing Compound: ASTM C 309, Type 2, Class B, dissipating.
  - 1. Products: Provide Lambert Corporation; AQUA KURE - WHITE or approved equal.

## 2.5 RELATED MATERIALS

- A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber in preformed strips.

## 2.6 WHEEL STOPS

- A. Wheel Stops: Precast, air-entrained concrete, 2500-psi minimum compressive strength, 4-1/2 inches high by 9 inches wide by 72 inches long. Provide chamfered corners and drainage slots on underside and holes for anchoring to substrate.
  - 1. Dowels: Galvanized steel, 3/4 inch in diameter, 10-inch minimum length.

## 2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.
  - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.
- B. Project-Site Mixing: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Mix concrete materials in appropriate drum-type batch machine mixer.
  - 1. For concrete batches of 1 cu. yd. or smaller, continue mixing at least 1-1/2 minutes, but not more than 5 minutes after ingredients are in mixer, before any part of batch is released.
  - 2. For concrete batches larger than 1 cu. yd., increase mixing time by 15 seconds for each additional 1 cu. yd.
  - 3. Provide batch ticket for each batch discharged and used in the Work, indicating Project identification name and number, date, mixture type, mixing time, quantity, and amount of water added.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### 3.2 PREPARATION

- A. Remove loose material from compacted subbase surface immediately before placing concrete.

### 3.3 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.
- B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

### 3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats.

### 3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.
  - 1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.
  - 1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.
  - 2. Provide tie bars at sides of paving strips where indicated.
  - 3. Butt Joints: Use epoxy bonding adhesive at joint locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.
  - 1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.
  - 2. Extend joint fillers full width and depth of joint.
  - 3. Terminate joint filler not less than 1/2 inch or more than 1 inch below finished surface if joint sealant is indicated.
  - 4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
  - 5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
  - 6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a **3/8-inch** radius. Repeat grooving of contraction joints after applying surface finishes. Eliminate grooving-tool marks on concrete surfaces.
    - a. Tolerance: Ensure that grooved joints are within **3 inches** either way from centers of dowels.
  2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
    - a. Tolerance: Ensure that sawed joints are within 3 inches either way from centers of dowels.
  3. Doweled Contraction Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.
- E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 3/8-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate edging-tool marks on concrete surfaces.

### 3.6 CONCRETE PLACEMENT

- A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.
- B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 (ACI 301M) requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site. Do not add water to fresh concrete after testing.
- F. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- G. Consolidate concrete according to ACI 301 (ACI 301M) by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
  1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement or side forms.

Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement and joint devices.

- H. Screed paving surface with a straightedge and strike off.
- I. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- J. Curbs and Gutters: Use design mixture for automatic machine placement. Produce curbs and gutters to required cross section, lines, grades, finish, and jointing.
- K. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.
  - 1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.
- L. Cold-Weather Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:
  - 1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
  - 2. Do not use frozen materials or materials containing ice or snow.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.
- M. Hot-Weather Placement: Comply with ACI 301 (ACI 301M) and as follows when hot-weather conditions exist:
  - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  - 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
  - 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

### 3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true

planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.
2. Medium-to-Fine-Textured Broom Finish: Draw a soft-bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.
3. Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

### 3.8 SPECIAL FINISHES

A. Monolithic Exposed-Aggregate Finish: Expose coarse aggregate in paving surface as follows:

1. Immediately after float finishing, spray-apply chemical surface retarder to paving according to manufacturer's written instructions.
2. Cover paving surface with plastic sheeting, sealing laps with tape, and remove when ready to continue finishing operations.
3. Without dislodging aggregate, remove mortar concealing the aggregate by lightly brushing surface with a stiff, nylon-bristle broom. Do not expose more than one-third of the average diameter of the aggregate and not more than one-half of the diameter of the smallest aggregate.
4. Fine-spray surface with water and brush. Repeat cycle of water flushing and brushing until cement film is removed from aggregate surfaces to depth required.

### 3.9 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture-retaining-cover curing as follows:

1. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm) and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period using cover material and waterproof tape.

