



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

STANDARD LOW BID PROJECT INVITATIONAL

December 8, 2008

SUPPORT BUILDING UPGRADE ORANGE STREET COMMUNITY CORRECTIONAL FACILITY

DIVISION OF ADULT PROBATION AND PAROLE SALT LAKE CITY, UTAH

DFCM Project Number 08216120

Vincent Design Group
401 East 1700 South
Salt Lake city, Utah 84115

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Current copies of the following documents are hereby made part of these contract documents by reference. These documents are available on the DFCM web site at <http://dfcm.utah.gov> or are available upon request from DFCM.

DFCM Supplemental General Conditions dated July 15, 2008
DFCM General Conditions dated May 25, 2005.
DFCM Application and Certification for Payment dated May 25, 2005.

Technical Specifications :
Drawings:

The Agreement and General Conditions dated May 25, 2005 have been updated from versions that were formally adopted and in use prior to this date. The changes made to the General Conditions are identified in a document entitled Revisions to General Conditions that is available on DFCM's web site at <http://dfcm.utah.gov>

INVITATION TO BID

Only firms that have been invited to submit bids on this project are allowed to bid on this project.

Sealed bids will be received by the Division of Facilities Construction and Management (DFCM) for:

SUPPORT BUILDING UPGRADE - ORANGE STREET COMMUNITY CORRECTIONAL FACILITY
DIVISION OF ADULT PROBATION AND PAROLE - SALT LAKE CITY, UTAH
DFCM PROJECT NO: 08216120

<u>Company</u>	<u>Contact</u>	<u>Fax</u>
Benstog Construction	Pat Benstog	(801)-399-1335
Garff Construction	Phil Henriksen	(801)-972-1928
JC Construction	John Cecala	(801)-262-7966
Rueckert Construction	Ken Rueckert	(801)-253-1774
Wade Payne Construction	Wade Payne	(801)-226-7772

Bids will be in accordance with the Contract Documents that will be available at 4:00 PM on Monday, December 8, 2008, and distributed in electronic format only on CDs from DFCM, 4110 State Office Building, Salt Lake City, Utah and on the DFCM web page at <http://dfcm.utah.gov>. For questions regarding this project, please contact Wayne Smith, DFCM, at (801)-550-6536. No others are to be contacted regarding this bidding process. The construction estimate for this project is \$56,000.00.

A **mandatory** pre-bid meeting will be held at 11:00 AM on Wednesday, December 10, 2008 at 80 Orange Street (1900 West North Temple), Salt Lake City, Utah. All bidders wishing to bid on this project are required to attend this meeting.

Bids will be received until the hour of 3:00 PM on Tuesday, January 6, 2009 at DFCM, 4110 State Office Building, Salt Lake City, Utah 84114. Bids will be opened and read aloud in the DFCM Conference Room, 4110 State Office Building, Salt Lake City, Utah. NOTE: Bids must be received at 4110 State Office Building by the specified time.

A bid bond in the amount of five percent (5%) of the bid amount, made payable to the Division of Facilities Construction and Management on DFCM's bid bond form, shall accompany the bid.

The Division of Facilities Construction and Management reserves the right to reject any or all bids or to waive any formality or technicality in any bid in the interest of DFCM.

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
Marla Workman, Contract Coordinator
4110 State Office Building, Salt Lake City, Utah 84114

PROJECT DESCRIPTION

This project consists of construction of a wood frame storage building with exterior stucco finish and TPO membrane roof. The structure is being built on an existing concrete slab which will need to be sawcut for the footing and foundation of the building. The building is 26' x 33' and has an overhead door and a man door. There is no heat to the building; however, there is electrical provided. There is also some concrete curbing to be included on the south property line.

**PROJECT SCHEDULE**

**PROJECT NAME: SUPPORT BUILDING UPGRADE
ORANGE STREET COMMUNITY CORRECTIONAL FACILITY
DIVISION OF ADULT PROBATION AND PAROLE - SALT LAKE CITY, UTAH**

DFCM PROJECT NO: 08216120

Event	Day	Date	Time	Place
Bidding Documents Available	Monday	December 8, 2008	4:00 PM	DFCM 4110 State Office Bldg SLC, UT and the DFCM web site *
Mandatory Pre-bid Site Meeting	Wednesday	December 10, 2008	11:00 AM	80 Orange Street (1900 West North Temple) SLC, UT
Last Day to Submit Questions	Monday	December 15, 2008	4:00 PM	Wayne Smith – DFCM E-mail wfsmith@utah.gov Fax 801-538-3267
Addendum Deadline (exception for bid delays)	Tuesday	December 16, 2008	2:00 PM	DFCM web site *
Prime Contractors Turn In Bid and Bid Bond	Tuesday	January 6, 2009	3:00 PM	DFCM 4110 State Office Bldg SLC, UT
Sub-contractor List Due	Wednesday	January 7, 2009	3:00 PM	DFCM 4110 State Office Bldg SLC, UT Fax 801-538-3677
Substantial Completion Date	Tuesday	March 31, 2009		

* **NOTE: DFCM's web site address is <http://dfcm.utah.gov>**



STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

BID FORM

NAME OF BIDDER _____ DATE _____

To the Division of Facilities Construction and Management
4110 State Office Building
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Contractors" and in accordance with the "Instructions to Bidders", in compliance with your invitation for bids for the **SUPPORT BUILDING UPGRADE - ORANGE STREET COMMUNITY CORRECTIONAL FACILITY - DIVISION OF ADULT PROBATION AND PAROLE SALT LAKE CITY, UTAH - DFCM PROJECT NO: 08216120** and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: _____

For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

_____ DOLLARS (\$_____)
(In case of discrepancy, written amount shall govern)

I/We guarantee that the Work will be Substantially Complete by **March 31, 2009**, should I/we be the successful bidder, and agree to pay liquidated damages in the amount of **\$250.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

This bid shall be good for 45 days after bid opening.

Enclosed is a 5% bid bond, as required, in the sum of _____

The undersigned Contractor's License Number for Utah is _____

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within ten (10) days, unless a shorter time is specified in the Contract Documents, and deliver acceptable Performance and Payment bonds in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract.

The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Division of Facilities Construction and Management as liquidated damages for delay and additional expense caused thereby in the event that the contract is not executed and/or acceptable 100% Performance and Payment bonds are not delivered within the time set forth.

Type of Organization:

(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

Respectfully submitted,

Name of Bidder

ADDRESS:

Authorized Signature

INSTRUCTIONS TO BIDDERS

1. Drawings and Specifications, Other Contract Documents

Drawings and Specifications, as well as other available Contract Documents, may be obtained as stated in the Invitation to Bid.

2. Bids

Before submitting a bid, each contractor shall carefully examine the Contract Documents, shall visit the site of the Work; shall fully inform themselves as to all existing conditions and limitations; and shall include in the bid the cost of all items required by the Contract Documents. If the bidder observes that portions of the Contract Documents are at variance with applicable laws, building codes, rules, regulations or contain obvious erroneous or uncoordinated information, the bidder shall promptly notify the DFCM Representative and the necessary changes shall be accomplished by Addendum.

The bid, bearing original signatures, must be typed or handwritten in ink on the Bid Form provided in the procurement documents and submitted in a sealed envelope at the location specified by the Invitation to Bid prior to the deadline for submission of bids.

Bid bond security, in the amount of five percent (5%) of the bid, made payable to the Division of Facilities Construction and Management, shall accompany bid. **THE BID BOND MUST BE ON THE BID BOND FORM PROVIDED IN THE PROCUREMENT DOCUMENTS IN ORDER TO BE CONSIDERED AN ACCEPTABLE BID.**

If the bid bond security is submitted on a bid bond form other than DFCM's required bid bond form, and the bid security meets all other legal requirements, the bidder will be allowed to provide an acceptable bid bond by the close of business on the next business day following notification by DFCM of submission of a defective bid bond security. **NOTE: A cashier's check cannot be used as a substitute for a bid bond.**

3. Contract and Bond

The Contractor's Agreement will be in the form found in the specifications. The Contract Time will be as indicated in the bid. The successful bidder, simultaneously with the execution of the Contract Agreement, will be required to furnish a performance bond and a payment bond, both bearing original signatures, upon the forms provided in the procurement documents. The performance and payment bonds shall be for an amount equal to one hundred percent (100%) of the contract sum and secured from a company that meets the requirements specified in the requisite forms. Any bonding requirements for subcontractors will be specified in the Supplementary General Conditions.

4. Listing of Subcontractors

Listing of Subcontractors shall be as summarized in the “Instructions and Subcontractor’s List Form”, which are included as part of these Contract Documents. The Subcontractors List shall be delivered to DFCM or faxed to DFCM at (801)538-3677 within 24 hours of the bid opening. Requirements for listing additional subcontractors will be listed in the Contract Documents.

DFCM retains the right to audit or take other steps necessary to confirm compliance with requirements for the listing and changing of subcontractors. Any contractor who is found to not be in compliance with these requirements is subject to a debarment hearing and may be debarred from consideration for award of contracts for a period of up to three years.

5. Interpretation of Drawings and Specifications

If any person or entity contemplating submitting a bid is in doubt as to the meaning of any part of the drawings, specifications or other Contract Documents, such person shall submit to the DFCM Project Manager a request for an interpretation thereof. The person or entity submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by addenda posted on DFCM’s web site at <http://dfcm.utah.gov>. Neither the DFCM nor A/E will be responsible for any other explanations or interpretations of the proposed documents. A/E shall be deemed to refer to the architect or engineer hired by DFCM as the A/E or Consultant for the Project.

6. Addenda

Addenda will be posted on DFCM’s web site at <http://dfcm.utah.gov>. Contractors are responsible for obtaining information contained in each addendum from the web site. Addenda issued prior to the submittal deadline shall become part of the bidding process and must be acknowledged on the bid form. Failure to acknowledge addenda may result in disqualification from bidding.

7. Award of Contract

The Contract will be awarded as soon as possible to the lowest, responsive and responsible bidder, based on the lowest combination of base bid and acceptable prioritized alternates, provided the bid is reasonable, is in the interests of the State of Utah to accept and after applying the Utah Preference Laws in U.C.A. Title 63, Chapter 56. DFCM reserves the right to waive any technicalities or formalities in any bid or in the bidding. Alternates will be accepted on a prioritized basis with Alternate 1 being highest priority, Alternate 2 having second priority, etc.

8. DFCM Contractor Performance Rating

As a contractor completes each DFCM project, DFCM, the architect/engineer and the using agency will evaluate project performance based on the enclosed “DFCM Contractor Performance Rating” form. The ratings issued on this project will not affect this project but may affect the award on future projects.

9. Licensure

The Contractor shall comply with and require all of its subcontractors to comply with the license laws as required by the State of Utah.

10. Permits

In concurrence with the requirements for permitting in the General Conditions, it is the responsibility of the Contractor to obtain the fugitive dust plan requirements from the Utah Division of Air Quality and the SWPPP requirements from the Utah Department of Environmental Quality and submit the completed forms and pay any permit fee that may be required for this specific project. Failure to obtain the required permit may result in work stoppage and/or fines from the regulating authority that will be the sole responsibility of the Contractor. Any delay to the project as a result of any such failure to obtain the permit or noncompliance with the permit shall not be eligible for any extension in the Contract Time.

11. Right to Reject Bids

DFCM reserves the right to reject any or all Bids.

12. Time is of the Essence

Time is of the essence in regard to all the requirements of the Contract Documents.

13. Withdrawal of Bids

Bids may be withdrawn on written request received from bidder prior to the time fixed for opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

14. Product Approvals

Where reference is made to one or more proprietary products in the Contract Documents, but restrictive descriptive materials of one or more manufacturer(s) is referred to in the Contract Documents, the products of other manufacturers will be accepted, provided they equal or exceed the standards set forth in the drawings and specifications and are compatible with the intent and purpose of

the design, subject to the written approval of the A/E. Such written approval must occur prior to the deadline established for the last scheduled addenda to be issued. The A/E's written approval will be in an issued addendum. If the descriptive material is not restrictive, the products of other manufacturers specified will be accepted without prior approval provided they are compatible with the intent and purpose of the design as determined by the A/E.

15. Financial Responsibility of Contractors, Subcontractors and Sub-subcontractors

Contractors shall respond promptly to any inquiry in writing by DFCM to any concern of financial responsibility of the contractor, subcontractor or sub-subcontractor.

16. Debarment

By submitting a bid, the Contractor certifies that neither it nor its principals, including project and site managers, have been, or are under consideration for, debarment or suspension, or any action that would exclude such from participation in a construction contract by any governmental department or agency. If the Contractor cannot certify this statement, attach to the bid a detailed written explanation which must be reviewed and approved by DFCM as part of the requirements for award of the Project.

BID BOND

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

KNOW ALL PERSONS BY THESE PRESENTS:

That _____ hereinafter referred to as the "Principal," and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____ and authorized to transact business in this State and U. S. Department of the Treasury Listed, (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the STATE OF UTAH, hereinafter referred to as the "Obligee," in the amount of \$ _____ (5% of the accompanying bid), being the sum of this Bond to which payment the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted to Obligee the accompanying bid incorporated by reference herein, dated as shown, to enter into a contract in writing for the _____ Project.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that if the said principal does not execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the principal, then the sum of the amount stated above will be forfeited to the State of Utah as liquidated damages and not as a penalty; if the said principal shall execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the Principal, then this obligation shall be null and void. It is expressly understood and agreed that the liability of the Surety for any and all defaults of the Principal hereunder shall be the full penal sum of this Bond. The Surety, for value received, hereby stipulates and agrees that obligations of the Surety under this Bond shall be for a term of sixty (60) days from actual date of the bid opening.

PROVIDED, HOWEVER, that this Bond is executed pursuant to provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals on the date indicated below, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

DATED this _____ day of _____, 20_____.

Principal's name and address (if other than a corporation):

By: _____

Title: _____

Principal's name and address (if a corporation):

By: _____

Title: _____

(Affix Corporate Seal)

Surety's name and address:

By: _____

Attorney-in-Fact (Affix Corporate Seal)

STATE OF _____)
) ss.
COUNTY OF _____)

On this ___ day of _____, 20____, personally appeared before me _____, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this _____ day of _____, 20_____.

My Commission Expires: _____

Resides at: _____

NOTARY PUBLIC

Agency: _____
Agent: _____
Address: _____
Phone: _____

Approved As To Form: May 25, 2005
By Alan S. Bachman, Asst Attorney General



Division of Facilities Construction and

INSTRUCTIONS AND SUBCONTRACTORS LIST FORM

The three low bidders, as well as all other bidders that desire to be considered, are required by law to submit to DFCM within 24 hours of bid opening a list of **ALL** first-tier subcontractors, including the subcontractor's name, bid amount and other information required by Building Board Rule and as stated in these Contract Documents, based on the following:

DOLLAR AMOUNTS FOR LISTING

PROJECTS UNDER \$500,000: ALL FIRST-TIER SUBS \$20,000 OR OVER MUST BE LISTED
PROJECTS \$500,000 OR MORE: ALL FIRST-TIER SUBS \$35,000 OR OVER MUST BE LISTED

- Any additional subcontractors identified in the bid documents shall also be listed.
- The DFCM Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law.
- List subcontractors for base bid as well as the impact on the list that the selection of any alternate may have.
- Bidder may not list more than one subcontractor to perform the same work.
- If there are no subcontractors for the job that are required to be reported by State law (either because there are no subcontractors that will be used on the project or because there are no first-tier subcontractors over the dollar amounts referred to above), then you do not need to submit a sublist. If you do not submit a sublist, it will be deemed to be a representation by you that there are no subcontractors on the job that are required to be reported under State law. At any time, DFCM reserves the right to inquire, for security purposes, as to the identification of the subcontractors at any tier that will be on the worksite.

LICENSURE:

The subcontractor's name, the type of work, the subcontractor's bid amount, and the subcontractor's license number as issued by DOPL, if such license is required under Utah Law, shall be listed. Bidder shall certify that all subcontractors, required to be licensed, are licensed as required by State law. A subcontractor includes a trade contractor or specialty contractor and does not include suppliers who provide only materials, equipment, or supplies to a contractor or subcontractor.

'SPECIAL EXCEPTION':

A bidder may list 'Special Exception' in place of a subcontractor when the bidder intends to obtain a subcontractor to perform the work at a later date because the bidder was unable to obtain a qualified or reasonable bid under the provisions of U.C.A. Section 63A-5-208(4). The bidder shall insert the term 'Special Exception' for that category of work, and shall provide documentation with the subcontractor list describing the bidder's efforts to obtain a bid of a qualified subcontractor at a reasonable cost and why the bidder was unable to obtain a qualified subcontractor bid. The Director must find that the bidder complied in good faith with State law requirements for any 'Special Exception' designation, in order for the bid to be considered. If awarded the contract, the Director shall supervise the bidder's efforts to obtain a qualified subcontractor bid. The amount of the awarded contract may not be adjusted to reflect the actual amount of the subcontractor's bid. Any listing of 'Special Exception' on the sublist form shall also include amount allocated for that work.

GROUNDS FOR DISQUALIFICATION:

The Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law. Director may withhold awarding the contract to a particular bidder if one or more of the proposed subcontractors are considered by the Director to be unqualified to do the Work or for

INSTRUCTIONS AND SUBCONTRACTORS LIST FORM
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such other reason in the best interest of the State of Utah. Notwithstanding any other provision in these instructions, if there is a good faith error on the sublist form, at the sole discretion of the Director, the Director may provide notice to the contractor and the contractor shall have 24 hours to submit the correction to the Director. If such correction is submitted timely, then the sublist requirements shall be considered met.

CHANGES OF SUBCONTRACTORS SPECIFICALLY IDENTIFIED ON SUBLIST FORM:

Subsequent to twenty-four hours after the bid opening, the contractor may change its listed subcontractors only after receiving written permission from the Director based on complying with all of the following criteria.

- (1) The contractor has established in writing that the change is in the best interest of the State and that the contractor establishes an appropriate reason for the change, which may include, but not is not limited to, the following reasons: the original subcontractor has failed to perform, or is not qualified or capable of performing, and/or the subcontractor has requested in writing to be released.
- (2) The circumstances related to the request for the change do not indicate any bad faith in the original listing of the subcontractors.
- (3) Any requirement set forth by the Director to ensure that the process used to select a new subcontractor does not give rise to bid shopping.
- (4) Any increase in the cost of the subject subcontractor work is borne by the contractor.
- (5) Any decrease in the cost of the subject subcontractor work shall result in a deductive change order being issued for the contract for such decreased amount.
- (6) The Director will give substantial weight to whether the subcontractor has consented in writing to being removed unless the Contractor establishes that the subcontractor is not qualified for the work.

EXAMPLE:

Example of a list where there are only four subcontractors:

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONTRACTOR LICENSE #
ELECTRICAL	ABCD Electric Inc.	\$350,000.00	123456789000
LANDSCAPING	"Self" *	\$300,000.00	123456789000
CONCRETE (ALTERNATE #1)	XYZ Concrete Inc	\$298,000.00	987654321000
MECHANICAL	"Special Exception" (attach documentation)	Fixed at: \$350,000.00	(TO BE PROVIDED AFTER OBTAINING SUBCONTRACTOR)

* Bidders may list "self", but it is not required.

PURSUANT TO STATE LAW - SUBCONTRACTOR BID AMOUNTS CONTAINED IN THIS SUBCONTRACTOR LIST SHALL NOT BE DISCLOSED UNTIL THE CONTRACT HAS BEEN AWARDED.