### 3.10 PAVING TOLERANCES

#### A. Comply with tolerances in ACI 117 and as follows:

1. Elevation: 3/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-foot-long, unlevelled straightedge not to exceed 1/2 inch.
4. Alignment of Tie-Bar End Relative to Line Perpendicular to Paving Edge: 1/2 inch per 12 inches of tie bar.
5. Lateral Alignment and Spacing of Dowels: 1 inch.
6. Vertical Alignment of Dowels: 1/4 inch.
7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Paving Edge: 1/4 inch per 12 inches of dowel.
8. Joint Spacing: 3 inches.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

### 3.11 WHEEL STOPS

- A. Install wheel stops in bed of adhesive applied as recommended by manufacturer.
- B. Securely attach wheel stops to paving with not less than two galvanized-steel dowels located at one-quarter to one-third points. Install dowels in drilled holes in the paving and bond dowels to wheel stop. Recess head of dowel beneath top of wheel stop.

### 3.12 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

### 3.13 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Architect.
- B. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.
- C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.
- D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

**END OF SECTION 321313**

**SECTION 32 1723****PAVEMENT MARKINGS****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section includes painted markings applied to asphalt pavement.
- B. Related Requirements:
  - 1. Section 099113 "Exterior Painting" for painting exterior concrete surfaces other than pavement.

## 1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.
  - 1. Review methods and procedures related to marking pavement including, but not limited to, the following:
    - a. Pavement aging period before application of pavement markings.
    - b. Review requirements for protecting pavement markings, including restriction of traffic during installation period.

## 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include technical data and tested physical and performance properties.
- B. Shop Drawings: For pavement markings.
  - 1. Indicate pavement markings, colors, lane separations, defined parking spaces, and dimensions to adjacent work.
  - 2. Indicate, with international symbol of accessibility, spaces allocated for people with disabilities.
- C. Samples: For each exposed product and for each color and texture specified; on rigid backing, 8 inches (200 mm) square.

## 1.5 FIELD CONDITIONS

- A. Environmental Limitations: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of [40 deg F (4.4 deg C) for alkyd materials] [55 deg F (12.8 deg C) for water-based materials], and not exceeding 95 deg F (35 deg C).

## PART 2 - PRODUCTS

### 2.1 PAVEMENT-MARKING PAINT

- A. Pavement-Marking Paint: Latex, waterborne emulsion, lead and chromate free, ready mixed, complying with FS TT-P-1952, Type II, with drying time of less than 45 minutes.
  - 1. Color: As indicated.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that pavement is dry and in suitable condition to begin pavement marking according to manufacturer's written instructions.
- B. Proceed with pavement marking only after unsatisfactory conditions have been corrected.

### 3.2 PAVEMENT MARKING

- A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Architect.
- B. Allow paving to age for a minimum of 30 days before starting pavement marking.
- C. Sweep and clean surface to eliminate loose material and dust.
- D. Apply paint with mechanical equipment to produce pavement markings, of dimensions indicated, with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils (0.4 mm) with three passes.
  - 1. Apply graphic symbols and lettering with paint-resistant, die-cut stencils, firmly secured to pavement. Mask an extended area beyond edges of each stencil to prevent paint application beyond the stencil. Apply paint so that it cannot run beneath the stencil.
  - 2. Broadcast glass beads uniformly into wet markings at a rate of 6 lb/gal. (0.72 kg/L).

### 3.3 PROTECTING AND CLEANING

- A. Protect pavement markings from damage and wear during remainder of construction period.

- B. Clean spillage and soiling from adjacent construction using cleaning agents and procedures recommended by manufacturer of affected construction.

**END OF SECTION 321723**

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**SECTION 32 3119****DECORATIVE METAL FENCES AND GATES****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Decorative steel fences.
  - 2. Swing gates.
- B. Related Sections:
  - 1. Division 03 Section "Cast-in-Place Concrete" for concrete post concrete fill.

## 1.3 SUBMITTALS

- A. Product Data: For each type of product indicated.
- B. Shop Drawings: For gates. Include plans, elevations, sections, details, and attachments to other work.
- C. Welding certificates.

## 1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Fabricator of products.
- B. Welding Qualifications: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel"

**PART 2 - PRODUCTS**

## 2.1 STEEL AND IRON

- A. Plates, Shapes, and Bars: ASTM A 36/A 36M.
- B. Bars (Pickets): Hot-rolled, carbon steel complying with ASTM A 29/A 29M, Grade 1010.