SUBCONTRACTORS LIST
FAX TO 801-538-3677

PROJECT TITLE: _____

Caution: You must read and comply fully with instructions.

Table with 4 columns: TYPE OF WORK, SUBCONTRACTOR, 'SELF' OR 'SPECIAL EXCEPTION', SUBCONTRACTOR BID AMOUNT, CONT. LICENSE #

We certify that:

- 1. This list includes all subcontractors as required by the instructions, including those related to the base bid as well as any alternates.
2. We have listed 'Self' or 'Special Exception' in accordance with the instructions.
3. All subcontractors are appropriately licensed as required by State law.

FIRM: _____

DATE: _____

SIGNED BY: _____

NOTICE: FAILURE TO SUBMIT THIS FORM, PROPERLY COMPLETED AND SIGNED, AS REQUIRED IN THESE CONTRACT DOCUMENTS, SHALL BE GROUNDS FOR OWNER'S REFUSAL TO ENTER INTO A WRITTEN CONTRACT WITH BIDDER. ACTION MAY BE TAKEN AGAINST BIDDERS BID BOND AS DEEMED APPROPRIATE BY OWNER. ATTACH A SECOND PAGE IF NECESSARY.

CONTRACTOR'S AGREEMENT

FOR:

THIS CONTRACTOR'S AGREEMENT, made and entered into this ____ day of _____, 20__, by and between the DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT, hereinafter referred to as "DFCM", and _____, incorporated in the State of _____ and authorized to do business in the State of Utah, hereinafter referred to as "Contractor", whose address is _____.

WITNESSETH: WHEREAS, DFCM intends to have Work performed at _____.

WHEREAS, Contractor agrees to perform the Work for the sum stated herein.

NOW, THEREFORE, DFCM and Contractor for the consideration provided in this Contractor's Agreement, agree as follows:

ARTICLE 1. SCOPE OF WORK. The Work to be performed shall be in accordance with the Contract Documents prepared by _____ and entitled "_____."

The DFCM General Conditions ("General Conditions") dated May 25, 2005 and Supplemental General Conditions dated July 15, 2008 ("also referred to as General Conditions") on file at the office of DFCM and available on the DFCM website, are hereby incorporated by reference as part of this Agreement and are included in the specifications for this Project. All terms used in this Contractor's Agreement shall be as defined in the Contract Documents, and in particular, the General Conditions.

The Contractor Agrees to furnish labor, materials and equipment to complete the Work as required in the Contract Documents which are hereby incorporated by reference. It is understood and agreed by the parties hereto that all Work shall be performed as required in the Contract Documents and shall be subject to inspection and approval of DFCM or its authorized representative. The relationship of the Contractor to the DFCM hereunder is that of an independent Contractor.

ARTICLE 2. CONTRACT SUM. The DFCM agrees to pay and the Contractor agrees to accept in full performance of this Contractor's Agreement, the sum of _____ DOLLARS AND NO CENTS (\$_____.00), which is the base bid, and which sum also includes the cost of a 100% Performance Bond and a 100%

CONTRACTOR'S AGREEMENT
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Payment Bond as well as all insurance requirements of the Contractor. Said bonds have already been posted by the Contractor pursuant to State law. The required proof of insurance certificates have been delivered to DFCM in accordance with the General Conditions before the execution of this Contractor's Agreement.

ARTICLE 3. TIME OF COMPLETION AND DELAY REMEDY. The Work shall be Substantially Complete by _____. Contractor agrees to pay liquidated damages in the amount of \$_____ per day for each day after expiration of the Contract Time until the Contractor achieves Substantial Completion in accordance with the Contract Documents, if Contractor's delay makes the damages applicable. The provision for liquidated damages is: (a) to compensate the DFCM for delay only; (b) is provided for herein because actual damages can not be readily ascertained at the time of execution of this Contractor's Agreement; (c) is not a penalty; and (d) shall not prevent the DFCM from maintaining Claims for other non-delay damages, such as costs to complete or remedy defective Work.

No action shall be maintained by the Contractor, including its or Subcontractor or suppliers at any tier, against the DFCM or State of Utah for damages or other claims due to losses attributable to hindrances or delays from any cause whatsoever, including acts and omissions of the DFCM or its officers, employees or agents, except as expressly provided in the General Conditions. The Contractor may receive a written extension of time, signed by the DFCM, in which to complete the Work under this Contractor's Agreement in accordance with the General Conditions.

ARTICLE 4. CONTRACT DOCUMENTS. The Contract Documents consist of this Contractor's Agreement, the Conditions of the Contract (DFCM General Conditions, Supplementary and other Conditions), the Drawings, Specifications, Addenda and Modifications. The Contract Documents shall also include the bidding documents, including the Invitation to Bid, Instructions to Bidders/ Proposers and the Bid/Proposal, to the extent not in conflict therewith and other documents and oral presentations that are documented as an attachment to the contract.

All such documents are hereby incorporated by reference herein. Any reference in this Contractor's Agreement to certain provisions of the Contract Documents shall in no way be construed as to lessen the importance or applicability of any other provisions of the Contract Documents.

ARTICLE 5. PAYMENT. The DFCM agrees to pay the Contractor from time to time as the Work progresses, but not more than once each month after the date of Notice to Proceed, and only upon Certificate of the A/E for Work performed during the preceding calendar month, ninety-five percent (95%) of the value of the labor performed and ninety-five percent (95%) of the value of materials furnished in place or on the site. The Contractor agrees to furnish to the DFCM invoices for materials purchased and on the site but not installed, for which the Contractor requests payment and agrees to

safeguard and protect such equipment or materials and is responsible for safekeeping thereof and if such be stolen, lost or destroyed, to replace same.

Such evidence of labor performed and materials furnished as the DFCM may reasonably require shall be supplied by the Contractor at the time of request for Certificate of Payment on account. Materials for which payment has been made cannot be removed from the job site without DFCM's written approval. Five percent (5%) of the earned amount shall be retained from each monthly payment. The retainage, including any additional retainage imposed and the release of any retainage, shall be in accordance with UCA 13-8-5 as amended. Contractor shall also comply with the requirements of UCA 13-8-5, including restrictions of retainage regarding subcontractors and the distribution of interest earned on the retention proceeds. The DFCM shall not be responsible for enforcing the Contractor's obligations under State law in fulfilling the retention law requirements with subcontractors at any tier.

ARTICLE 6. INDEBTEDNESS. Before final payment is made, the Contractor must submit evidence satisfactory to the DFCM that all payrolls, materials bills, subcontracts at any tier and outstanding indebtedness in connection with the Work have been properly paid. Final Payment will be made after receipt of said evidence, final acceptance of the Work by the DFCM as well as compliance with the applicable provisions of the General Conditions.

Contractor shall respond immediately to any inquiry in writing by DFCM as to any concern of financial responsibility and DFCM reserves the right to request any waivers, releases or bonds from Contractor in regard to any rights of Subcontractors (including suppliers) at any tier or any third parties prior to any payment by DFCM to Contractor.

ARTICLE 7. ADDITIONAL WORK. It is understood and agreed by the parties hereto that no money will be paid to the Contractor for additional labor or materials furnished unless a new contract in writing or a Modification hereof in accordance with the General Conditions and the Contract Documents for such additional labor or materials has been executed. The DFCM specifically reserves the right to modify or amend this Contractor's Agreement and the total sum due hereunder either by enlarging or restricting the scope of the Work.

ARTICLE 8. INSPECTIONS. The Work shall be inspected for acceptance in accordance with the General Conditions.

ARTICLE 9. DISPUTES. Any dispute, PRE or Claim between the parties shall be subject to the provisions of Article 7 of the General Conditions. DFCM reserves all rights to pursue its rights and remedies as provided in the General Conditions.

ARTICLE 10. TERMINATION, SUSPENSION OR ABANDONMENT. This Contractor's Agreement may be terminated, suspended or abandoned in accordance with the General Conditions.

ARTICLE 11. DFCM'S RIGHT TO WITHHOLD CERTAIN AMOUNT AND MAKE USE THEREOF. The DFCM may withhold from payment to the Contractor such amount as, in DFCM's judgment, may be necessary to pay just claims against the Contractor or Subcontractor at any tier for labor and services rendered and materials furnished in and about the Work. The DFCM may apply such withheld amounts for the payment of such claims in DFCM's discretion. In so doing, the DFCM shall be deemed the agent of Contractor and payment so made by the DFCM shall be considered as payment made under this Contractor's Agreement by the DFCM to the Contractor. DFCM shall not be liable to the Contractor for any such payment made in good faith. Such withholdings and payments may be made without prior approval of the Contractor and may be also be prior to any determination as a result of any dispute, PRE, Claim or litigation.

ARTICLE 12. INDEMNIFICATION. The Contractor shall comply with the indemnification provisions of the General Conditions.

ARTICLE 13. SUCCESSORS AND ASSIGNMENT OF CONTRACT. The DFCM and Contractor, respectively bind themselves, their partners, successors, assigns and legal representatives to the other party to this Agreement, and to partners, successors, assigns and legal representatives of such other party with respect to all covenants, provisions, rights and responsibilities of this Contractor's Agreement. The Contractor shall not assign this Contractor's Agreement without the prior written consent of the DFCM, nor shall the Contractor assign any moneys due or to become due as well as any rights under this Contractor's Agreement, without prior written consent of the DFCM.

ARTICLE 14. RELATIONSHIP OF THE PARTIES. The Contractor accepts the relationship of trust and confidence established by this Contractor's Agreement and covenants with the DFCM to cooperate with the DFCM and A/E and use the Contractor's best skill, efforts and judgment in furthering the interest of the DFCM; to furnish efficient business administration and supervision; to make best efforts to furnish at all times an adequate supply of workers and materials; and to perform the Work in the best and most expeditious and economic manner consistent with the interests of the DFCM.

ARTICLE 15. AUTHORITY TO EXECUTE AND PERFORM AGREEMENT. Contractor and DFCM each represent that the execution of this Contractor's Agreement and the performance thereunder is within their respective duly authorized powers.

ARTICLE 16. ATTORNEY FEES AND COSTS. Except as otherwise provided in the dispute resolution provisions of the General Conditions, the prevailing party shall be entitled to reasonable attorney fees and costs incurred in any action in the District Court and/or appellate body to enforce this Contractor's Agreement or recover damages or any other action as a result of a breach thereof.

PAYMENT BOND

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

KNOW ALL PERSONS BY THESE PRESENTS:

That _____ hereinafter referred to as the "Principal," and _____, a corporation organized and existing under the laws of the State of _____ authorized to do business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); with its principal office in the City of _____, hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah hereinafter referred to as the "Obligee," in the amount of _____ Dollars (\$ _____) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated the _____ day of _____, 20____, to construct _____ in the County of _____, State of Utah, Project No. _____ for the approximate sum of _____ Dollars (\$ _____), which contract is hereby incorporated by reference herein.

NOW, THEREFORE, the condition of this obligation is such that if the said Principal shall pay all claimants supplying labor or materials to Principal or Principal's Subcontractors in compliance with the provisions of Title 63, Chapter 56, of Utah Code Annotated, 1953, as amended, and in the prosecution of the Work provided for in said Contract, then, this obligation shall be void; otherwise it shall remain in full force and effect.

That said Surety to this Bond, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or to the Work to be performed thereunder, or the specifications or drawings accompanying same shall in any way affect its obligation on this Bond, and does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to the Work or to the specifications or drawings and agrees that they shall become part of the Contract Documents.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20____.

WITNESS OR ATTESTATION:

PRINCIPAL:

By: _____ (Seal)

Title: _____

WITNESS OR ATTESTATION:

SURETY:

By: _____ Attorney-in-Fact (Seal)

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 20____, personally appeared before me _____, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this _____ day of _____, 20____.

My commission expires: _____
Resides at: _____

NOTARY PUBLIC

Agency: _____
Agent: _____
Address: _____
Phone: _____

Approved As To Form: May 25, 2005
By Alan S. Bachman, Asst Attorney General



CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT _____ PROJECT NO: _____

AGENCY/INSTITUTION _____

AREA ACCEPTED _____

The Work performed under the subject Contract has been reviewed on this date and found to be Substantially Completed as defined in the General Conditions; including that the construction is sufficiently completed in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the State of Utah can occupy the Project or specified area of the Project for the use for which it is intended.

The DFCM - (Owner) accepts the Project or specified area of the Project as Substantially Complete and will assume full possession of the Project or specified area of the Project at _____ (time) on _____ (date).

The DFCM accepts the Project for occupancy and agrees to assume full responsibility for maintenance and operation, including utilities and insurance, of the Project subject to the itemized responsibilities and/or exceptions noted below:

The Owner acknowledges receipt of the following closeout and transition materials:

- As-built Drawings
- O & M Manuals
- Warranty Documents
- Completion of Training Requirements

A list of items to be completed or corrected (Punch List) is attached hereto. The failure to include an item on it does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents, including authorized changes thereof. The amount of _____(Twice the value of the punch list work) shall be retained to assure the completion of the punch list work.

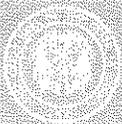
The Contractor shall complete or correct the Work on the list of (Punch List) items appended hereto within _____ calendar days from the above date of issuance of this Certificate. The amount withheld pending completion of the list of items noted and agreed to shall be: \$_____. If the list of items is not completed within the time allotted the Owner has the right to be compensated for the delays and/or complete the work with the help of independent contractor at the expense of the retained project funds. If the retained project funds are insufficient to cover the delay/completion damages, the Owner shall be promptly reimbursed for the balance of the funds needed to compensate the Owner.

_____ by: _____
CONTRACTOR (include name of firm) (Signature) DATE

_____ by: _____
A/E (include name of firm) (Signature) DATE

_____ by: _____
USING INSTITUTION OR AGENCY (Signature) DATE

_____ by: _____
DFCM (Owner) (Signature) DATE

**General Contractor Performance Rating Form**

Project Name:		DFCM Project#	
Contractor: (ABC Construction, John Doe, 111-111-1111)	A/E: (ABC Architects, Jane Doe, 222-222-2222)	Original Contract Amount:	Final Contract Amount:
DFCM Project Manager:		Contract Date:	
Completion Date:		Date of Rating:	

Rating Guideline	QUALITY OF PRODUCT OR SERVICES	COST CONTROL	TIMELINESS OF PERFORMANCE	BUSINESS RELATIONS
5-Exceptional	Contractor has demonstrated an exceptional performance level in any of the above four categories that justifies adding a point to the score. Contractor performance clearly exceeds the performance levels described as "Very Good"			
4-Very Good	Contractor is in compliance with contract requirements and/or delivers quality product/service.	Contractor is effective in managing costs and submits current, accurate, and complete billings	Contractor is effective in meeting milestones and delivery schedule	Response to inquiries, technical/service/administrative issues is effective
3-Satisfactory	Minor inefficiencies/errors have been identified	Contractor is usually effective in managing cost	Contractor is usually effective in meeting milestones and delivery schedules	Response to inquires technical/service/administrative issues is somewhat effective
2-Marginal	Major problems have been encountered	Contractor is having major difficulty managing cost effectively	Contractor is having major difficulty meeting milestones and delivery schedule	Response to inquiries, technical/service/administrative issues is marginally effective
1-Unsatisfactory	Contractor is not in compliance and is jeopardizing achievement of contract objectives	Contractor is unable to manage costs effectively	Contractor delays are jeopardizing performance of contract objectives	Response to inquiries, technical/service/administrative issues is not effective

1. Rate Contractors quality of workmanship, management of sub contractor performance, project cleanliness, organization and safety requirement.	Score
<u>Agency Comments:</u>	
<u>A & E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

2. Rate Contractor administration of project costs, change orders and financial management of the project budget.	Score
<u>Agency Comments:</u>	
<u>A & E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

3. Rate Contractor's performance and adherence to Project Schedule, delay procedures and requirements of substantial completion, inspection and punch-list performance.	Score
<u>Agency Comments:</u>	
<u>A & E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

4. Evaluate performance of contractor management team including project manager, engineer and superintendent also include in the rating team's ability to work well with owner, user agency and consultants.	Score
<u>Agency Comments:</u>	
<u>A & E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

5. Rate success of Contractor's management plan, completion of the plans mitigation of project risks and performance of value engineering concepts.	Score
<u>Agency Comments:</u>	
<u>A & E Comments:</u>	
<u>DFCM Project Manager Comments:</u>	

Signed by:	Date:	Mean Score
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Additional Comments:

SPECIFICATION

NEW STORAGE BUILDING FOR
UTAH DEPARTMENT OF CORRECTIONS

AT

ORANGE STREET FACILITY

Salt Lake City, Utah
DFCM #08216120

SPECIFICATIONS

<u>TITLE</u>	<u>SUBJECT</u>
	INDEX
01300	SUBMITTALS
01400	QUALITY CONTROL
01600	MATERIAL AND EQUIPMENT
01700	CONTRACT CLOSEOUT
02211	DEMOLITION & EXCAVATION
02223	BACKFILLING
02225	TRENCHING
02513	ASPHALTIC CONCRETE PAVING
03100	CONCRETE FORMWORK
03200	CONCRETE REINFORCEMENT
03300	CAST-IN-PLACE CONCRETE
03346	CONCRETE FLOOR FINISHING
06001	CARPENTRY WORK
06112	FRAMING AND SHEATHING
07240	STANDARD STUCCO SYSTEM
07514	SINGLE PLY ROOFING SYSTEM (TPO)
07620	SHEET METAL FLASHING AND TRIM
07631	GUTTERS AND DOWNSPOUTS
07900	JOINT SEALERS
08111	STANDARD STEEL DOOR AND DOOR FRAMES
08360	SECTIONAL OVERHEAD DOORS
08712	DOOR HARDWARE
09260	GYPSTUM BOARD SYSTEMS
09900	PAINTING
16000	GENERAL PROVISIONS, ELECTRICAL
16110	RACEWAYS
16120	CONDUCTORS
16130	ELECTRICAL BOXES
16140	OUTLETS AND WIRING DEVICES
16190	SUPPORTING DEVICES
16195	ELECTRICAL IDENTIFICATION
16470	PANELBOARDS
16500	LIGHTING

LIST OF DRAWINGS

SHT. NO.

- AS-101 TITLE SHEET, SITE PLAN, INDEX, SCHEDULE, & SYMBOLS
- AE-101 FLOOR PLAN, ELEVATIONS, & DETAILS
- AE-102 FOOTING, FOUNDATION & FRAMING PLANS & DETAILS

SECTION 01300

SUBMITTALS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Submittal procedures.
- B. Construction progress schedules.
- C. Proposed products list.
- D. Shop drawings.
- E. Product data.
- F. Samples.
- G. Manufacturers' instructions.
- H. Manufacturers' certificates.

1.02 RELATED SECTIONS

- A. Section 01400 - Quality Control: Manufacturers' field services and reports.
- B. Section 01700 - Contract Closeout: Contract, warranty, and manufacturer's certificates and closeout submittals.

1.03 SUBMITTAL PROCEDURES

- A. Transmit each submittal to Architect/Engineer for approval.
- B. Identify Project, Contractor, Subcontractor or supplier; pertinent Drawing sheet and detail number (s) and specification section number, as appropriate.
- C. Apply Contractor's stamp, signed or initialled certifying that review, verification of products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the work and contract documents.
- D. Schedule submittals to expedite the project, and deliver to Architect/Engineer at business address. Coordinate submittal of related items.
- E. Identify variations from Contract Documents and product or system limitations which may be detrimental to successful performance of the completed work.
- F. Provide space for Contractor and Architect/Engineer review stamps.
- G. Revise and resubmit submittals as required; identify all changes made since previous submittal.
- H. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with provisions.