- C. Tubing: ASTM A 500, cold formed steel tubing.
- D. Bar Grating: NAAMM MBG 531.
  - 1. Bars: Hot-rolled steel strip, ASTM A 1011/A 1011M, Commercial Steel, Type B.
  - 2. Wire Rods: ASTM A 510 (ASTM A 510M).
- E. Uncoated Steel Sheet: Hot-rolled steel sheet, ASTM A 1011/A 1011M, Structural Steel, Grade 45 (Grade 310) or cold-rolled steel sheet, ASTM A 1008/A 1008M, Structural Steel, Grade 50 (Grade 340).
- F. Galvanized-Steel Sheet: ASTM A 653/A 653M, structural quality, Grade 50 (Grade 340), with G90 (Z275) coating.
- G. Aluminum-Zinc Alloy-Coated Steel Sheet: ASTM A 792/A 792M, structural quality, Grade 50 (Grade 340), with AZ60 (AZM180) coating.
- H. Castings: Either gray or malleable iron unless otherwise indicated.
  - 1. Gray Iron: ASTM A 48/A 48M, Class 30.
  - 2. Malleable Iron: ASTM A 47/A 47M.

## 2.2 COATING MATERIALS

- A. Shop Primers for Steel: Provide primers that comply with Division 09 Section "High-Performance Coatings."
- B. Epoxy Zinc-Rich Primer for Steel: Complying with MPI #20 and compatible with coating specified to be applied over it.
  - 1. Use primer with a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- C. Epoxy Primer for Galvanized Steel: Complying with MPI #101 and compatible with coating specified to be applied over it.
  - 1. Use primer with a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- D. Epoxy Intermediate Coat: Complying with MPI #77 and compatible with primer and topcoat.
  - 1. Use product with a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).
- E. Polyurethane Topcoat: Complying with MPI #72 and compatible with undercoat.
  - 1. Use product with a VOC content of 420 g/L or less when calculated according to 40 CFR 59, Subpart D (EPA Method 24).

## 2.3 MISCELLANEOUS MATERIALS

- A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy welded.
  - 1. For aluminum, provide type and alloy as recommended by producer of metal to be welded and as required for strength and compatibility in fabricated items.
- B. Concrete: Normal-weight, air-entrained, ready-mix concrete complying with requirements in Division 03 Section "Cast-in-Place Concrete" with a minimum 28-day compressive strength of 3000 psi (20 MPa), 3-inch (75-mm) slump, and 1-inch (25-mm) maximum aggregate size.
- C. Nonshrink Grout: Factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107 and specifically recommended by manufacturer for exterior applications.

## 2.4 DECORATIVE STEEL FENCES

- A. Decorative Steel Fences: Fences made from steel tubing and shapes.
- B. Posts: Square steel tubing.
  - 1. Line Posts: 1 by 2 inches with 1/8-inch wall thickness.
  - 2. End and Corner Posts: 4 by 4 inches with 3/16-inch wall thickness.
  - 3. Swing Gate Posts: 4 by 4 inches with 3/16-inch wall thickness.
- C. Post Caps: Formed from steel sheet and hot-dip galvanized after forming.
- D. Rails:
  - 1. Steel Tube Rails: Square steel tubing 2 by 2 inches with 1/8-inch wall thickness.
- E. Pickets: Decorative steel bars of pattern and size indicate in Drawings.
- F. Terminate tops of pickets as shown on Drawings for flush top appearance. Cap pickets from sheet steel sheet and hot-dip galvanized after forming.
  - 1. Picket Spacing: As shown on Drawings.
- G. Fasteners: Stainless-steel carriage bolts and tamperproof nuts.
- H. Fabrication: Assemble fences into sections by welding pickets to rails.
  - 1. Fabricate sections with clips welded to rails for fastening to posts in field.
  - 2. Drill posts and clips for fasteners before finishing to maximum extent possible.
- I. Finish exposed welds to comply with NOMMA Guideline 1, Finish #4 - good-quality, uniform undressed weld with minimal splatter.
- J. Galvanizing: For items other than hardware that are indicated to be galvanized, hot-dip galvanize to comply with ASTM A 123/A 123M. For hardware items, hot-dip galvanize to comply with ASTM A 153/A 153M.

1. Hot-dip galvanize posts and rails.
2. Hot-dip galvanize rail and picket assemblies after fabrication.

K. Finish for Steel Items: Shop painted.

## 2.5 SWING GATES

A. Gate Configuration: As indicated.

B. Gate Frame Height: As indicated.

C. Gate Opening Width: As indicated.

D. Steel Frames and Bracing: As indicated.

E. Frame Corner Construction: Welded.

F. Additional Rails: Provide as indicated, complying with requirements for fence rails.

G. Infill: Comply with requirements for adjacent fence.

H. Picket Size, Configuration, and Spacing: Comply with requirements for adjacent fence.

I. Hardware: See Section 08 7100 "Door Hardware".

J. Finish exposed welds to comply with NOMMA Guideline 1, Finish #4 - good-quality, uniform undressed weld with minimal splatter.