1.04 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit initial progress schedule in duplicate within 20 days after date established in Notice to

Proceed for Architect/Engineer review.

- B. Revise and resubmit as required.
- C. Submit computer generated network analysis diagram using the critical path, PERT method, or generally as outlined in Associated General Contractors of American (AGC) publication "The Use of CPM in Construction - A Manual for General Contractors and the Construction Industry".
- D. Show complete sequence of construction by activity, identifying work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- E. Indicate estimated percentage of completion for each item of work at each submission.
- F. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those Owner furnished and under allowances.

1.05 SHOP DRAWINGS

- A. Submit the number of opaque reproductions which Contractor requires, plus four copies which will be retained by Architect/Engineer.
- B. After review, reproduce and distribute in accordance with Article on Procedures above and for Record Documents described in Section 01700 - Contract Closeout.

1.06 PRODUCT DATA

- A. Submit the number of copies which the Contractor requires, plus four copies which will be retained by the Architect/Engineer.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information unique to this project.
- C. After review distribute in accordance with Article on Procedures above and provide copies for Record Documents described in Section 01700 - Contract Closeout.

1.07 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of the product with integral parts and attachment devices. Coordinate sample submittals for interfacing work.
- B. Submit samples of finishes from the full range of manufacturers' standard colors, textures, and patterns for Architect/Engineer's selection.
- C. Include identification on each sample with full project information.
- D. Submit the number of samples specified in individual specification sections; one of which will be retained by Architect/Engineer.
- E. Reviewed samples which may be used in the work are indicated in individual specification sections.

1.08 MANUFACTURER'S INSTRUCTIONS

- A. When specified in individual specification sections, submit manufacturers' printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing in quantities specified for Product Data.
- B. Identify conflicts between manufacturers' instructions and Contract Documents.

1.09 MANUFACTURER'S CERTIFICATES

- A. When specified in individual specification sections, submit manufacturers' certificate to Architect/Engineer for review in quantities specified for Product Data.
- B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits and certifications as appropriate.
- C. Certificates may be recent or previous test results on material or product, but must be acceptable to Architect/Engineer.

END OF SECTION

SECTION 01400

QUALITY CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Quality assurance and control of installation.
- B. References.
- C. Field samples.
- D. Inspection and testing laboratory services.
- E. Manufacturers' field services and reports.

1.02 RELATED SECTIONS

- A. Section 01300 - Submittals Submission of Manufacturers' Instructions and Certificates.
- B. Section 01600 - Material and Equipment: Requirements for material and product quality.

1.03 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, products, services, site conditions, and workmanship to produce work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect/Engineer before proceeding.
- D. Comply with specified standards as a minimum quality for the work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality.
- F. Secure products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion, or disfigurement.

1.04 REFERENCES

- A. Conform to reference standard by date of issue current on date of Contract Documents.
- B. Obtain copies of standards when required by Contract Documents.
- C. Should specified reference standards conflict with Contract Documents, request clarification for Architect/Engineer before proceeding.
- D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.05 FIELD SAMPLES

- A. Install field samples at the site as required by individual specifications sections for review.

- B. Acceptable samples represent a quality level for the work.
- C. Where field sample is specified in individual sections to be removed, clear area after field sample has been accepted by Architect/Engineer.

1.06 MANUFACTURERS' FIELD SERVICES AND REPORTS

- A. Submit qualifications of observer to Architect/Engineer 30 days in advance of required observations. Observer subject to approval of Architect/Engineer.
- B. When specified in individual specification sections, require material or product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, start-up of equipment, test, adjust, and balance of equipment as applicable and to initiate instructions when necessary.
- C. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.
- D. Submit report in duplicate within 30 days of observation to Architect/Engineer for review.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01600

MATERIAL AND EQUIPMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Products.
- B. Transportation and handling.
- C. Storage and protection.
- D. Product options.
- E. Substitutions.

1.02 RELATED SECTIONS

- A. Section 01400 - Quality Control: Product quality monitoring.

1.03 PRODUCTS

- A. Products: Means new material, machinery, components, equipment, fixtures, and systems forming the work. Does not include machinery and equipment used for preparation, fabrication, conveying and erection of the work.
- B. Provide interchangeable components of the same manufacturer for similar components.

1.04 TRANSPORTATION AND HANDLING

- A. Transport and handle products in accordance with manufacturer's instructions.
- B. Promptly inspect shipments to assure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products by methods to prevent soiling, disfigurement, or damage.

1.05 STORAGE AND PROTECTION

- A. Store and protect products in accordance with manufacturer's instructions, with seals and labels intact and legible. Store sensitive products in weathertight, climate controlled enclosures.
- B. For exterior storage of fabricated products, place on sloped supports above ground.
- C. Provide off-site storage and protection when site does not permit on-site storage or protection.
- D. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to avoid condensation.
- E. Store loose granular materials on solid flat surfaces in a well-drained area. Provide mixing with foreign matter.
- F. Provide equipment and personnel to store products by methods to prevent soiling, disfigurement, or damage.

- G. Arrange storage of products to permit access for inspection. Periodically inspect to assure products are undamaged and are maintained under specified conditions.

1.06 PRODUCT OPTIONS

- A. Products specified by naming one or more manufacturers with a provision for substitutions: Submit a request for substitution for any manufacturer not named.

1.07 SUBSTITUTIONS

- A. Architect/Engineer will consider requests for substitutions only within 5 days of Bid Opening.
- B. Substitutions may be considered when a product becomes unavailable through no fault of the Contractor.
- C. Document each request with complete data substantiating compliance of proposed substitution with Contract Documents.
- D. A request constitutes a representation that the Bidder:
 - 1. Has investigated proposed product and determined that it meets or exceeds the quality level of the specified product.
 - 2. Will provide the same warranty for the substitution as for the specified product.
 - 3. Will coordinate installation and make changes to other work which may be required for the work to be complete with no additional cost to Owner.
 - 4. Waives claims for additional costs or time extension which may subsequently become apparent.
 - 5. Will reimburse Owner for review or redesign services associated with reapproval by authorities.
- E. Substitutions will not be considered when they are indicated or implied on shop drawing or product data submittals, without separate written request or when acceptance will require revision to the Contract Documents.
- F. Substitution Submittal Procedure:
 - 1. Submit three copies of request for substitution for consideration. Limit each request to one proposed substitution.
 - 2. Submit shop drawings, product data, and certified test results attesting to the proposed product equivalence.
 - 3. Architect/Engineer will notify Contractor in writing of decision to accept or reject request.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01700

CONTRACT CLOSEOUT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Closeout procedures.
- B. Final cleaning.
- C. Adjusting.
- D. Project record documents.
- E. Operation and maintenance data.
- F. Warranties.
- G. Spare parts and maintenance materials.

1.02 CLOSEOUT PROCEDURES

- A. Submit written certification that Contract Documents have been reviewed, work has been inspected, and that work is complete in accordance with Contract Documents and ready for Architect/Engineer's inspections, Owner prefinal and final.
- B. Provide submittals to Architect/Engineer and Owner that are required by governing or other authorities.
- C. Submit final Application for Payment identifying total adjusted contract sum, previous payments, and sum remaining due.
- D. Owner will occupy all portions of the building upon final acceptance of project.

1.03 FINAL CLEANING

- A. Execute final cleaning prior to final inspection.
- B. Clean interior and exterior glass and surfaces exposed to view; remove temporary labels, stains and foreign substances, polish transparent and glossy surfaces, vacuum carpeted and soft surfaces.
- C. Clean equipment and fixtures to a sanitary condition.
- D. Clean and replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean site, sweep paved areas, rake clean landscaped surfaces.
- G. Remove waste and surplus materials, rubbish, and construction facilities from the site.

1.04 ADJUSTING

- A. Adjust operating products and equipment to ensure smooth and unhindered operation.

1.05 PROJECT RECORD DOCUMENTS

- A. Maintain on site, one set of the following record documents; record actual revisions to the work:
 - 1. Contract drawings.
 - 2. Specifications.
 - 3. Addenda.
 - 4. Change Orders and other modifications to the contract.
 - 5. Reviewed shop drawings, product data, and samples.
- B. Store record documents separate from documents used for construction.
- C. Record information concurrent with construction progress.
- D. Specifications: Legibly mark and record at each product section description of actual products installed, including the following:
 - 1. Manufacturer's name and product model and number.
 - 2. Product substitutions or alternates utilized.
 - 3. Changes made by Addenda and modifications.
- E. Record documents and shop drawings: Legibly mark each item to record actual construction including.
- F. Submit documents to Architect/Engineer with claim for final Application for Payment.

1.06 OPERATION AND MAINTENANCE DATA

- A. Submit three sets prior to final inspection bound in 8-1/2 x 11 inch text pages, three ring binders with durable plastic covers.
- B. Prepare binder covers with printed title "OPERATION AND MAINTENANCE INSTRUCTIONS" and title of project.
- C. Internally subdivide the binder contents with permanent page dividers logically organized as described below with tab titling clearly printed under reinforced laminated plastic tabs.
- D. Contents: Prepare a Table of Contents for each volume, with each product or system description identified.
- E. Part 1: Directory, listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
- F. Part 2: Operation and maintenance instructions, arranged by system and subdivided by specification section. Identify the following:
 - 1. Significant design criteria.
 - 2. List of equipment.
 - 3. Parts list for each component.
 - 4. Operating instructions.
 - 5. Maintenance instructions for equipment and systems.
 - 6. Maintenance instructions for special finishes, including recommended cleaning methods and materials and special precautions identifying detrimental agents.
- G. Part 3: Project documents and certificates, including the following:
 - 1. Shop drawings and product data.
 - 2. Air and water balance reports.
 - 3. Certificates.
 - 4. Photocopies of warranties.
- H. Submit one copy of completed volumes in final form at prefinal inspection. This copy will be returned with Architect/Engineer comments. Revise content of documents as required prior to final submittal.

I. Submit final volumes revised within ten days after final inspection.

1.07 WARRANTIES

A. Provide duplicate notarized copies.

B. Execute and assemble documents from subcontractors, suppliers, and manufacturers.

C. Submit prior to final Application for Payment.

1.08 SPARE PARTS AND MAINTENANCE MATERIALS

A. Provide products, spare parts, maintenance and extra materials in quantities specified in individual specification sections.

B. Deliver to project site and place in location as directed by Owner; obtain receipt prior to final payment.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 02211

DEMOLITION & EXCAVATION

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Saw cutting and removal of concrete slab and subsoil.
- B. Excavation for building foundations and slabs-on-grade.

1.02 RELATED SECTIONS

- A. Quality Control: Inspection of bearing surfaces - see GENERAL CONDITIONS.
- B. Section 02223 - Backfilling: General building area backfilling.
- C. Section 02225 - Trenching: Trenching and backfilling for utilities.

1.03 REFERENCES

- A. ANSI/ASTM D698 - Test Methods for Moisture Density Relations of Soils and Soil-Aggregate Mixtures.
- B. ANSI/ASTM D1557-78 - Test Method for Density of Soil.

1.04 SUBMITTALS

- A. Provide soils information to soils engineer for approval prior to commencing (if questionable).

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of GENERAL CONDITIONS.
- B. Accurately record actual locations of utilities remaining, by horizontal dimensions, elevations or inverts, and slope gradients.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Topsoil: Excavated material, graded, free of roots, rocks larger than 2 inches, subsoil, debris, and large weeds.
- B. Subsoil: Excavated material, graded, free of lumps larger than 6 inches, rocks larger than 3 inches, and debris.
- C. Granular Fill: Type specified in Section 02223.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify site conditions, building location, and existing site and utility improvements.

3.02 PREPARATION

- A. Identify required lines and levels.
- B. Identify known underground, above ground, and aerial utilities. Stake and flag locations.
- C. Notify Utility Company for locations of all utilities.
- D. Protect above and below grade utilities which are to remain.
- E. Protect bench marks, existing structures, fences, roads, paving, and curbs which are to remain from excavation equipment and vehicular traffic.

3.03 SUBSOIL EXCAVATION

- A. Excavate subsoil required to accommodate building foundations, slabs-on-grade, and construction operations.
- B. Excavation cut not to interfere with normal 45 degree bearing splay of foundation.
- C. Grade top perimeter of excavation to prevent surface water from draining into excavation.
- D. Hand trim excavation. Remove loose matter.
- E. Remove lumped subsoil, boulders, and rock.
- F. Notify Architect/Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.
- G. Correct unauthorized excavation at no extra cost to Owner.
- H. Correct areas overexcavated by error in accordance with Section 02223.
- I. Excavate subsoil from areas to be further excavated, regraded; see Site Plan for designated areas.
- J. Stockpile in area designated on site. Remove excess subsoil not being reused from site.

3.04 FILLING

- A. Fill areas to contours and elevations with unfrozen materials.
- B. Granular Fill: Place and compact materials in continuous layers not exceeding 8 inches compacted depth, compacted to 95 percent in areas below concrete footings, slabs, and asphalt paving.
- C. Subsoil Fill: Place and compact material in continuous layers not exceeding 8 inches compacted depth, compacted to 95 percent.
- D. Maintain optimum moisture content of fill materials to attain required compaction density.
- E. Slope grade away from building minimum 3 inches in 10 feet, unless noted otherwise.
- F. Make grade changes gradual. Blend slope into level areas.
- G. Remove surplus fill materials from site.

3.05 TOLERANCES

- A. Top Surface of Subgrade: Plus or minus 1/10 foot.

3.06 FIELD QUALITY CONTROL

- A. Field inspection and testing as hired by the Owner as deemed necessary will be performed under provisions of GENERAL CONDITIONS.
- B. Provide for visual inspection of bearing surfaces.
- C. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D698 and D1557 and with GENERAL CONDITIONS.
- D. Compaction testing will be performed in accordance with Section 02223.
- E. If tests indicate work does not meet specified requirements, remove work, replace, and retest at no cost to Owner.
- F. Frequency of tests as follows:
 - 1. Take (1) compaction test per lift per each 50 lineal feet of continuous building foundation.
 - 2. Slabs and flatwork will need (1) test per each 1,000 sq. ft. each lift.
 - 3. Trenches will need one (1) test for compaction per each 50 lin. ft. each lift.
 - 4. Spot foundation: One test per lift per each spot footing or isolated foundation.

3.07 PROTECTION

- A. Protect excavations by methods required to prevent cave-in or loose soil from falling into excavation.
- B. Protect bottom of excavations and soil adjacent to and beneath foundation from freezing.

END OF SECTION

SECTION 02223

BACKFILLING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Building perimeter backfilling to subgrade elevations.
- B. Site filling and backfilling.
- C. Fill under slabs-on-grade and paving.
- D. Consolidation and compaction under building footings and slabs.
- E. Fill for over-excavation.

1.02 RELATED SECTIONS

- A. Section 02211 - Excavation.
- B. Section 02225 - Trenching: Backfilling of utility trenches.
- C. Section 03300 - Cast-in-Place Concrete: Concrete materials.
- D. General Conditions - Consolidation and compaction testing.

1.03 REFERENCES

- A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
- B. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb Rammer and 12 inch Drop.
- C. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 inch Drop.

1.04 SUBMITTALS

- A. Submit under provisions of GENERAL CONDITIONS and test data requested material to use and sources.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. Type A - Granular Material: Pit run, washed natural stone; free of shale, clay, friable material, sand, debris; graded in accordance with ANSI/ASTM C136. See soils engineering report and material specification
- B. Subsoil: Reused, free of gravel larger than 3 inch size, and debris; see Soils Report.
- C. Concrete: Structural concrete conforming to Section 03300.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify fill materials to be reused are acceptable.

3.02 PREPARATION

- A. Generally, compact subgrade to density requirements for subsequent backfill materials.
- B. Cut out soft areas of subgrade not capable of insitu compaction. Backfill with Type A fill and compact to density equal to or greater than requirements for subsequent backfill material.
- C. Prior to placement of aggregate base course material at floor slabs and paved areas, compact subsoil to 95 percent of its maximum dry density in accordance with ANSI/ASTM D698 and soil engineer's report.

3.03 BACKFILLING

- A. Backfill areas to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Granular Fill: Place and compact materials in continuous layers not exceeding 8 inches compacted depth.
- D. Soil Fill: Place and compact material in continuous layers not exceeding 8 inches compacted depth.
- E. Employ a placement method that does not disturb or damage foundations.
- F. Maintain optimum moisture content of backfill materials to attain required compaction density.
- G. Backfill against supported foundation walls both interior and exterior. Do not backfill against unsupported foundation walls.
- H. Backfill simultaneously on each side of unsupported foundation walls until supports are in place.
- I. Slope grade away from building minimum 3 inches in 10 ft unless noted otherwise.
- J. Make changes gradual. Blend slope into level areas.
- K. Remove surplus backfill materials from site.
- L. Leave fill material stockpile areas completely free of excess fill materials.

3.04 TOLERANCES

- A. Top Surface of Backfilling Under Slabs and Paved Areas: Plus or minus one inch from required elevations.

3.05 FIELD QUALITY CONTROL

- A. Field inspection and testing as procured by Owner will be performed under provisions of GENERAL CONDITIONS.
- B. Tests and analysis of fill material will be performed in accordance with ANSI/ASTM D698, with GENERAL CONDITIONS, and by soil engineer's report provided by Owner.
- C. Compaction testing will be performed in accordance with ANSI/ASTM D698 and with GENERAL CONDITIONS.
- D. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no

cost to Owner.

- E. Proof roll compacted fill surfaces under slabs-on-grade and paving.

3.06 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of GENERAL CONDITIONS.
- B. Recompact fills subjected to vehicular traffic.

3.07 SCHEDULE

- A. Interior Slab-On-Grade:
 - 1. Consolidated engineered fill and compaction to be installed per soil engineer's report
 - 2. Granular Material fill, 4 inches thick, compacted to 90 percent.
- B. Fill Under Concrete Walks:
 - 1. Granular material fill, to 4 inches below finish paving elevation, compacted to 90 percent.
- C. Fill for Over Excavation:
 - 1. Granular material fill as required to bring over excavation to below finish grade, compacted to 95 percent if under building structure. To be 90 percent elsewhere.

END OF SECTION

SECTION 02225

TRENCHING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Excavate trenches for utilities from foundation outside building to lines shown on drawings and existing building services.
- B. Compacted bedding under fill over utilities to subgrade elevations.
- C. Backfilling and compaction.

1.02 RELATED SECTIONS

- A. GENERAL CONDITIONS: Testing fill compaction.
- B. Section 02211 - Rough Grading: Topsoil and subsoil removal from site surface.
- C. Section 02222 - Excavation: General building excavation.
- D. Section 02223 - Backfilling: General backfilling.
- E. Section 03300 - Cast-in-Place Concrete: Concrete materials.
- F. Section 15400: Sewer piping from building to existing sewer system.
- G. Section 15400: Water piping from building to existing service.

1.03 REFERENCES

- A. ANSI/ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.

1.04 FIELD MEASUREMENTS

- A. Verify that survey benchmark and intended elevations for the Work are as shown on Drawings.

PART 2 PRODUCTS

2.01 FILL MATERIALS

- A. Types of materials as specified in Section 02223.

2.02 BED MATERIALS

- A. Type of Material: As specified for Type A in Section 02223.
- B. Type of Material: As specified for Type B in Section 02223.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify fill materials to be reused, is acceptable.

3.02 PREPARATION

- A. Identify required lines, levels, contours, and datum.
- B. Maintain and protect existing utilities remaining, which pass through work area.
- C. Protect bench marks, existing structures, fences, sidewalks, paving, and curbs from excavation equipment and vehicular traffic.
- D. Protect above and below grade utilities which are to remain.
- E. Cut out soft areas of subgrade not capable of insitu compaction. Backfill with Type 2 fill and compact to density equal to or greater than requirements for subsequent backfill material.

3.03 EXCAVATION

- A. Excavate subsoil required for sanitary sewer, water, and electric power piping to existing building utilities system.
- B. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.
- C. Excavation shall not interfere with normal 45 degree bearing splay of foundations.
- D. Hand trim excavation. Hand trim for bell and spigot pipe joints. Remove loose matter.
- E. Remove lumped subsoil, boulders, and rock up to 1/3 cu yd measured by volume.
- F. Correct unauthorized excavation at no cost to Owner.
- G. Correct areas over-excavated by error in accordance with Section 02222.
- H. Stockpile excavated material in area designated on site and remove excess material not being used, from site.

3.04 BEDDING

- A. Support pipe and conduit during placement and compaction of bedding fill.

3.05 BACKFILLING

- A. Backfill trenches to contours and elevations with unfrozen materials.
- B. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.
- C. Granular Fill: Place and compact materials in continuous layers not exceeding 8 inches compacted depth where called for on drawings.
- D. Soil Fill: Place and compact material in continuous layers not exceeding 8 inches compacted depth.
- E. Employ a placement method that does not disturb or damage plumbing piping or conduit in trench.
- F. Maintain optimum moisture content of backfill materials to attain required compaction density.
- G. Remove surplus backfill materials from site.
- H. Leave fill material stockpile areas completely free of excess fill materials.

3.06 TOLERANCES

- A. Top Surface of General Backfilling: Plus or minus one inch from required elevations.

3.07 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of GENERAL CONDITIONS.
- B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest at no cost to Owner.

3.08 PROTECTION OF FINISHED WORK

- A. Protect finished Work under provisions of GENERAL CONDITIONS.
- B. Recompact fills subjected to vehicular traffic.

END OF SECTION

SECTION 02513

ASPHALTIC CONCRETE PAVING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Asphaltic concrete paving; wearing binder course.
- B. Aggregate base course.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION.

- A. Section 03300 - Cast-In-Place Concrete:

1.03 RELATED SECTIONS

- A. Section 02211 - Rough Grading: Preparation of site for paving and base.
- B. Section 02223 - Backfilling: Compacted subbase for paving.
- C. Section 03300 - Cast-In-Place Concrete curbs.
- D. Section 09900 - Painting: Pavement markings.

1.04 REFERENCES

- A. The Asphalt Institute - Manual MS-4 - The Asphalt Handbook.
- B. The Asphalt Institute - Manual MS-13 - Asphalt Surface Treatments and Asphalt Penetration Macadam.
- C. ASTM D946 - Penetration-Graded Asphalt Cement for Use in Pavement Construction.

1.05 PERFORMANCE REQUIREMENTS

- A. Paving: Designed for movement of trucks up to 30,000 lbs.

1.06 QUALITY ASSURANCE

- A. Perform work in accordance with The Asphalt Institute Manual MS-4 and State of Utah (UDOT) Highway Standards.
- B. Mixing Plant: Conform to State of Utah (UDOT) Standards.
- C. Obtain materials from same source throughout.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable Utah construction code for paving work.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Do not place asphalt when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Asphalt Cement: ASTM D946.
- B. Aggregate for Binder Course Mix: State of Utah (UDOT) Highway Standard.
- C. Fine Aggregate: (Sand) State of Utah (UDOT) Highway Standard.
- D. Mineral Filler: Finely ground particles of limestone, hydrated lime or other mineral dust, free of foreign matter.

2.02 ACCESSORIES

- A. Primer: Homogeneous, medium curing, liquid asphalt.

2.03 ASPHALT PAVING MIX

- A. Use dry material to avoid foaming. Mix uniformly.
- B. Surface Course: 6 percent of asphalt cement by weight in mixture in accordance with Asphalt Institute Manual MS-4 and State of Utah (UDOT) Highway Standard.

2.04 SOURCE QUALITY CONTROL

- A. Provide mix design for asphalt.
- B. Submit proposed mix design of each class of mix for review prior to commencement of work.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify base conditions.
- B. Verify that compacted granular base is dry and ready to support paving and imposed loads.
- C. Verify gradients and elevations of base are correct.

3.02 PREPARATION - PRIMER

- A. Apply primer in accordance with manufacturer's instructions.
- B. Use clean sand to blot excess primer.

3.03 PLACING ASPHALT PAVEMENT - SINGLE COURSE

- A. Place asphalt within 24 hours of applying primer coat.
- B. Place to 3 inch compacted thickness over 6 inch base course.
- C. Compact pavement by steel wheel rolling. Do not displace or extrude pavement from position. Hand compact in areas inaccessible to rolling equipment.
- D. Develop rolling with consecutive passes to achieve even and smooth finish, without roller marks.

3.04 SMOOTHNESS TEST

- A. Surface to show no deviations in excess of 1/8" when tested with 10' straightedge applied parallel with and at right angles to center line of paved area. Deviations to be corrected by removing

material and replacing with new material or reworking existing material and compacting as directed.

- B. Straightedge testing by contractor in presence of Architect to demonstrate conformance with smoothness requirements.

3.05 RAINAGE TESTS

- A. At completion of paving work contractor shall test all new paved areas for positive drainage by flooding with water. Mark and bring up to grade when surface is dry any ponds, "birdbaths", or depressed areas.

3.06 PROTECTION

- A. After final rolling no vehicular traffic shall be allowed for at least 8 hours or until pavement has cooled to atmospheric temperature and hardened.

3.07 SAMPLING

- A. Sampling for pavement thickness and density will be performed by Contractor without cost to Owner.
- B. Contractor shall replace pavement where samples are removed at his expense.
- C. No payment will be made for areas deficient in composition, density, or thickness until area is removed and replaced by contractor as directed by Architect. At least one core sample shall be taken in each paved area and roadway; one core sample for each 1,000 sq. yds, as requested by Architect. Test shall be taken in Architect's presence.

3.08 PATCHING EXISTING PAVEMENTS

- A. If existing road paving has been cut or disturbed by trenching, etc., and around new building, alligatoring or damaged spots in pavement are to be repaired or replaced to make pavement whole or equal to original pavement prior to disturbing; repair cracks or holes in existing paving.

3.09 INSPECTION OF PLANT AND EQUIPMENT

- A. Architect shall have access to all parts of paving plant for checking adequacy of equipment in use, inspecting operation of plant, verifying weights, proportions, character of materials, and checking temperatures being maintained in mixture preparations.

3.10 WEATHER LIMITATIONS

- A. Temperature shall not be below 50 degrees F. If below 50 degrees F., contractor shall protect by approved methods all areas of completed work against detrimental freezing.
- B. Completed areas damaged by freezing, rainfall, or other weather conditions must be brought to satisfactory condition by contractor without additional cost to Owner.

3.11 TOLERANCES

- A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.
- B. Scheduled Compacted Thickness: Within 1/4 inch.
- C. Variation from True Elevation: Within 1/2 inch.

3.12 PROTECTION

- A. Immediately after placement, protect pavement from mechanical injury for 7 days.

3.13 GUARANTEE

- A. Contractor to guarantee asphaltic paving against settling, breakup, chuckholes, alligating, and other defects for two years from date of Substantial Completion Certificate. Repairs or replacements as directed by architect at no cost to Owner.
- B. All materials, mixed, and workmanship to be subject to UDOT materials lab approval; submit information and samples when requested.

END OF SECTION

SECTION 03100

CONCRETE FORMWORK

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.
- B. Openings for other work.
- C. Form accessories.
- D. Form stripping.

1.02 PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

- A. Section 03300 - Cast-In-Place Concrete: Supply of concrete accessories for placement by this Section.
- B. Section 15400: Supply of mechanical items for placement by this Section.
- C. Section 16400: Supply of electrical items for placement by this Section.

1.03 RELATED SECTIONS

- A. Section 03200 - Concrete Reinforcement.
- B. Section 03300 - Cast-in-Place Concrete.

1.04 REFERENCES

- A. ACI 347 - Recommended Practice For Concrete Formwork.
- B. PS-1 - Construction and Industrial Plywood.

1.05 DESIGN REQUIREMENTS

- A. Design, engineer and construct formwork, shoring and bracing to conform to design and code requirements; resultant concrete to conform to required shape, line and dimension.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 347.
- B. Maintain one copy of each document on site.

1.07 QUALIFICATIONS

- A. Design formwork under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed at the place where the Project is located in the State of Utah.

1.08 REGULATORY REQUIREMENTS

- A. Conform to applicable code for design, fabrication, erection and removal of formwork.

1.09 COORDINATION

- A. Coordinate work under provisions of GENERAL CONDITIONS.
- B. Coordinate this Section with other Sections of work which require attachment of components to formwork.
- C. If formwork is placed after reinforcement resulting in insufficient concrete cover over reinforcement, request instructions from Architect/Engineer before proceeding.

PART 2 PRODUCTS

2.01 WOOD FORM MATERIALS

- A. Form Materials: At the discretion of the Contractor.
- B. Lumber: Pine species; construction grade; with grade stamp clearly visible.

2.02 FORMWORK ACCESSORIES

- A. Form Ties: Snap-off type, galvanized] metal, fixed length, free of defects that could leave holes larger than one inch in concrete surface.
- B. Form Release Agent: Colorless mineral oil which will not stain concrete, absorb moisture, impair natural bonding, or color characteristics of coating intended for use on concrete.
- C. Corners: Filleted wood strip type; 3/4 x 3/4 inch size; maximum possible lengths.
- D. Nails, Spikes, Lag Bolts, Through Bolts, Anchorages: Sized as required, of sufficient strength and character to maintain formwork in place while placing concrete.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with Drawings.

3.02 EARTH FORMS

- A. Earth forms are not permitted.

3.03 ERECTION - FORMWORK

- A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.
- B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.
- C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.
- D. Align joints and make watertight. Keep form joints to a minimum.
- E. Obtain approval before framing openings in structural members which are not indicated on Drawings.
- F. Provide fillet strips on external corners.

3.04 APPLICATION - FORM RELEASE AGENT

- A. Apply form release agent on formwork in accordance with manufacturer's recommendations.
- B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.
- C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are effected by agent. Soak inside surfaces untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.05 INSERTS, EMBEDDED PARTS, AND OPENINGS

- A. Provide formed openings where required for items to be embedded in or passing through concrete work.
- B. Locate and set in place items which will be cast directly into concrete.
- C. Coordinate work of other Sections in forming and placing openings, slots, reglets, recesses, chases, sleeves, bolts, anchors, and other inserts.
- D. Position recessed anchors for block masonry anchors to spacing and intervals specified in Section 04300.
- E. Install accessories in accordance with manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.

3.06 FORM CLEANING

- A. Clean and remove foreign matter within forms as erection proceeds.
- B. Clean formed cavities of debris prior to placing concrete.
- C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.
- D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts or water to clean out forms, unless formwork and concrete construction proceed within heat enclosure. Use compressed air or other means to remove foreign matter.

3.07 FORMWORK TOLERANCES

- A. Construct formwork to maintain tolerances required by ACI 301.

3.08 FIELD QUALITY CONTROL

- A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

3.09 FORM REMOVAL

- A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and impose loads.
- B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.
- C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

D. Rub all exposed concrete.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Reinforcing steel bars, wire fabric and accessories for cast-in-place concrete.

1.02 RELATED SECTIONS

- A. Section 03100 - Concrete Formwork.
- B. Section 03300 - Cast-in-Place Concrete.
- C. Section 03346 - Concrete Floor Finishing: Reinforcement for concrete floor toppings.

1.03 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 318 - Building Code Requirements For Reinforced Concrete.
- C. ACI - American Concrete Institute - Detail Manual.
- D. ANSI/ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.
- E. ANSI/ASTM A184 - Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
- F. ANSI/ASTM A185 - Welded Steel Wire Fabric for Concrete Reinforcement.
- G. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.
- H. CRSI - Concrete Reinforcing Steel Institute Manual of Practice.
- I. CRSI - Recommended Practice For Placing Reinforcing Bars.
- J. CRSI - Recommended Practice For Placing Bar Supports, Specifications and Nomenclature.

1.04 SUBMITTALS

- A. Submit under provisions of GENERAL CONDITIONS.
- B. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.
- C. Manufacturer's Certificate: Certify that products meet or exceed specified requirements.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with ANSI/ASTM A184.
- B. Maintain one copy of each document on site.
- C. Provide Architect/Engineer with access to fabrication plant to facilitate inspection of reinforcement. Provide notification of commencement and duration of shop fabrication in sufficient time to allow inspection.

1.06 QUALIFICATIONS

- A. Design support of reinforcement under direct supervision of a Professional Structural Engineer experienced in design of this work and licensed in the State of Utah.

1.07 COORDINATION

- A. Coordinate work under provisions of GENERAL CONDITIONS.
- B. Coordinate with placement of formwork, formed openings and other Work.

PART 2 PRODUCTS

2.01 REINFORCEMENT

- A. Reinforcing Steel: ASTM A615, 60 ksi yield grade; deformed billet steel bars, plain finish. Splices shall be lapped a minimum 30 bar diameters or 1'-6" minimum and 40 bar diameters for foundation dowels to masonry walls.
- B. Reinforcing Steel Mat: A615, 60 ksi yield grade; steel bars.
- C. Welded Steel Wire Fabric: ASTM A185 Plain Type; in coiled rolls and flat mats, see drawings; plain finish.

2.02 ACCESSORY MATERIALS

- A. Tie Wire: Minimum 16 gage annealed type.
- B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions

2.03 FABRICATION

- A. Fabricate concrete reinforcing in accordance with ANSI/ASTM A184.
- B. Locate reinforcing splices not indicated on Drawings, at point of minimum stress. Review location of splices with Architect/Engineer.

PART 3 EXECUTION

3.01 PLACEMENT

- A. Place, support and secure reinforcement against displacement. Do not deviate from required position.
- B. Accommodate placement of formed openings.
- C. Maintain concrete cover around reinforcing as follows:

Item	Coverage
Walls (exposed to weather or backfill)	1-1/2 inch
Footings and Concrete Formed Against Earth	3 inches
Slabs on Fill	1-1/2 inch

- D. Conform to applicable I.B.C. code for concrete cover over reinforcement.

3.02 FIELD QUALITY CONTROL

- A. Field review will be performed under provisions of GENERAL CONDITIONS.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cast-in-place concrete foundation footings and walls.
- B. Slabs on grade, curbs, aprons, etc.
- C. Control, and expansion and contraction joint devices associated with concrete work, including joint sealants.

1.02 PRODUCTS FURNISHED BUT NOT INSTALLED UNDER THIS SECTION

- A. Section 03100 - Concrete Formwork: Placement of formwork.

1.03 RELATED SECTIONS

- A. Section 03100 - Concrete Formwork: Formwork and accessories.
- B. Section 03200 - Concrete Reinforcement.
- C. Section 03346 - Concrete Floor Finishing.

1.04 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.
- B. ACI 302 - Guide for Concrete Floor and Slab Construction.
- C. ACI 305R - Hot Weather Concreting.
- D. ACI 306R - Cold Weather Concreting.
- E. ACI 308 - Standard Practice for Curing Concrete.
- F. ACI 3 Building Code Requirements for Reinforced Concrete.
- G. ASTM C33 - Concrete Aggregates.
- H. ASTM C94 - Ready-Mixed Concrete.
- I. ASTM C150 - Portland Cement.
- J. ASTM C260 - Air Entraining Admixtures for Concrete.

1.05 PROJECT RECORD DOCUMENTS

- A. Submit under provisions of GENERAL CONDITIONS.
- B. Accurately record actual locations of embedded utilities and components which are concealed from view.

1.06 QUALITY ASSURANCE

- A. Perform Work in accordance with ACI 301.

- B. Maintain one copy of each document on site.
- C. Acquire cement and aggregate from same source for all work.
- D. Conform to ACI 305R when concreting during hot weather.
- E. Conform to ACI 306R when concreting during cold weather.

1.07 FIELD SAMPLES

- A. Provide under provisions of GENERAL CONDITIONS. Coordinate with Section 03100.
- B. Sample Panel: Sufficient size to indicate special treatment or finish required.
- C. Accepted sample panel is considered basis of quality for the finished work. Keep sample panel exposed to view for duration of concrete work.
- D. Accepted sample may not remain as part of the work.

1.08 COORDINATION

- A. Coordinate work under provisions GENERAL CONDITIONS.
- B. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

PART 2 PRODUCTS

2.01 CONCRETE MATERIALS

- A. Cement: ASTM C150, Type II - Normal manufactured by Portland Cement Co.
- B. Fine and Coarse Aggregates: ASTM C33.
- C. Water: Clean and not detrimental to concrete.

2.02 ACCESSORIES

- A. Non-Shrink Grout: Premixed compound consisting of nonmetallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of 2,000 psi in 48 hours.

2.03 JOINT DEVICES AND FILLER MATERIALS

- A. Joint Filler: ASTM D1751; Asphalt impregnated fiberboard or felt, 1/2 inch thick; tongue and groove profile; manufactured by Celotex.
- B. Construction Joint Devices: Integral galvanized steel; 6 inch thick, formed to tongue and groove profile, knockout holes spaced at 6 inches, ribbed steel spikes with tongue to fit top screed edge.

2.04 CONCRETE MIX

- A. Mix and deliver concrete in accordance with ASTM C94, requiring the concrete supplier to provide concrete to specified performance criteria.
- B. Select proportions for normal weight concrete in accordance with ACI 301 requiring the concrete supplier to provide concrete to specific minimum water/cement ratio.

- C. Provide concrete to the following criteria:
 - 1. Compressive Strength 28 days: Foundations: 3,000 psi; W/C = 0.50; Floor Slabs: 4,000 psi, W/C = 0.45.
 - 2. Slump: 2 to 3 inches.
 - 3. Use 6 bag mix for 3,000 psi and 6-1/2 bag mix for 4,000 psi.
 - 4. Aggregates: 3/4" per C33.
 - 5. Exterior concrete is to be air-entrained with 6-1/2% plus or minus 1-1/2% air per C260.
- D. Use accelerating admixtures in cold weather only when approved by Architect/Engineer. Use of admixtures will not relax cold weather placement requirements.
- E. Use calcium chloride only when approved by Architect/Engineer.
- F. Use set retarding admixtures during hot weather only when approved by Architect/Engineer.
- G. Add air entraining agent to normal weight concrete mix for work exposed to exterior.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify site conditions under provisions of GENERAL CONDITIONS.
- B. Verify requirements for concrete cover over reinforcement. See drawings.
- C. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.02 PREPARATION

- A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.
- B. In locations where new concrete is dowelled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with nonshrink grout.