K. Galvanizing: For items other than hardware that are indicated to be galvanized, hot-dip galvanize to comply with ASTM A 123/A 123M unless otherwise indicated. For hardware items, hot-dip galvanize to comply with ASTM A 153/A 153M.

L. Steel Finish: Shop painted.

## 2.6 STEEL FINISHES

A. Surface Preparation: Clean surfaces according to SSPC-SP 6/NACE No. 3, "Commercial Blast Cleaning."

1. After cleaning, apply a conversion coating suited to the organic coating to be applied over it.

B. Primer Application: Apply zinc-rich epoxy primer immediately after cleaning, to provide a minimum dry film thickness of 2 mils per applied coat, to surfaces that will be exposed after assembly and installation, and to concealed surfaces.

C. Shop-Painted Finish: Comply with Division 09 Section "High-Performance Coatings."

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.
- B. Do not begin installation before final grading is completed unless otherwise permitted by Architect.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- A. Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, lawn sprinkler system, underground structures, benchmarks, and property monuments.
  - 1. Construction layout and field engineering are specified in Division 01 Section "Execution"

#### 3.3 DECORATIVE FENCE INSTALLATION

- A. Install fences according to manufacturer's written instructions.
- B. Post Excavation: Drill or hand-excavate holes for posts in firm, undisturbed soil. Excavate holes to a diameter of not less than 4 times post size and a depth of not less than 24 inches plus 3 inches for each foot or fraction of a foot that fence height exceeds 4 feet.
- C. Post Setting: Set posts in concrete masonry unit wall at indicated spacing into firm, undisturbed soil.
  - 1. Verify that posts are set plumb, aligned, and at correct height and spacing, and hold in position during setting with concrete or mechanical devices.
  - 2. Concrete Fill: Place concrete around posts and vibrate or tamp for consolidation. Protect aboveground portion of posts from concrete splatter.
    - a. Concealed Concrete: Top 2 inches below grade to allow covering with surface material. Slope top surface of concrete to drain water away from post.
  - 3. Posts Set in Concrete: Extend post to within 6 inches of specified excavation depth, but not closer than 3 inches to bottom of concrete.

#### 3.4 GATE INSTALLATION

- A. Install gates according to manufacturer's written instructions, level, plumb, and secure for full opening without interference. Attach hardware using tamper-resistant or concealed means.

Install ground-set items in concrete for anchorage. Adjust hardware for smooth operation and lubricate where necessary.

### 3.5 ADJUSTING

- A. Gates: Adjust gates to operate smoothly, easily, and quietly, free of binding, warp, excessive deflection, distortion, nonalignment, misplacement, disruption, or malfunction, throughout entire operational range. Confirm that latches and locks engage accurately and securely without forcing or binding.
- B. Lubricate hardware, and other moving parts.

**END OF SECTION 32 3119**

**SECTION 33 0500****COMMON WORK RESULTS FOR UTILITIES****PART 1 - GENERAL**

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes the following:
  - 1. Piping installation.
  - 2. Piping joint construction.

## 1.3 DEFINITIONS

- A. Exposed Installations: Exposed to view outdoors or subject to outdoor ambient temperatures and weather conditions.
- B. Concealed Installations: Concealed from view and protected from weather conditions and physical contact by building occupants but subject to outdoor ambient temperatures. Examples include installations within unheated shelters.
- C. ABS: Acrylonitrile-butadiene-styrene plastic.
- D. PVC: Polyvinyl chloride plastic.

## 1.4 SUBMITTALS

- A. Product Data: For the following:
  - 1. Identification devices.

## 1.5 QUALITY ASSURANCE

- A. Steel Support Welding: Qualify procedures and personnel according to AWS D1.1/D1.1M, "Structural Welding Code - Steel."
- B. Steel Piping Welding: Qualify processes and operators according to ASME Boiler and Pressure Vessel Code: Section IX, "Welding and Brazing Qualifications."
  - 1. Comply with provisions in ASME B31 Series, "Code for Pressure Piping."