3.03 PLACING CONCRETE

- A. Place concrete in accordance with ACI 304, ACI 301 and ACI 318.
- B. Notify Architect/Engineer minimum 24 hours prior to commencement of operations.
- C. Ensure reinforcement, inserts, embedded parts, formed joint fillers are not disturbed during concrete placement.
- D. Install joint fillers, primer and sealant in accordance with manufacturer's instructions.
- E. Separate slabs on grade from vertical surfaces with 1/2 inch thick joint filler.
- F. Extend joint filler from bottom of slab to within 1/4 inch of finished slab surface.
- G. Install joint devices in accordance with manufacturer's instructions.
- H. Install construction joint device in coordination with floor slab pattern placement sequence. Set top to required elevations. Secure to resist movement by wet concrete.
- I. Install joint device anchors. Maintain correct position to allow joint cover flush with floor and

wall finish.

- J. Install joint covers in one piece or longest practical length, when adjacent construction activity is complete.
- K. Maintain records of concrete placement. Record date, location, quantity, air temperature, and test samples taken.
- L. Place concrete continuously between predetermined expansion, control, and construction joints.
- M. Do not interrupt successive placement; do not permit cold joints to occur.
- N. Place floor slabs in checkerboard pattern indicated.
- O. Screed slabs on grade level, maintaining surface flatness of maximum 1/8 inch in 10 ft and provide slope to floor drains as shown on drawings.
- P. Tooled joints in walls are to be 1/2" maximum width and depth.

3.04 CONCRETE FINISHING

- A. Provide formed vertical concrete surfaces to be left exposed with smooth rubbed or sand float finish.
- B. Finish concrete floor surfaces to requirements of Section 03346.
- C. Wood float surfaces which will receive ceramic tile with full bed setting system.
- D. Steel trowel surfaces which are scheduled to be exposed.
- E. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at 1/8 inch per foot nominal as indicated on Drawings.
- F. Broom finish all exterior walks.

3.05 CURING AND PROTECTION

- A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
- B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
- C. Cure floor surfaces in accordance with ACI 308.
- D. Spraying: Spray water over floor slab areas and maintain wet for 7 days.

3.06 FIELD QUALITY CONTROL

- A. The Owner will employ a testing agency as recommended by the Architect.
- B. Provide free access to Work and cooperate with appointed firm.
- C. Submit proposed mix design of each class of concrete to inspection and testing firm and structural engineer for preview prior to commencement of work.
- D. Tests of cement and aggregates may be performed to ensure conformance with specified requirements.

- E. Three concrete test cylinders will be taken for every 10 cu. yds. of each class of concrete placed. Testing lab shall be selected by Architect. Owner will pay for tests except for retesting when defective concrete is detected.
- F. One additional test cylinder will be taken during cold weather concreting, cured on on job site under same conditions as concrete it represents.
- G. One slump test will be taken for each set of test cylinders taken.

3.07 PATCHING

- A. Allow Architect/Engineer to inspect concrete surfaces immediately upon removal of forms.
- B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Architect/Engineer upon discovery.
- C. Patch imperfections as directed.

3.08 DEFECTIVE CONCRETE

- A. Defective Concrete: Pitting, spalling, or cracking concrete or concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.
- B. Repair or replacement of defective concrete will be determined by the Architect/Engineer.
- C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

3.09 SCHEDULE - CONCRETE TYPES AND FINISHES

- A. Foundation Walls: 3,000 psi 28 day concrete, form finish with honeycomb filled surface and rubbed exposed surfaces.
- B. Concrete Slabs on Grade: 4,000 psi 28 day concrete. Steel and wood trowel finishes depending on floor covering (ceramic tile) or exposed concrete.

3.10 TWO (2) YEAR WRITTEN GUARANTEE

- A. Provide two year written guarantee to Owner in form approved by architect to promptly remove and/or repair concrete as directed by architect at contractor's expense. New replacement work to carry similar two-year written guarantee. Guarantee shall start from date of Substantial Completion.

END OF SECTION

SECTION 03346

CONCRETE FLOOR FINISHING

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Finishing slabs on grade.
- B. Surface treatment with sealer.

1.02 RELATED SECTIONS

- A. Section 03300 - Cast-in-Place Concrete: Prepared concrete floors ready to receive finish.
- B. Section 03300 - Cast-in-Place Concrete: Control and formed expansion and contraction joints and joint devices.

1.03 REFERENCES

- A. ACI 301 - Structural Concrete for Buildings.

1.04 SUBMITTALS

- A. Manufacturer's Installation Instructions: Indicate criteria for preparation and application.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, protect and handle products under provisions of GENERAL CONDITIONS.
- B. Deliver materials in manufacturer's packaging including application instructions.

PART 2 PRODUCTS

2.01 COMPOUNDS - HARDENERS AND SEALERS

- A. Chemical Sealer: Clear Spray type; TK26EUV manufactured by Tri-Kote.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify site conditions under provisions of GENERAL CONDITIONS.
- B. Verify that floor surfaces are acceptable to receive the Work of this Section.

3.02 FLOOR FINISHING

- A. Finish concrete floor surfaces in accordance with ACI 301.
- B. Wood float surfaces which will receive ceramic tile with full bed setting system.
- C. Steel trowel surfaces which are scheduled to be exposed.
- D. In areas with floor drains, maintain floor elevation at walls; pitch surfaces uniformly to drains at

1/8 inch per foot nominal as indicated on Drawings.

3.03 FLOOR SURFACE TREATMENT

- A. Apply sealer in accordance with manufacturer's instructions on scheduled floor surfaces.

3.04 TOLERANCES

- A. Maximum Variation of Surface Flatness For Exposed Concrete Floors: 1/16 inch in 10 ft.

END OF SECTION

SECTION 06001

CARPENTRY WORK

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Rough carpentry and finish carpentry work. Refer to Schedule located at the end of this Section.

1.02 RELATED WORK

- A. Setting anchorage in stud walls for work of this Section.
- B. Job layout and supervision of trades thru project.
- C. Section 08712 - Hardware: Supply of cabinet hardware as required for this Section.
- D. Section 09900 - Painting: Site finishing of finish carpentry and cabinetwork.

1.03 QUALITY ASSURANCE

- A. Rough Carpentry Lumber: Visible grade stamp, of agency certified by National Forest Products Association (NFPA).

1.04 SUBMITTALS

- A. Submit shop drawings under provisions of GENERAL CONDITIONS.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store indoors, in ventilated areas with a constant, minimum temperature of 60 degrees F, maximum relative humidity of 25 to 55 percent.

PART 2 PRODUCTS

2.01 ROUGH CARPENTRY MATERIALS

- A. Lumber: PS 20; graded in accordance with established Grading rules; maximum moisture content of 6 percent; of following species and grades:
 - 1. Light Framing and Miscellaneous Blocking: Stress group Douglas Fir, Larch; No. 2 grade.
- B. Nails, Spikes and Staples: Galvanized for exterior locations, high humidity locations and treated wood; plain finish for other interior locations; size and type to suit application.
- C. Bolts, Nuts, Washers, Lags, Pins and Screws: Medium carbon steel; sized to suit application, galvanized for exterior locations, high humidity locations and treated wood; plain finish for other interior locations.
- D. Fasteners: Toggle bolt type for anchorage to hollow masonry. Expansion shield and lag bolt type for anchorage to solid masonry or concrete. Bolts or power activated type for anchorage to steel.
- E. Exposed Boards: Provide lumber with 19 percent maximum moisture content and any of the following species and grades:
 - 1. Species and Grade: Eastern white pine, D Select per NELMA or NLGA rules.
 - 2. Species and Grade: Western or Idaho white pine, Choice per NLGA or WWPA rules.

- F. Waferboard (OSB): Comply with and factory mark each panel according to ANSI A208.1. Provide thickness indicated.
- G. Fasteners: Size and type indicated. Where miscellaneous carpentry is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners with a hot-dip zinc coating per ASTM A153 or of Type 304 stainless steel.
 - 1. Power-Driven Fasteners: CABO NER-272.

PART 3 EXECUTION

3.01 SCHEDULE

- A. Rough Carpentry Work:
 - 1. Building layout and supervision.
 - 2. Structural and non-structural concrete form work.
 - 3. Framing and furring for wall finishes and stud walls and roof.
 - 4. Miscellaneous furring and blocking.
 - 5. Behind wall wood blocking.
 - 6. Setting and installation of metal doors, frames and hardware.

END OF SECTION

SECTION 06112

FRAMING AND SHEATHING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Wall and roof framing and sheathing.
- B. Preservative treatment of wood.

1.02 RELATED WORK

- A. Section 03300 - Cast-In-Place Concrete: Setting anchors in concrete.

1.03 REFERENCES

- A. ALSC - American Lumber Standards Committee: Softwood Lumber Standards.
- B. APA - American Plywood Association.
- C. AWWA - American Wood Preservers' Association: Book of Standards.
- D. NFPA - National Forest Products Association.
- E. WCLIB - West Coast Lumber Inspection Bureau: Standard Grading Rules for West Coast Lumber.
- F. WWPA - Western Wood Products Association.

1.04 QUALITY ASSURANCE

- A. Lumber Grading Agency: Certified by ALSC.
- B. Plywood Grading Agency: Certified by APA.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Store and protect products under provisions of GENERAL CONDITIONS.

PART 2 PRODUCTS

2.01 LUMBER MATERIALS

- A. Lumber Grading Rules: NFPA, WWPA.
- B. Non-structural Light Framing: Douglas Fir species, #2 grade, 2" and better size classification, 19 percent maximum moisture content.

2.02 SHEATHING MATERIALS

- A. Wall Sheathing: APA Structural I, Grade C-D; sanded, or OSB.

2.03 ACCESSORIES

- A. Fasteners: Hot-dipped galvanized steel for exterior, high humidity, and treated wood locations; plain finish elsewhere; size and type to suit condition.

B. Drywall Screws: Bugle head, steel, power driven type length of three times thickness of sheathing.

C. Building Paper: No. 15 asphalt felt.

2.04 WOOD TREATMENT

A. Wood Preservative (Surface Application): Clear, type; manufactured by 'Penta'.

PART 3 EXECUTION

3.01 SITE APPLIED WOOD TREATMENT

A. Brush apply one coat of preservative treatment on wood in contact with cementitious materials.

B. Apply preservative treatment in accordance with manufacturer's instructions.

C. Treat site-sawn ends.

D. Allow preservative to cure prior to erecting members.

3.02 SHEATHING

A. Secure roof sheathing perpendicular to steel framing members with ends staggered. Secure sheet edges over firm bearing. Provide solid edge blocking between sheets.

B. Secure wall sheathing vertically perpendicular to wall studs, with ends staggered, over firm bearing.

C. Install sheathing to combination single and two span continuous, random with 2 foot minimum length.

3.03 TOLERANCES

A. Framing Members: 1/4 inch maximum from true position.

END OF SECTION

SECTION 07514

SINGLE PLY ROOFING SYSTEM (TPO)

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Cleaning deck surface.
- B. Roofing with base flashings.

1.02 RELATED SECTIONS

- A. Section 06001 - Carpentry Work: Wood nailers.
- B. Section 06112 - Framing and Sheathing
- C. Section 07620 - Sheet Metal Flashing and Trim: Weather protection to base flashings.

1.03 REFERENCES

- A. ASTM D6878 - Single ply roofing.
- B. FS HH-I-526 - Insulation Board, Thermal (Mineral Fiber).
- C. NRCA - Roofing and Waterproofing Manual.
- D. UL - Fire Hazard Classifications.

1.04 SYSTEM DESCRIPTION

- A. Single ply Roofing System: Mechanically fastened over approved insulation and tapered rigid insulation.
- B. Manufacturer's Specification Designation: TPO

1.05 SYSTEM PERFORMANCE

- A. Roofing System: Arrest water migration from entering building through the roof membrane.

1.06 SUBMITTALS

- A. Submit product data indicating TOP membrane, base flashing materials, and insulation.
- B. Submit manufacturer's installation instructions.
- C. Submit manufacturer's 10-year minimum guarantee that products meet or exceed specified requirements.

1.07 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum five years documented experience.
- B. Applicator: Company specializing in applying bituminous roofing with minimum three years experience and approved by materials manufacturer.
- C. Work of this Section to conform to NRCA Roofing and Waterproofing Manual and manufacturer's

Color

White

2.04 CANTS

- A. Fiber Cant and Tapered Edge Strips: Asphalt impregnated wood fiberboard, preformed to 45 degrees angle.

2.05 ACCESSORIES

- A. Mechanical Fasteners for Insulation and Membrane: Appropriate for purpose intended and approved by Factory Mutual; length required for thickness of material; with metal washers; 3" x 3" square min.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and site conditions are ready to receive work.
- B. Verify that deck is supported and secured.
- C. Verify that deck is clean and smooth, free of depressions, waves, or projections, properly sloped to drains.
- D. Verify that deck surfaces are dry and free of snow or ice.
- E. Verify that roof openings, curbs, pipes, sleeves, ducts, and vents through roof are solidly set, and wood cant strips, wood nailing strips, and reglets are in place.
- F. Beginning of installation means installer accepts existing surfaces and substrate.

3.02 PROTECTION

- A. Protect building surfaces against damage from roofing work.

3.03 MEMBRANE APPLICATION

- A. Apply roofing membrane over tapered insulation and deck surface and mechanically fasten per manufacturer's instructions.
- B. Apply membrane smooth, free from air pockets, wrinkles, fishmouths, lap joints, or tears.
- C. Extend membrane up cant strips a minimum of 12 inches onto vertical surfaces and mechanically fasten to parapet or mechanical curbing.
- D. Apply manufacturer's recommended walking pads per layout shown on roof plan for access to mechanical equipment.

3.04 FLASHINGS AND ACCESSORIES

- A. Apply flexible base flashings to seal membrane to vertical elements.
- B. Coordinate installation of related flashings.

3.05 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed under provisions of GENERAL CONDITIONS and Section 01400, QUALITY CONTROL, by Architect and manufacturer's representative at time of installation. Installation is to conform to manufacturer's requirements.

B. Correct identified defects or irregularities.

3.06 MANUFACTURER'S FIELD SERVICES

A. Provide manufacturer's field services.

B. Require site attendance of roofing materials manufacturers during installation of the work.

3.07 CLEANING

A. Repair or replace defaced or disfigured finishes and membrane caused by work of this Section.

3.10 PROTECTION

A. Where traffic must continue over finished roof installation, limit traffic to manufacturer's recommended walking pads; protect surfaces.

END OF SECTION

SECTION 07620

SHEET METAL FLASHING AND TRIM
(Prefinished)

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Fascias and soffits.
- B. Roof flashings.
- C. Counterflashings at flues and vent stacks.

1.02 RELATED WORK

- A. Section 06001: Wood blocking, nailers, and grounds.
- B. Section 07900 - Joint Sealers.
- C. Section 09900 - Painting: Prime and finish painting.
- D. Section 15000 - Mechanical: Flashing sleeves and collars for mechanical items protruding through roofing membrane.
- E. Section 16000 - Electrical: Flashing sleeves and collars for electrical items protruding through roofing membrane.

1.03 REFERENCES

- A. ASTM A525 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process.
- B. NAAMM - Metal Finishes Handbook.
- C. NRCA (National Roofing Contractors Association) - Roofing Manual.
- D. SMACNA - Architectural Sheet Metal Manual.

1.04 SYSTEM DESCRIPTION

- A. Work of this Section is to physically protect roofing, base flashings, and building components from damage that would permit water leakage to building interior.

PART 2 PRODUCTS

2.01 SHEET MATERIALS

- A. Galvanized Steel: ASTM A525, G90; 22 gage Factory finished core steel. Color to be selected by Architect.

2.02 ACCESSORIES

- A. Fastener: Galvanized steel. Finish exposed fasteners same as flashing metal.
- B. Underlayment: ASTM D266; No. 15 asphalt saturated roofing felt.
- C. Metal Primer.

D. Sealant: Caulk type specified in Section 07900.

2.03 FABRICATION

- A. Form sections true to shape, accurate in size, square, and free from distortion or defects.
- B. Fabricate cleats and starter strips of same material as sheet, minimum 6 inches wide.
- C. Form pieces in longest practical lengths.
- D. Hem exposed edges on underside 1/2 inch; miter and seam corners.
- E. Form material with cover plate seam.
- F. Fabricate corners from one piece with minimum 18 inch long legs; seam or solder for rigidity, seal with sealant.
- G. Fabricate vertical faces with bottom edge formed outward 1/4 inch and hemmed to form drip.

2.04 FINISH

- A. Shop prepare and prime exposed ferrous metal surfaces. See Section 09900.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify roof openings, curbs, pipes, sleeves, ducts, or vents through roof are solidly set, cant strips and reglets in place, and nailing strips located.
- B. Verify membrane termination and base flashings are in place, sealed, and secure.
- C. Beginning of installation means acceptance of existing conditions.

3.02 PREPARATION

- A. Field measure site conditions prior to fabricating work.
- B. Install starter and edge strips, and cleats before starting installation.
- C. Secure flashings in place using concealed fasteners. Use exposed fasteners only in locations approved by Architect/Engineer.
- D. Lap and seal all joints.
- E. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.
- F. Seal metal joints watertight.

3.03 INSTALLATION

- A. Conform to drawing details and standards of industry.

END OF SECTION

SECTION 07631

GUTTERS AND DOWNSPOUTS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Prefinished steel gutters and downspouts.
- B. Precast concrete splash blocks, standard size.

1.02 RELATED SECTIONS

- A. Sloped roofing.
- B. Section 07620 - Sheet Metal Flashing and Trim.
- C. Section 09900 - Painting: Field painting of metal surfaces.

1.03 REFERENCES

- A. ANSI/ASTM A446 - Steel Sheet, Zinc Coated, (Galvanized) by the Hot-Dip Process, structural (Physical) Quality.
- B. ASTM A525 - General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process.
- C. FS O-F-506 - Flux, Soldering, Paste and Liquid.
- D. SMACNA - Architectural Sheet Metal Manual.

1.04 QUALITY ASSURANCE

- A. Conform to SMACNA Manual Drawings for nominal sizing of components for rainfall intensity determined by a storm occurrence of 1 in 5 years.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store products on site under provisions of GENERAL CONDITIONS.
- B. Stack preformed and prefinished material to prevent twisting, bending, or abrasion, and to aid ventilation. Slope to drain.
- C. Prevent contact with materials during storage which may cause discoloration, staining, or damage.

PART 2 PRODUCTS

2.01 MATERIALS

- A. Galvanized Steel: ASTM A525, G9; 24 gage core steel, Prefinished metal; color selected by Architect.

2.02 COMPONENTS

- A. Gutters and Scuppers: (To be built into roof system) SMACNA style profile. See detail on Drawings.

- B. Downspouts with square profile.
- C. Downspout Outlets, Downspout, Support Brackets, Joint Fasteners, and Downspout Header: Profiled to suit gutters and downspouts.
- D. Splash Blocks: Precast concrete type, of size and profiles indicated; minimum 3000 psi at 28 days, with minimum 5 percent air entrainment.]
- E. Downspout Boots: Same material as downspout; match color.

2.03 ACCESSORIES

- A. Anchorage Devices: SMACNA requirements.
- B. Downspout Supports: Brackets to match color of downspouts and gutter.
- C. Protective Backing Paint: Zinc chromate alkyd.
- D. Solder: ANSI/ASTM B32; 50/50 type.

2.04 FABRICATION

- A. Form downspouts with headers of profiles and size indicated.
- B. Field measure site conditions prior to fabricating work.
- C. Fabricate with required connection pieces.
- D. Form sections square, true, and accurate in size, in maximum possible lengths and free of distortion or defects detrimental to appearance or performance. Allow for expansion at joints.
- E. Hem exposed edges of metal.
- F. Seal metal joints.
- G. Fabricate downspout and headers with accessories; solder or seal watertight.