2. Certify that each welder has passed AWS qualification tests for welding processes involved and that certification is current.
- C. Comply with ASME A13.1 for lettering size, length of color field, colors, and viewing angles of identification devices.
- 1.6 DELIVERY, STORAGE, AND HANDLING
- A. Deliver pipes and tubes with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe end damage and to prevent entrance of dirt, debris, and moisture.
  - B. Store plastic pipes protected from direct sunlight. Support to prevent sagging and bending.
- 1.7 COORDINATION
- A. Coordinate installation of required supporting devices and set sleeves in poured-in-place concrete and other structural components as they are constructed.
  - B. Coordinate installation of identifying devices after completing covering and painting if devices are applied to surfaces.
  - C. Coordinate size and location of concrete bases. Formwork, reinforcement, and concrete requirements are specified in Division 03.

## PART 2 - PRODUCTS

### 2.1 PIPING JOINING MATERIALS

- A. Pipe-Flange Gasket Materials: Suitable for chemical and thermal conditions of piping system contents.
  1. ASME B16.21, nonmetallic, flat, asbestos free, 1/8-inch maximum thickness, unless otherwise indicated.
    - a. Full-Face Type: For flat-face, Class 125, cast-iron and cast-bronze flanges.
    - b. Narrow-Face Type: For raised-face, Class 250, cast-iron and steel flanges.
  2. AWWA C110, rubber, flat face, 1/8 inch thick, unless otherwise indicated; and full-face or ring type, unless otherwise indicated.
- B. Plastic, Pipe-Flange Gasket, Bolts, and Nuts: Type and material recommended by piping system manufacturer, unless otherwise indicated.
- C. Solvent Cements for Joining Plastic Piping:
  1. PVC Piping: ASTM D 2564. Include primer according to ASTM F 656.
- D. Fiberglass Pipe Adhesive: As furnished or recommended by pipe manufacturer.

## 2.2 TRANSITION FITTINGS

### A. AWWA Transition Couplings NPS 2 (DN 50) and Larger:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Cascade Waterworks Mfg. Co.
  - b. Dresser, Inc.; DMD Div.
  - c. Ford Meter Box Company, Inc. (The); Pipe Products Div.
  - d. JCM Industries.
  - e. Smith-Blair, Inc.
3. Description: AWWA C219, metal sleeve-type coupling for underground pressure piping.

### B. Plastic-to-Metal Transition Fittings:

1. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
2. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Spears Manufacturing Co.
3. Description: PVC one-piece fitting with manufacturer's Schedule 80 equivalent dimensions; one end with threaded brass insert, and one solvent-cement-joint end.
4. Description: ASTM C 1173 with elastomeric sleeve, ends same size as piping to be joined, and corrosion-resistant metal band on each end.

## 2.3 IDENTIFICATION DEVICES

- A. General: Products specified are for applications referenced in other Division 33 Sections. If more than single type is specified for listed applications, selection is Installer's option.

## 2.4 FLOWABLE FILL

### A. Description: Low-strength-concrete, flowable-slurry mix.

1. Cement: ASTM C 150, Type I, portland.
2. Density: 115- to 145-lb/cu. ft.
3. Aggregates: ASTM C 33, natural sand, fine.
4. Admixture: ASTM C 618, fly-ash mineral.
5. Water: Comply with ASTM C 94/C 94M.
6. Strength: 100 to 200 psig (690 to 1380 kPa) at 28 days.

PART 3 - EXECUTION

## 3.1 PIPING INSTALLATION

- A. Install piping according to the following requirements and Division 33 Sections specifying piping systems.
- B. Install piping indicated to be exposed and piping in equipment rooms and service areas at right angles or parallel to building walls. Diagonal runs are prohibited unless specifically indicated otherwise.
- C. Install piping to permit valve servicing.
- D. Install piping at indicated slopes.
- E. Install piping free of sags and bends.
- F. Install fittings for changes in direction and branch connections.
- G. Select system components with pressure rating equal to or greater than system operating pressure.
- H. Sleeves are not required for core-drilled holes.

## 3.2 PIPING JOINT CONSTRUCTION

- A. Join pipe and fittings according to the following requirements and Division 33 Sections specifying piping systems.
- B. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
- C. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
- D. Pressure-Sealed Joints: Assemble joints for plain-end copper tube and mechanical pressure seal fitting with proprietary crimping tool to according to fitting manufacturer's written instructions.
- E. Plastic Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:
  - 1. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
  - 2. PVC Pressure Piping: Join schedule number ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
  - 3. PVC Nonpressure Piping: Join according to ASTM D 2855.
- F. Plastic Pressure Piping Gasketed Joints: Join according to ASTM D 3139.
- G. Plastic Nonpressure Piping Gasketed Joints: Join according to ASTM D 3212.

**END OF SECTION 330500**