2.05 SHOP FINISHING

- A. Shop prepare and prime exposed ferrous metal surfaces.
- B. Backpaint concealed metal surfaces with protective backing paint to a minimum dry film thickness of 15 mil.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces are ready to receive work and conditions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

- A. Install gutters, downspouts, and accessories in accordance with manufacturer's instructions.
- B. Join lengths with formed seams sealed watertight. Flash and seal downspouts and accessories.

- C. Apply backing paint to metal back surfaces.
- D. Apply bituminous protective backing on surfaces in contact with dissimilar materials.
- E. Seal metal joints watertight.
- F. Connect downspouts to downspout boots system. Seal connection watertight.
- G. Set splash blocks under downspouts.

END OF SECTION

SECTION 07900

JOINT SEALERS

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Preparing sealant substrate surfaces.
- B. Sealant and backing.

1.02 RELATED SECTIONS

- A. Section 07620 - Sheet Metal Flashing: Sealants used in conjunction with metal flashings.
- B. Section 08111 - Standard Steel Door and Window Framing: Sealants used in conjunction with door and window frames.
- C. Section 08800 - Glazing: Sealants used in conjunction with glazing methods.

1.03 REFERENCES

- A. ASTM C790 - Use of Latex Sealing Compounds.
- B. FS TT-S-00227 - Sealing Compound: Elastomeric Type, Multi-Component.

1.04 SUBMITTALS

- A. Submit product data under provisions of GENERAL CONDITIONS.
- B. Submit product data indicating sealant chemical characteristics, performance criteria, limitations, and color availability.

1.05 QUALITY ASSURANCE

- A. Manufacturer: Company specializing in manufacturing the products specified in this Section with minimum 3 years documented experience.
- B. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

1.06 ENVIRONMENTAL REQUIREMENTS

- A. Do not install solvent curing sealants in enclosed building spaces.
- B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.07 SEQUENCING AND SCHEDULING

- A. Coordinate the work of this Section with all Sections referencing this Section.

1.08 WARRANTY

- A. Provide 3 year warranty.
- B. Warranty: Include coverage of installed sealants and accessories which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.01 SEALANTS

- A. Polysulphide Sealant: FS TT-S-00227, Type II - non-sag, Class A; white color; manufactured by Thiokol; color to match surrounding surfaces.

2.02 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: ANSI/ASTM D1056; round, cell polyethylene foam rod; oversized 30 to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify that surfaces and joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.
- B. Beginning of installation means installer accepts existing surfaces.

3.02 PREPARATION

- A. Clean and prime joints in accordance with manufacturer's instructions.
- B. Remove loose materials and foreign matter which might impair adhesion of sealant.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Perform preparation in accordance with sealant manufacturer's instructions.
- E. Protect elements surrounding the work of this Section from damage or disfiguration.

3.03 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.
- G. Tool joints concave.

3.04 CLEANING AND REPAIRING

- A. Clean work under provisions of GENERAL CONDITIONS.
- B. Clean adjacent soiled surfaces.
- C. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.05 PROTECTION OF FINISHED WORK

- A. Protect finished installation under provisions of GENERAL CONDITIONS.
- B. Protect sealants until cured.

END OF SECTION

SECTION 08111

STANDARD STEEL DOOR AND DOOR FRAMES

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Non-rated doors and frames for hollow metal doors.

1.02 RELATED WORK

- A. Section 08712 - Hardware.
- B. Section 09900 - Painting: Field painting of door frames.

1.03 REFERENCES

- A. ASTM E152 - Methods of Fire Tests of Door Assemblies.
- B. DHI - Door Hardware Institute: The Installation of Commercial Steel Doors and Steel Frames, Insulated Steel Doors in Wood Frames and Builder's Hardware.
- C. SDI-100 - Standard Steel Doors and Frames.
- D. SDI-105 - Recommended Erection Instructions for Steel Frames.

1.04 QUALITY ASSURANCE

- A. Conform to requirements of SDI-100.
- B. Installed frame assembly to conform to NFPA 80 for fire rated class indicated in Door Schedule on Drawings.

1.05 REGULATORY REQUIREMENTS

- A. Conform to applicable construction code.

1.06 SUBMITTALS

- A. Submit shop drawings and product data under provisions of GENERAL CONDITIONS.
- B. Indicate frame configuration, anchor types and spacings, location of cutouts for hardware, reinforcement, and finish.
- B. Indicate door elevations, internal reinforcement and closure method.
- C. Submit manufacturer's installation instructions under provisions of GENERAL CONDITIONS.

1.07 DELIVERY, STORAGE AND PROTECTION

- A. Protect products under provisions of GENERAL CONDITIONS.
- B. Protect frames with resilient packaging sealed with heat shrunk plastic.
- C. Break seal on-site to permit ventilation.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Amweld
- B. Republic
- C. Kewanee
- D. Substitutions: Under provisions of GENERAL CONDITIONS.

2.02 DOORS AND FRAMES

- A. Doors: SDI-100 Grade II, heavy duty, 1-3/4", Level B, full flush composite construction
- B. Interior Frames: 16 gage Thick material, core thickness. To suit grade and model of door.

2.03 DOOR CORE

- A. Core: Impregnated cardboard honeycomb.

2.04 ACCESSORIES

- A. Rubber Silencers Resilient rubber.
- B. Glazing Stops: Rolled steel channel shape, mitered corners; prepared for countersink style tamperproof screws.

2.05 PROTECTIVE COATINGS

- A. Primer: Zinc chromate baked gray primer type.

2.06 FABRICATION

- A. Fabricate frames as welded unit type.
- B. Fabricate frames and doors with hardware reinforcement plates welded in place.
- C. Prepare frame for silencers. Provide three single rubber silencers for single doors on strike side, and two single silencers on frame head.
- D. Attach fire rated label to each frame and door unit called out as label door.
- E. Close top edge flush with inverted steel channel closure. Seal joints watertight.

2.07 FINISH

- A. Primer: Baked on.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install frames in accordance with SDI-105.
- B. Install door in accordance with DHI.
- C. Coordinate with wallboard and wall construction for anchor placement.

- D. Coordinate installation of glass and glazing.
- E. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.

3.02 TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.03 ADJUSTING AND CLEANING

- A. Adjust hardware for smooth and balanced door movement.

END OF SECTION

SECTION 08360

SECTIONAL OVERHEAD DOORS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Electric overhead sectional door.
- B. Steel panels of flush design.
- C. Operating hardware and supports.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

- A. Furnish anchors to Section 06001 - Carpentry Work for placement of wall and structural anchors.

1.03 RELATED WORK

- A. Section 09900 - Painting: Field painting.
- B. Section 16000 - Electrical: Electrical service to disconnect located near door operator.

1.04 REFERENCES

- A. ANSI A216.1 - Section Overhead Type Door.
- B. ANSI/ASTM A446 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Structural (Physical) Quality.
- C. ANSI/ASTM A526 - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Commercial Quality.
- D. NEMA - National Electrical Manufacturer's Association.

1.05 SYSTEM DESCRIPTION

- A. Panels: Rolled pattern steel with top, bottom and side rails; 2 inches thick with insulated core and metal interior side panel.
- B. Standard lift track and hardware.
- C. Electric operation on 120 volt, single phase, 60 Hz service to 1/3 HP 250 Watt motor manually operable in case of power failure, transit time of 12 inches per second, with automatic safety reverse bottom contact edge, hood housing, prefinished.

1.06 QUALITY ASSURANCE

- A. Wind Velocity = 90 mph exp. "C" per 2001 I.B.C.
- B. Manufacturer: Company specializing in overhead door construction with three years minimum experience.
- C. Applicator: Company specializing in installing overhead doors with three years experience, approved by manufacturer.

1.07 REGULATORY REQUIREMENTS

- A. Conform to latest I. B. C. code for motor and motor control requirements.

1.08 SUBMITTALS

- A. Submit shop drawings and product data under provisions of GENERAL CONDITIONS.
- B. Indicate opening dimensions and tolerances, component construction, connections and details, anchorage methods and spacing, hardware and locations, installation details, and electrical requirements.
- C. Submit manufacturer's installation instructions.

1.09 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of GENERAL CONDITIONS.
- B. Include data for motor and transmission, shaft and gearing, lubrication frequency, control adjustments, and spare part sources.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Atlas, Roll-Lite, Model - 24 ga. epoxy primed with (2) coats baked enamel painted panels, and weather seals.
- B. Martin, #MD-20 - 24 ga. epoxy primed with (2) coats baked enamel painted panels, and weather seals.
- C. Overhead Door #420 Series - 24 ga. epoxy primed with (2) coats baked enamel painted panels, and weather seals.
- D. Substitutions: Under provisions of GENERAL CONDITIONS.

2.02 MATERIALS

- A. Sheet Steel: ANSI/ASTM A526; galvanized to 1.25 oz/sq ft roll formed with v-groove for ribbed effect.
- B. Weatherstripping: Resilient vinyl strip at edge, top, bottom, and between each panel.
- C. Metal Primer Paint: Epoxy primer and (2) coats baked on enamel paint.

2.03 COMPONENTS

- A. Panels: Flush steel construction; outer steel sheet of 24 gage thick, galvanized, v-grooved profile; inner steel sheet of 16 gage thick, flat profile; core reinforcement of 16 gage thick sheet steel roll formed to channel Z-shape; rabbeted weather joints at meeting rails.
- B. Track: 13 gage thick by 2 inch wide galvanized rolled steel track, continuous, vertical mounted; galvanized steel mounting brackets, 1/4 inch thick.
- C. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel ball bearing rollers, located at top and bottom of each panel at meeting joint.
- D. Lock: Inside side mounted, adjustable keeper, spring activated latch bar with feature to keep in locked or retracted position; interior handle; lock keyed alike.
- E. Jamb Weatherstripping: Roll formed steel fitted full height of jamb with integral resilient

weatherstripping in moderate contact with door panels.

- F. Lift Mechanism: Torsion spring on cross head shaft, with braided steel lift cables.
- G. Hood: 20 gage thick sheet steel, internally reinforced for stiffening; enclose cross head shaft, top, front, and ends, including chain pulley and motor.
- H. Electric Operator: NEMA Type 1 UL approved motor; side mounted on cross head shaft, adjustable safety friction clutch; brake system actuated by independent voltage solenoid controlled by motor starter; enclosed gear driven limit switch; enclosed magnetic cross line reversing starter, mounting brackets and hardware.
- I. Control Station: Standard three button (open-close-stop) type control for each electric operator; 24 volt circuit; surface mounted. Operating switch located at inside door jamb.
- J. Safety Edge: At bottom of door panel, full width; electromechanical sensitized type, wired to stop door upon striking object; hollow rubber covered to provide weatherstrip seal.

2.04 FINISHES

- A. Precoated Steel: Shop precoated with epoxy primer and (2) coats of baked on enamel coating of standard manufacturer's color selected by Architect.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within limits. Coordinate opening size with metal building contractor.
- B. Beginning of installation means acceptance of existing surfaces.

3.02 PREPARATION

- A. Prepare opening to permit correct installation of door unit and air and vapor barrier seal.
- B. Apply sealer.

3.03 INSTALLATION

- A. Install door unit assembly in accordance with manufacturer's instructions.
- B. Use anchorage devices to securely fasten assembly to wall construction and building framing without distortion or stress.
- C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- D. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.
- E. Coordinate installation of electrical service. Complete wiring from disconnect to unit components.
- F. Coordinate installation of sealants and backing materials at frame perimeter as specified.
- G. Install perimeter trim and closures.

3.04 TOLERANCES

- A. Maintain dimensional tolerances and alignment with adjacent work.

- B. Variation from Plumb: 1/16 inch maximum.
- C. Variation from Level: 1/16 inch maximum.
- D. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch from 10 ft straight edge.

3.05 ADJUSTING AND CLEANING

- A. Adjust door assembly.
- B. Clean doors and frames.
- C. Remove labels and visible markings.

END OF SECTION

SECTION 08712

DOOR HARDWARE

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Hardware for doors.
- B. Thresholds.
- C. Gasketing.

1.02 WORK FURNISHED BUT INSTALLED UNDER OTHER SECTIONS

- A. Furnish templates to Section 08111 - Standard Frames for door and frame preparation.
- B. Furnish door hardware to Section 06001 - Carpentry Work for installation.

1.03 RELATED WORK

- A. Section 06001 - Carpentry Work.
- B. Section 08111 - Standard Frames.

1.04 REFERENCES

- A. ANSI A117.1 - Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People.
- B. ANSI/NFPA 80 - Fire Doors and Windows.
- C. BHMA - Builders' Hardware Manufacturers Association.
- D. DHI - Door and Hardware Institute.
- E. NFPA 101 - Life Safety Code.
- F. SDI - Steel Door Institute.

1.05 COORDINATION

- A. Coordinate work of this Section with other directly affected Sections involving manufacturer of any internal reinforcement for door hardware.

1.06 QUALITY ASSURANCE

- A. Manufacturers: Companies specializing in manufacturing door hardware with minimum three years experience.
- B. Hardware Supplier: Company specializing in supplying commercial door hardware with three years experience and approved by manufacturer.
- C. Hardware Supplier Personnel: Employ a qualified person to assist in the work of this Section.

1.07 REGULATORY REQUIREMENTS

- A. Conform to I. B. C. and A. D. A. for requirements.

- B. Conform to the applicable sections of Chapter 5 of NFPA 101.

1.08 SUBMITTALS

- A. Submit schedule, shop drawings, and product data under provisions of GENERAL CONDITIONS.
- B. Indicate locations and mounting heights of each type of hardware to comply with handicapped and State of Utah standards.
- C. Provide product data on specified hardware.
- D. Submit manufacturer's parts lists, templates, and installation instructions.

1.09 OPERATION AND MAINTENANCE DATA

- A. Submit operation and maintenance data under provisions of GENERAL CONDITIONS.
- B. Include data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.

1.10 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of GENERAL CONDITIONS.
- B. Store and protect products under provisions of GENERAL CONDITIONS.
- C. Package hardware items individually; label and identify package with door opening code to match hardware schedule.
- D. Deliver keys to Owner by security shipment direct from hardware supplier.
- E. Protect hardware from theft by cataloging and storing in secure area.

1.11 WARRANTY

- A. Provide five year warranty.
- B. Warranty: Include coverage of door closers, locksets, cylinders, and hinges.

1.12 MAINTENANCE MATERIALS

- A. Provide special wrenches and tools applicable to each different or special hardware component.
- B. Provide maintenance tools and accessories supplied by hardware component manufacturer.

PART 2 PRODUCTS

2.01 ACCEPTABLE SUPPLIERS

- A. Corbin
- B. Russwin
- C. Sargeant
- D. Substitutions: Under provisions of GENERAL CONDITIONS and Architect approval (5) working days prior to bidding.

2.02 ACCEPTABLE MANUFACTURERS

- A. Hinges: Stanley, Hagar, Corbin.
- B. Latch Sets: Corbin, Russwin, Schlage.
- C. Push/Pulls: Quality, Corbin, Russwin.
- D. Cylinder Locks: Corbin, Russwin, Schlage.
- E. Exit Devices: Corbin, Von Duprin, Russwin.
- F. Closers: LCN, Corbin, Russwin.
- G. Gasketing: Pemko, Stanley, Trimco.
- H. Protection Plates: Quality, Corbin, Trimco.
- I. Substitutions: Under provisions of GENERAL CONDITIONS and Architect approval (5) working days prior to bidding.

2.03 KEYING (Coordinate with building Owner's locking systems and manufacturer.)

- A. Door Locks: Keyed in like-groups and Master keyed to existing building system including construction keying.
- B. Supply 2 keys for each lock.
- C. Supply keys in the following quantities:
 - 1. 2 master keys.
 - 2. 2 construction keys.

2.04 FINISHES

- A. Finishes are identified in Schedule at end of this Section.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that doors and frames are ready to receive work and dimensions are as indicated on shop drawings.
- B. Beginning of installation means acceptance of existing conditions.

3.02 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions.
- B. Use the templates provided by hardware item manufacturer.
- C. Mounting heights for hardware from finished floor to center line of hardware item:
 - 1. Locksets: 40-5/16 inches
 - 2. Push/Pulls: 45 inches
 - 3. Dead Locks: 48 inches
 - 4. Panic Devices: 40-5/16 inches
- D. Conform to ANSI A117.1 for positioning requirements for the handicapped.

3.03 SCHEDULE

- A. Groups of finish hardware shall be furnished and installed complete with all plates, screws, and other accessories to make a complete installation. Hardware specified are taken from the following manufacturer's catalogs.

Locks (Lever type)	Corbin, Russwin, Schlage, Arrow
Hinges	Stanley, Hagar, Corbin
Stops	Glynn Johnson or Quality
Closers	Dorma, LCN, Corbin (set at 5 to 8 lbs. pressure)
Miscellaneous	As called for on Schedule

Hardware of equal quality, function, and finish as manufactured by Best or Sargeant will be accepted.

NOTE: See Door Hardware groups specified on the drawings schedule Sheet #A-6.

END OF SECTION

SECTION 09260

GYPSUM BOARD SYSTEMS

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Stud wall framing (if use of non-load bearing metal studs).
- B. Gypsum board.
- C. Taped and sanded joint treatment.

1.02 RELATED WORK

- A. Section 06112 - Framing and Sheathing
- B. Section 08111 - Standard Steel Door Frames.
- C. Section 09900 - Painting: Surface finish.

1.03 REFERENCES

- A. ANSI/ASTM C36 - Gypsum Wallboard.
- B. ANSI/ASTM C475 - Joint Treatment Materials for Gypsum Wallboard Construction.
- C. ANSI/ASTM C754 - Installation of Framing Members to Receive Screw Attached Gypsum Wallboard, Backing Board, or Water Resistant Backing Board.
- D. GA-201 - Gypsum Board for Walls and Ceilings.
- E. GA-216 - Recommended Specifications for the Application and Finishing of Gypsum Board.

1.04 QUALITY ASSURANCE

- A. Applicator: Company specializing in gypsum board systems work with three years experience.

1.05 REGULATORY REQUIREMENTS

- A. Conform to local City code for fire rated assemblies.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - GYPSUM BOARD SYSTEM

- A. U. S. Gypsum Co.
- B. Other acceptable manufacturers offering equivalent products:
 - 1. Georgia Pacific.
 - 2. National Gypsum.
- C. Substitutions: Under provisions of GENERAL CONDITIONS.

2.02 FRAMING MATERIALS

- A. Studs: Load bearing, wood; structural grade. See Section 0600.

- B. Fasteners: ANSI/ASTM C646.

2.03 GYPSUM BOARD MATERIALS

- A. Standard Gypsum Board: ANSI/ASTM C36; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.
- B. Fire Rated Gypsum Board: ANSI/ASTM C36; fire resistive type, UL rated; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges. Ceilings and walls down to top of ceramic tile.

2.04 ACCESSORIES

- A. Corner Beads: Metal.
- B. Edge Trim: GA 201 and GA 216 bead.
- C. Joint Materials: ANSI/ASTM C475; reinforcing tape, joint compound, adhesive, water, and fasteners.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that site conditions are ready to receive work and opening dimensions are as indicated on drawings.
- B. Beginning of installation means acceptance of existing surfaces and substrate.

3.02 METAL STUD INSTALLATION (Option for non-load bearing only)

- A. Install studding in accordance with ANSI/ASTM C754.
- B. Metal Stud Spacing: 16 inches on center.
- C. Partition Heights: Varies above finished floors.
- D. Door Opening Framing: Install double studs at door frame jambs. Install stud tracks on each side of opening, at frame head height, and between studs and adjacent studs.
- E. Blocking: Bolt or screw steel channels to studs. Install blocking for support of plumbing fixtures, toilet partitions, wall cabinets, toilet accessories, and hardware. Wood is to be fire treated.
- F. Coordinate installation of bucks, anchors, blocking, electrical and mechanical work placed in or behind partition framing.
- G. Metal stud latch seismic bracing from top of wall to underside of deck or top chord of roof joists at 8'-0" front corners and 8'-0" o.c.

3.03 CEILING FRAMING INSTALLATION

- A. Install in accordance with ANSI/ASTM C754.
- B. Coordinate location of hangers with other work.
- C. Install ceiling framing dependent bearing on walls, columns, and above-ceiling work.
- D. Reinforce openings in ceiling system which interrupt main carrying channels or furring channels, with lateral channel bracing. Extend bracing minimum 24 inches past each end of openings.

3.04 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with manufacturer's instructions.
- B. Erect single layer fire rated gypsum board horizontally (long dimension at right angles to framing members) with edges and ends occurring over firm bearing on both walls and ceilings.
- C. Use screws when fastening gypsum board to metal furring or ceiling framing and metal studs.
- D. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abutts dissimilar materials as indicated.

3.05 JOINT TREATMENT

- A. Tape, fill, and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- B. Feather coats onto adjoining surfaces so that camber is maximum 1/16 inch.
- C. Taping, filling, and sanding is not required at surfaces behind adhesive applied ceramic tile.

3.06 TOLERANCES

- A. Maximum Variation from True Flatness: 1/8 inch in 10 feet in any direction.

END OF SECTION

SECTION 09900

PAINTING

PART 1 GENERAL

1.01 WORK INCLUDED

- A. Surface preparation.
- B. Surface finish schedule.
- C. Color selection schedule furnished by Architect or Owner.

1.02 REFERENCES

- A. ANSI/ASTM D16 - Definitions of Terms Relating to Paint, Varnish, Laquer, and Related Products.
- B. ASTM D2016 - Test Method for Moisture Content of Wood.

1.03 DEFINITIONS

- A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.04 QUALITY ASSURANCE

- A. Product Manufacturer: Company specializing in manufacturing quality paint and finish products with three years experience.
- B. Applicator: Company specializing in commercial painting and finishing with three years experience.

1.05 REGULATORY REQUIREMENTS

- A. Conform to local code for flame/fuel/smoke rating requirements for finishes.

1.06 SUBMITTALS

- A. Submit product data under provisions of GENERAL CONDITIONS.
- B. Provide product data on all finishing products.
- C. Submit samples for color and product approval prior to commencing work.
- D. Submit two samples 2 X 2 inch in size illustrating range of colors available for each surface finishing product scheduled, for selection.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Deliver products to site under provisions of GENERAL CONDITIONS.
- B. Store and protect products under provisions of GENERAL CONDITIONS.
- C. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
- D. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
- E. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees

F, in well ventilated area, unless required otherwise by manufacturer's instructions.

F. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Provide continuous ventilation and heating facilities to maintain surface and ambient temperatures above 45 degrees F for 24 hours before, during, and 48 hours after application of finishes, unless required otherwise by manufacturer's instructions.
- B. Do not apply exterior coatings during rain or snow, or when relative humidity is above 50 percent, unless required otherwise by manufacturer's instructions.
- C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperature for Varnish and Enamel Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.
- E. Provide lighting level of 80 ft candles measured mid-height at substrate surface.

1.09 EXTRA STOCK

- A. Provide a one gallon container of each color to Owner.
- B. Label each container with color, and room locations, in addition to the manufacturer's label.

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS - PAINT & VARNISH

- A. Kwal Product: Latex and Enamel
- B. Pratt & Lambert Product: Latex and Enamel
- C. Benjamin Moore Product: Latex and Enamel
- D. Substitutions: Under provisions of GENERAL CONDITIONS.

2.02 ACCEPTABLE MANUFACTURERS - PRIMER-SEALERS

- A. Same as Paint Manufacturers

2.03 MATERIALS

- A. Coatings: Ready mix all paint items. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating.
- B. Coatings: Good flow and brushing properties; capable of drying or curing free of streaks or sags.
- C. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2.04 FINISHES

- A. Refer to schedule at end of Section for surface finish and color schedule on Drawings.

PART 3 EXECUTION

3.01 INSPECTION

- A. Verify that surfaces and substrate conditions are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Measure moisture content of surfaces using an electronic moisture meter. Do not apply finishes unless moisture content of surfaces are below the following maximums:
 - 1. Gypsum Wallboard: 12 percent.
- D. Beginning of installation means acceptance of existing surfaces and substrate.

3.02 PREPARATION

- A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces or finishing.
- B. Correct minor defects and clean surfaces which affect work of this Section.
- C. Shellac and seal marks which may bleed through surface finishes.
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.
- E. Gypsum Board Surfaces: Latex fill minor defects. Spot prime defects after repair.
- F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- G. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- H. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.03 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shields, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site daily.

3.04 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Do not apply finishes to surfaces that are not dry.
- C. Apply each coat to uniform finish.
- D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

- E. Sand lightly between coats to achieve required finish.
- F. Allow applied coat to dry before next coat is applied.
- G. Prime back surfaces of interior and exterior woodwork with primer paints.

3.05 CLEANING

- A. As Work proceeds, promptly remove paint where spilled, splashed, or spattered.
- B. During progress of Work maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, cloths, and material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.06 SCHEDULE - EXTERIOR SURFACES

- A. Steel - Shop Primed
 - 1. Touch-up with zinc chromate primer.
 - 2. Two coats alkyd enamel, semi-gloss.

3.07 SCHEDULE - INTERIOR SURFACES

- A. Steel - Primed
 - 1. Touch-up with original primer.
 - 2. Two coats alkyd enamel, semi-gloss.
- B. New Gypsum Board
 - 1. One coat acrylic primer sealer.
 - 2. Two coats acrylic enamel, eggshell.

3.10 SCHEDULE - COLORS

- A. To be scheduled by Architect at a later date.

END OF SECTION

SECTION 16000 - GENERAL PROVISIONS, ELECTRICAL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions and Division 1 Specification Sections apply to work of this section and all other Division 16 specification sections.
- B. This section applies to all Division 16 specification sections.

1.2 SUMMARY

- A. This section includes general administrative and procedural requirements for electrical installations to expand the requirements of the General Conditions and Division 1 Specification Sections.

1.3 STANDARDS

- A. The following industry standards are considered minimum requirements for electrical work and are made a part of the contract documents:
 - 1. National Electrical Code, 2002 Edition (NEC)
 - 2. Electrical Ordinances of Local Governing Authority
 - 3. Local Fire Marshal's Rules and Regulations
 - 4. International Building Code
 - 5. International Fire Code
 - 6. Underwriters Laboratories (UL) Standards
 - 7. American National Standards Institute (ANSI)
 - 8. National Electrical Manufacturer's Association (NEMA)
 - 9. National Fire Protection Association (NFPA) Standards
 - 10. Regulations of American Standards Association
 - 11. Power Company rules governing installation of electrical service.
- B. If any conflict occurs between these rules and the contract documents or between the plans and specifications, notify the Architect promptly in writing. Do not proceed with any work in conflict until a solution is approved in writing by the Architect.

1.4 WORKMANSHIP

- A. All Electrical Work of any nature shall be performed by qualified electricians, experienced in the type of work to be performed and licensed with the State of Nevada. Electricians shall show their license upon request of the Owner, Architect and/or their representatives.

1.5 FEES AND PERMITS

- A. Obtain all necessary fees, permits and inspections in accordance with the General Conditions and Division 1 Specifications. Coordinate requirements with the General Contractor.

1.6 ELECTRICAL WORK INCLUDED

- A. The basic contract work includes all labor, material, tools, transportation, equipment, and superintendence specified, indicated on the drawings or necessary to make a complete installation of, but not limited to, the following:
 - 1. Appliances, apparatus and materials not specifically noted on drawings or mentioned herein, but which are necessary to make a complete working installation of all electrical systems required for the project.
 - 2. Hangers, anchors, sleeves, chases, supports and fittings as may be required and as indicated.

3. Complete electric service with service conduits, service conductors, meter/main breaker, distribution system, branch panels and branch circuits for power and lighting with raceway system and outlet boxes.
4. All luminaries, wall switches, receptacles, etc. as indicated on drawings.
5. Exterior building lighting and controls.
6. Telephone/Data outlets and raceway system, ready for installation of wires by others.
7. Electrical service to heating, ventilating and air conditioning equipment.
8. Safety switches and other wiring necessary to connect electric power to the controls of heating, ventilating and air conditioning equipment.

1.7 SUBSTITUTIONS

- A. Material or products specified by name of manufacturer, brand or trade name or catalogue reference will be the basis of the bid and furnished under the contract unless changed in writing by the Architect. Where two or more materials are named, the choice of these will be optional with the Contractor.
- B. Submit requests for substitution in writing to the Architect, with copy to the Engineer, in accordance with the General Conditions.

1.8 ACCURACY OF DATA

- A. Data given herein and on the drawings are as exact as could be secured, but their absolute accuracy is not guaranteed. Specifications and drawings are for the assistance and guidance of the Contractor.
- B. Electrical drawings are diagrammatic, but will be followed as closely as actual building construction and work of other contractors will permit. All deviations from the drawings required to make the Electrical Work conform to the building as constructed and to the work of other contractors will be made by the Contractor as approved by the Architect.

1.9 VISIT THE SITE

- A. Contractors are assumed to have visited the site and thoroughly acquainted themselves with conditions affecting the proposed work. Verify existing conditions and measurements at the building before beginning work and immediately notify the Architect of any discrepancies.

1.10 TEMPORARY POWER

- A. Provide temporary power for reasonable convenience during construction in accordance with the General Conditions.
- B. Provide GFCI Protection for all temporary power outlets.
- C. Use temporary power for construction purposes only. Do not use temporary power for electric space heating, etc..

1.11 SHOP DRAWING SUBMITTALS

- A. As soon as possible after contract award, submit shop drawings for review in accordance with the General Conditions and Division 1 Specifications.
- B. Submit shop drawings in three ring loose-leaf binder.
- C. Divide Electrical equipment into subsections of common equipment such as wiring devices, lighting fixtures, panelboards, starters, etc.. Provide a complete equipment list at the beginning of each subsection.
- D. Provide manufacturers' catalogue and/or descriptive literature indicating specific model and/or catalog numbers, options, accessories and modifications for the following items:

1. Wiring Devices and Occupancy Sensors
 2. Underfloor duct system
 3. Metering Equipment
 4. Safety Switches
 5. Panelboards
 6. Motor Starters
 7. Light Fixtures and poles
 8. Exterior Lighting Controls
- E. Above list is considered minimum. Additional items may be required to be submitted for review.
- F. Refer to individual Specification Sections for additional Shop Drawing Submittal requirements.

1.12 RECORD DRAWINGS

- A. Provide As-Built Record Drawings in accordance with the General Conditions and Division 1 Specifications.
- B. Indicate location and routing of all underground raceways on the As-Built Record Drawings by dimension to permanent structures such as buildings, sidewalks, curbs, etc.
- C. Indicate all changes made to the drawings such as changes in fixture and outlet location, changes in circuit routing and circuit numbering, etc. Include all changes by Addenda, Change Order, Supplemental Instruction or verbal instruction.
- D. Refer to individual Specification Sections for additional Record Drawing requirements.

1.13 OPERATION AND MAINTENANCE MANUALS

- A. Provide Operation and Maintenance Manuals in accordance with the General Conditions and Division 1 Specifications.
- B. Include manufacturers' catalog and/or descriptive literature of equipment actually installed. Clearly indicate on literature the specific model and/or catalog numbers of equipment installed, including all options, accessories and/or modifications.
- C. All copies of literature will be new, clean and clearly legible. Sheets used for shop drawing submittals with review stamp, remarks, etc., will not be acceptable.
- D. Divide Electrical equipment into subsections of common equipment such as wiring devices, lighting fixtures, panelboards, starters, etc.. Provide a complete equipment list and recommended maintenance schedule at the beginning of each subsection.
- E. Refer to individual Specification Sections for additional Operation and Maintenance Manual requirements.

1.14 WARRANTY

- A. Provide Warranty for Electrical Work in accordance with the General Conditions and Division 1 Specifications.
- B. Provide manufacturer's warranty for all equipment which the manufacturer normally provides a warranty in excess of twelve months. Refer to individual Specification Sections for extended warranty requirements.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. All materials and equipment for which U.L. Standards have been established, will be listed by and bear the label of Underwriters Laboratories, Inc..
- B. All materials will be new and bear the manufacturer's name, trade name and catalog or model numbers. Similar items will be of the same manufacturer.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Installation of materials will comply with all codes and be accomplished with good workmanship in the judgement of the Architect and Engineer.

3.2 COOPERATION WITH OTHER CONTRACTORS

- A. Cooperate with other contractors doing work on the building as may be necessary for the proper execution of the work of various trades employed in construction of the building.
- B. Refer to architectural, structural and mechanical drawings, for construction details, and coordinate the electrical work with that of other contractors to the end that unnecessary delays and conflicts will be avoided.

3.3 MATERIAL HANDLING

- A. Use all means necessary to protect materials before, during and after installation and to protect the installed work and materials of all other trades.
- B. In the event of damage, immediately make all repairs and replacements necessary to the approval of the Architect and at no additional cost to the Owner.

3.4 CUTTING AND REPAIRING

- A. Provide all required digging, cutting, etc. incidental to the Electrical Work. Make required repairs thereafter to the satisfaction of the Architect.
- B. Do not cut into any major structural element, beam or column, without written approval of the Architect.
- C. Install the Electrical Work to proceed with other trades in order to avoid unnecessary cutting of the construction.
- D. Perform all excavating, trenching and backfill required for electrical work in accordance with Division 2 Specifications.

3.5 CONSTRUCTION REVIEW

- A. The Owner, Architect and/or Engineer will perform construction review throughout the construction of the project. The construction review does not relieve the contractor from the responsibility of providing all materials and performing the work in accordance with the Contract Documents.
- B. Notify the Architect in writing, giving ample notice, at the following stages of construction and allow the Owner, Architect and/or Engineer to review the installed work.
 - 1. When underground electrical work is complete, before backfilling, including work under floor slabs.

2. When all electrical rough-in is complete, but not covered.
 3. Pre-Final, upon completion of all electrical work.
 4. Final, upon completion of all items noted in the Pre-Final Construction Review Report.
- C. Test all systems and equipment provided and/or connected under the Contract for short circuits, ground faults, proper neutral connections and proper operation in the presence of the Owner, Architect and/or Engineer.
- D. The entire construction will be installed in accordance with the contract documents and be free of mechanical and electrical defects prior to final acceptance of the work.

END OF SECTION 16000

SECTION 16110 - RACEWAYS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, Division 1 Specification Sections and Section 16000 - General Provisions, Electrical apply to work of this section.

1.2 SCOPE

- A. Provide a complete raceway system for all wiring as shown on the drawings and as specified herein.

PART 2 - PRODUCTS

2.1 RACEWAYS

- A. Provide minimum 3/4" trade diameter raceways for all wiring systems.
 - 1. Type 'AC' Armored Cable or Type 'MC' Metal Clad cable may be used in indoor dry locations only.
- B. Do not use aluminum conduit, intermediate steel conduit (IMC), Flexible Non-metallic Tubing, NM cable, Direct Burial Cable or any other wiring methods not allowed by this specification unless approved in writing by the Architect and/or Engineer.

2.2 ABOVEGROUND RACEWAYS

- A. Provide Electrical Metallic Tubing (EMT), galvanized inside and out, Type AC cable or Type MC cable for raceways not subject to permanent moisture or damage.
- B. Provide Galvanized Rigid Steel Conduit (GRC) where raceways are subject to permanent moisture such as underground, or damage such as vehicular traffic, etc..

2.3 UNDERGROUND RACEWAYS

- A. Provide Schedule 40 PVC electrical conduit in earth or in concrete in contact with earth.
 - 1. Provide a separate ground wire in all PVC conduits, except main electrical service conduits.
 - 2. Provide Galvanized Rigid Steel Conduit (GRC) for all elbows in PVC conduits.
 - 3. Do not use PVC conduit above grade nor for penetrations through structural elements such as foundation walls, floor slabs, etc..
- B. Provide Galvanized Rigid Steel Conduit (GRC) for conduit penetrations through floor slab or grade to extend minimum 12" above floor or grade.
- C. Provide Galvanized Rigid Steel Conduit (GRC) for conduit penetrations through foundation walls to extend minimum 36" beyond the foundation wall.
- D. Corrosion protect all galvanized rigid steel conduit (GRC) installed in earth or in concrete in contact with earth with two (2) half-lapped layers of 0.010" thick approved waterproof PVC tape

equal to Scotch No. 50 or use factory PVC coated rigid steel conduit with all field joints coated after installation.

2.4 FLEXIBLE RACEWAY CONNECTIONS

- A. Provide Flexible Steel Conduit for final connection to lay-in light fixtures, motors and other equipment subject to vibrations or movement, not to exceed 6 feet for fixture connections and 3 feet for motor and equipment connections.
- B. Provide liquid-tight flexible steel conduit outside and in wet, humid, corrosive and oily locations. Provide Sunlight Resistant liquid-tight flexible steel conduit outdoors.
- C. Provide a ground conductor in all flexible steel conduit.
- D. Flexible Steel Conduit may be used where misalignment or cramped quarters exist only with prior approval of the Architect and/or Engineer.
- E. Minimum 3/8" factory fabricated fixture whips may be used to make final connections to lay-in light fixtures.

2.5 CONDUIT FITTINGS

- A. Provide steel compression type or steel set screw type fittings for Electrical Metallic Tubing.
- B. Provide malleable iron clamp type fittings for Flexible Steel Conduit, Type AC Cable and Type MC Cable.
- C. Provide steel compression type fittings for Liquid-Tight Flexible Steel Conduit.
- D. Provide threaded fittings for GRC conduit. Provide double locknuts and plastic bushing for GRC conduit terminations or provide boxes and enclosures with threaded hubs.
- E. Provide liquid-tight and gas-tight conduit fittings underground using fittings and PVC cement as recommended by the conduit manufacturer.
- F. Provide steel rain-tight, compression type fittings for all conduit installed outside and in wet, humid, corrosive and oily locations.
- G. Provide insulating bushings for all conduit terminations 1-1/4" diameter and larger.
- H. Provide Grounding Bushings bonded to the electrical system ground:
 - 1. On each end of all service conduits.
 - 2. On each end of all feeder conduits in which a separate ground conductor is installed.
 - 3. On each end of all conduits used to protect ground conductors.
 - 4. On all conduit terminations installed in concentric or eccentric knockouts or where reducing washers have been installed.
- I. Do not use cast metal or indenter type fittings. Do not use screw-in type fittings for Flexible Steel Conduit, Type AC Cable or Type MC Cable. Do not use spray (aerosol) PVC cement.

2.6 RACEWAY SEALS

- A. Seal all conduit penetrations through fire rated walls, ceilings and floors with a UL classified fire barrier system as manufactured by Scotch 3M or Nelson Electric which will provide an immediate fire seal, require no curing time, and emit no hazardous or toxic fumes.
- B. Seal all conduit penetrations through airtight spaces and plenums with an approved mastic compound acceptable to the Architect to prevent air leakage.

2.7 PULL BOXES

- A. Provide pull boxes or conduit bodies in accessible locations where required to reduce the number of bends in the conduit run to less than 360 degrees and at points not exceeding 100 feet in long branch circuit conduit runs.
Indicate exact location of pull boxes and conduit bodies on the As-Built Record Drawings.

2.8 PULL STRING

- A. Provide a nylon or polypropylene pull string with not less than 200 lb tensile strength in all spare conduits and conduits installed for use by others. Provide a hard cardboard tag for each raceway to indicate location of the opposite end of the raceway.

PART 3 - EXECUTION

3.1 SUPPORTS

- A. Securely support all raceways and cables with pipe straps, hangers, or ceiling trapeze directly from building structure such as roof trusses, beams, floor joists, etc., in accordance with Specification Section 16190 - Supporting Devices.
 - 1. Do not support raceways from other electrical systems or mechanical systems.
- B. Provide supports at spacing intervals not less than required by National Electrical Code for the type of raceway or cable involved.

3.2 INSTALLATION

- A. Raceway layouts on the drawings are generally diagrammatic and the exact routing of raceways will be governed by structural conditions and the work of other contractors.
- B. Install raceways concealed within finished ceilings, walls and floors except where exposed raceways are specifically shown on the drawings or permitted by the Architect.
- C. Install exposed raceways parallel with or perpendicular to walls and ceilings, with right angle turns consisting of symmetrical bends or conduit bodies equal to Crouse-Hinds "Condulet". Avoid all bends and offsets where possible.
 - 1. Paint exposed raceways to match surrounding surfaces in accordance with Division 9 Specifications.
- D. Install raceways minimum 12" from insulation of hot water piping, steam piping and other systems or equipment with temperatures in excess of 104° F (40° C).
- E. Make all field bends and offsets with a radius not less than allowed by the National Electrical Code for the type of raceway system.
 - 1. Do not install bends or offsets which are flattened, kinked, rippled or which destroy the smooth internal bore or surface of the conduit.

- F. Cap the open ends of raceways during construction to prevent the accumulation of water, dirt or concrete in the raceways. Thoroughly clean raceways in which water or other foreign matter has been permitted to accumulate or replace the raceway where such accumulation cannot be removed by a method approved by the Architect and/or Engineer.
- G. Do not install raceways which have been crushed or deformed in any manner.
- H. Do not install wiring until work which might cause damage to the wires or raceways has been completed.

3.3 UNDERGROUND RACEWAY INSTALLATION

- A. Install underground raceways within buildings minimum 4" below the bottom of the concrete floor slab to the top of the raceway.
- B. Install underground raceways outside of building minimum 24" below finished grade to the top of the raceway.
 - 1. Provide a plastic red magnetic warning ribbon stating "CAUTION - BURIED ELECTRICAL" 12" directly above the top of the raceway.
 - 2. Provide increased burial depth for primary and secondary electrical service conduits as noted on drawings and/or as required by local by power company.
- C. Use select granular fill, free of rocks or hard clumps with sharp or angular edges, for the first 6" of backfill around underground raceways including raceways below concrete floor slabs. Provide imported sand backfill where required by Division 2 Specifications or where excavated materials are not suitable.
- D. Coordinate location of underground raceways with the General Contractor to avoid areas where raceways may be damaged by subsequent installation of trees, shrubbery or other landscape vegetation.
- E. Install underground raceways minimum 3'-0" from parallel runs, and minimum 1'-0" from perpendicular runs, of underground natural gas and propane lines.
- F. Do not use torches to heat PVC conduit for field bends. Do not install PVC conduit that has been scorched by heating for bends.

END OF SECTION 16110

SECTION 16120 - CONDUCTORS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, Division 1 Specification Sections and Section 16000 - General Provisions, Electrical apply to work of this section.

1.2 SCOPE

- A. Provide all conductors for power and lighting as shown on drawings and as specified herein.

PART 2 - PRODUCTS

2.1 CONDUCTORS

- A. Provide Copper building wire, minimum #12 AWG, with type THHN/THWN or XHHW 600 volt insulation, except as otherwise noted on the drawings or required by NEC.
 - 1. Provide conductors in underground raceways with insulation approved for wet locations such as type THWN or XHHW.
- B. Provide stranded conductors for wires #8 AWG and larger and for terminal connections to all motors. Stranded or solid conductors may be used for sizes smaller than #8 AWG at the contractor's option.
- C. Provide conductors rated 90° C minimum in wiring channels of Fluorescent and High Intensity Discharge lighting fixtures.
- D. Provide conductors with surface printed identification showing conductor size and material, insulation type, voltage rating and approvals at regularly spaced intervals of 24".
- E. Do not use sizes smaller than #12 AWG in branch circuits carrying load. Circuits requiring larger sizes to meet voltage drop conditions, etc., are indicated on the drawings.
 - 1. Where branch circuit homeruns indicate conductor size, use that size conductor for the entire branch circuit, including switch legs, etc.
- F. Do not use aluminum conductors except as noted on drawings and/or as required by local power company.

2.2 SPLICES

- A. Provide Ideal wrenuts or Scotchlock spring connectors for all conductor splices #8 AWG and smaller. Provide split-bolt or compression type connectors for all conductor splices larger than #8 AWG.
- B. Provide splices which are UL listed for the type, quantity and size of the conductors to be spliced.
- C. Provide all splices with insulation at least equal to that of the conductor.
- D. Provide watertight splices in junction or outlet boxes located outside and in wet locations. Provide heat shrink insulating kits or use connectors pre-potted with an approved waterproof compound.
- E. Splice conductors only in approved boxes. Do not splice conductors in conduit bodies.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install all conductors in approved raceway systems.
- B. Install conductors continuous without splice between outlet boxes, devices and panelboards.
 - 1. Provide suitable junction boxes in readily accessible locations where splices are necessary at intermediate points. Indicate exact location of all boxes on the As-Built Record Drawings.
- C. Do not install wiring until work which might cause damage to the wires has been completed.

3.2 COLOR CODING

- A. Color code all wiring at each enclosure and box where conductors are accessible and at each splice, tap or termination by means of colored conductor insulation.
 - 1. For conductors #6 AWG and larger, colored self-adhesive tape with the appropriate color designations may be used.
- B. Color code each conductor of each circuit as follows.
 - 1. Ground: Green or Bare Copper
 - 2. 120/208 Volt, 3 Phase, 4 Wire System
 - a. Phase A - Black
 - b. Phase B - Red
 - c. Phase C - Blue
 - d. Neutral - White
- C. Color code switch legs and travelers according to phase with colors other than used for phase conductors, to be consistent throughout the project.

3.3 MULTI-WIRE BRANCH CIRCUITS

- A. Where a common neutral is run for multi-wire branch circuits, connect phase conductors to separate phases such that the neutral conductor will carry only the unbalanced current. Use neutral conductors of the same size as the phase conductors unless specifically noted otherwise.
- B. Do not install more than three phase conductors in any raceway except where specifically shown on the drawings or approved by the Architect and/or Engineer.

3.4 PHASE ROTATION

- A. Phase rotation for Three Phase System will be A leads B Leads C from front to back, from left to right or from top to bottom as viewed from the front of the enclosure.

END OF SECTION 16120

SECTION 16130 - ELECTRICAL BOXES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, Division 1 Specification Sections and Section 16000 - General Provisions, Electrical apply to work of this section.

1.2 SCOPE

- A. Provide junction boxes and outlet boxes at each outlet, fixture and other device location as shown on drawings and as specified herein.

PART 2 - PRODUCTS

2.1 OUTLET AND DEVICE BOXES

- A. Provide galvanized or cadmium plated sheet steel electrical boxes in indoor dry locations, of the most suitable size and shape for the conditions encountered and in accordance with NEC requirements for the number of conductors allowed.
 - 1. Provide gang boxes where more than one device is located at the same point.
- B. Provide Type FD cast metal boxes outside, in wet, humid or corrosive locations and where exposed to damage such as vehicular traffic.
- C. Confer with the various equipment suppliers and either use or properly provide for boxes which are furnished with the equipment, such as speakers, horns, bells, etc..
- D. Do not use "THRU-THE-WALL" boxes, sectional (gangable) boxes or non-metallic boxes.

2.2 JUNCTION BOXES

- A. Provide junction boxes as specified for outlet and device boxes except that boxes 6" square and larger may be painted sheet steel.

2.3 BOX ACCESSORIES

- A. Provide fittings, plaster rings, cover plates and other accessories suitable for the purpose and location of each box.
- B. Provide plaster rings which are minimum 1/8" deeper than wall covering for flush mounted boxes (i.e. use 3/4" plaster ring for 5/8" gypsum board wall covering) such that plaster ring will be flush with finished face of wall.
- C. Provide industrial raised covers for surface mounted outlet and device boxes.
- D. Provide masonry rings for boxes installed in brick walls, concrete block walls and in walls with tile finish.

PART 3 - EXECUTION

3.1 SUPPORTS

- A. Support each box from the building structure independent of the raceway system.

- B. Support flush mounted wall boxes with metal bar hangers or metal stud backing behind the box secured to wall studs.
- C. Support flush mounted ceiling boxes with metal bar hangers secured to ceiling support system or threaded rod hangers secured to structure.
 - 1. Secure boxes for box supported fixtures to the building structure with suitable anchors capable of supporting not less than 200 lbs or 4 times the fixture weight, whichever is greater.
- D. Secure surface mounted boxes to building structure with minimum of 2 screws or bolts as required.
- E. Secure boxes in concrete block walls in place prior to pouring grout such that installation of grout will not displace the box and the box will be flush with the finished face of the wall.
- F. Do not use side mounted boxes or brackets.

3.2 INSTALLATION

- A. Install flush mounted boxes, after being equipped with extensions, accessories, etc., flush with finished face of wall, ceiling or floor.
 - 1. Replace or repair all boxes not installed flush with finished surfaces to the satisfaction of the Architect and/or Owner.
 - 2. In order to meet this requirement, it is recommended that the Electrical Contractor be present during installation of gypsum board, tile or other wall coverings and during installation of outlet boxes in masonry walls.
 - 3. Coordinate depth of wall coverings to be installed on all walls with the General Contractor prior to installing plaster rings.
- B. Install boxes in opposite sides of common room walls in adjacent stud spaces where possible and with minimum 6" separation between the boxes. Provide minimum 10" of conduit between boxes which are connected by conduit.
- C. Install outlet boxes for light switches on the strike side of door openings. Coordinate door swings with the General Contractor prior to roughing in switch boxes.
- D. Seal around the surface of all switch and outlet boxes with plaster or grout to close any opening between the outlet box and the wall finish.
- E. Install boxes level and plumb.

3.3 LOCATIONS

- A. The wiring system layouts on the drawings are generally diagrammatic and the location of outlets and equipment are approximate.
- B. Study all available drawing details, shop drawings, equipment drawings, building conditions and materials surrounding each outlet and device box prior to installing the box to ascertain the exact location required for each box.
- C. Rough in the electrical work such that electrical outlets, fixtures and other fittings are properly fitted to the work of other trades.
- D. Do not install boxes inside cupboards, behind drawers, or otherwise so located, as to be inaccessible or unsuited for the purpose intended.
- E. The right is reserved to make any reasonable change in the location of the outlets before roughing in, without involving additional expense.

3.4 MOUNTING HEIGHT

- A. Install outlet and device boxes at the heights shown on the drawings or as directed by the Architect. In general, mount outlets as follows.
- | | | |
|----|-----------------------|-------|
| 1. | Convenience Outlet | 18" |
| 2. | Wall Switch | 46" |
| 3. | Telephone/Data Outlet | 18" |
| 4. | Exit Lights | 8'-0" |
- B. All mounting heights, including mounting heights indicated on drawings, are to the center of the outlet box above finished floor or grade unless noted otherwise.
- C. Install outlets above counters 4" above the top of the counter backsplash to the center of the outlet. Coordinate mounting heights with the cabinet installer prior to roughing in the outlets.
- D. Refer to applicable Specification Sections for mounting heights of devices and equipment not included above or install at heights as directed by the Architect and/or Engineer.

* END OF SECTION 16130 *

SECTION 16140 - OUTLETS AND WIRING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, Division 1 Specification Sections and Section 16000 - General Provisions, Electrical apply to work of this section.

1.2 SCOPE

- A. Provide all wiring devices complete with coverplates and necessary accessories as shown on the drawings and as specified herein.

1.3 SUBMITTALS

- A. Provide submittals for each type of wiring device to be used on the project in accordance with Division 1 Specifications and Section 16000 - General Provisions, Electrical.

PART 2 - PRODUCTS

2.1 WIRING DEVICES

- A. Provide wiring devices rated 20 amps minimum, as specified below, or equivalent of Eagle, General Electric, Hubbell, Leviton or Pass & Seymour.

1. Switch, Single Pole	Bryant 4901
2. Switch, 3 - Way	Bryant 4903
3. Switch, Single Pole, Red Pilot Handle, 120 Volt	Bryant 4901-PLR120
4. Switch, Single Pole, Double Throw, Center Off	Bryant 4922
5. Receptacle, duplex convenience, 3-wire	Bryant 5352
6. Receptacle, duplex, GFCI protected	Bryant GFR53FT
- B. Color of devices in finished areas will be as selected by the Architect from the manufacturer's standard colors to compliment the color of architectural finishes.
- C. Provide convenience outlets with GFCI protection in accordance with NEC requirements, where installed outside or within 6 feet of any sink and as indicated on the drawings.
 - 1. Provide a self-adhesive printed label stating "GFCI PROTECTED" for each outlet protected by feed-through GFCI receptacles or GFCI circuit breakers.
 - 2. Use feed-through GFCI outlets only to protect other outlets within sight of the GFCI protected outlet.

2.2 COVERPLATES

- A. Provide a cover plate for each outlet and box suitable for the location and function of the outlet and box.
- B. Provide blank cover plates for junction boxes and outlet boxes not used.
- C. Provide nylon or impact resistant thermoplastic coverplates for outlets and boxes installed in finished areas, of the same manufacturer and color as the wiring devices.
- D. Provide UV Stabilized Polycarbonate, "Raintight While In Use" coverplates with spring return lids and suitable gasket as manufactured by Eagle or Taymac for all devices installed outside or in wet locations.

2.3 OCCUPANCY SENSORS

- A. Provide passive infrared type occupancy sensors, as specified below, to control lighting in rooms as indicated on the drawings.
1. 360° Ceiling Sensor Novitas 01-083
 - a. Nominal 1/2 step walk coverage, open area: 2,100 sq. ft. (36' x 60')
 - b. Nominal motion at desk coverage, open area: 1,344 sq. ft. (24' x 56')
 2. Switchpack Novitas 13-051
 - a. 120/277 Volt field selectable circuit voltage rating.
 - b. Contact ratings: 15 Ampere, 120 VAC, Tungsten; 20 Ampere, 120/277 VAC, Ballast
 - c. NEC Class 2, 15 VDC, control circuit for interface with motion sensors.
 - d. Zero crossing circuit to ensure the relay contacts engage at the zero crossing point of the AC Voltage source to minimize contact damage due to high inrush loads such as tungsten lighting and electronic ballasts.
 3. Wall switch Novitas 01-290
 - a. Coverage suitable for use in offices or rooms up to 300 sq. ft.
 - b. 120/277 Volt field selectable circuit voltage rating.
 - c. Contact ratings: 1,200 VA, 120 VAC, Tungsten or Ballast
 - d. Automatic/Manual selector switch.
- B. Other acceptable manufacturers, subject to compliance with the contract documents are Honeywell, Hubbell, Leviton, Lightolier, Pass & Seymour, Tork, Uneco and Watt Stopper.

2.4 ACCESSORIES

- A. Equip each outlet with devices suitable for the purpose of the outlet and with means of properly connecting the equipment served, whether or not such devices are specifically mentioned.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Properly locate each outlet to fulfill its particular purpose. Do not install receptacles or boxes inside cupboards, behind drawers, or otherwise so located, as to be inaccessible or unsuited for the purpose intended.
- B. Install all outlets and wiring devices flush with face of coverplate, with the coverplate in contact with the finished face of the wall and with mounting strap of device in contact with the outlet box.

END OF SECTION 16140

SECTION 16190 - SUPPORTING DEVICES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, Division 1 Specification Sections and Section 16000 - General Provisions, Electrical apply to work of this section.

1.2 SCOPE

- A. Provide suitable supporting devices for all electrical equipment, raceways and components as specified herein and as shown on the drawings.
- B. Refer to individual specification sections for additional supporting requirements.

PART 2 - PRODUCTS

2.1 SUPPORTING DEVICES

- A. Provide support anchors which will support in tension a minimum of 4 times the weight of the equipment to be supported but not less 100 lbs.
- B. Provide wood screws in wood; toggle bolts in hollow masonry units; expansion bolts with lead shield or shot anchors in concrete and brick; and machine screws, threaded 'C' clamps or spring-tension clamps on steel work.
- C. Do not use tie wire for support unless specifically called for in individual specification sections.
- D. Do not use threaded C Clamps on tapered steel sections.
- E. Do not weld supports, equipment, boxes, raceways, etc., to steel structures.
- F. Do not use wooden plug inserts as a base for supports.
- G. Do not use shot anchors or drilled anchors of any kind in prestressed or post-tensioned concrete slabs and beams except as approved in writing by the Architect.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Secure supporting devices to building structure.
- B. Do not install supporting devices with sheetrock or plaster as the sole means of support. Provide proper blocking behind the sheetrock or plaster as required to support equipment.

END OF SECTION 16190

SECTION 16195 - ELECTRICAL IDENTIFICATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, Division 1 Specification Sections and Section 16000 - General Provisions, Electrical apply to work of this section.

1.2 SCOPE

- A. Provide identification of all electrical equipment, devices, enclosures, conductors, cables, etc., as shown on the drawings and as specified herein.
- B. Refer to individual specification sections for additional identification requirements.

PART 2 - PRODUCTS

2.1 NAMEPLATES

- A. Provide engraved laminated micarta or plastic nameplates to identify each panelboard, cabinet, motor starter, disconnect, etc., with the following minimum lettering heights:
 - 1. Switchboards, panelboards, etc. - 3/8"
 - 2. Disconnects, motor starters, etc. - 1/4"
 - 3. Time switches, lighting contactors, etc. - 3/16"
 - 4. Wiring devices, etc. - 1/8"
- B. Provide Black Nameplates with White Lettering unless noted otherwise, or required to contrast with equipment enclosures.
- C. Do not use Dynamo Labels, printed labels, etc., unless specifically called for in other specification sections or approved by the Architect and/or Engineer.

2.2 EQUIPMENT IDENTIFICATION

- A. Provide engraved nameplates on the exterior of each Motor Starter, Safety Switch, etc., to include the Equipment Description, Number or Designation, Voltage, Motor Horsepower and/or Full Load Amps and the Circuit from which the equipment is served.
 - 1. Example: AIR CONDITIONING UNIT AC/1
50.0 FLA, 208 VOLT, 3Ø
CIRCUIT A2-31
- B. Provide engraved nameplates for wiring devices as indicated on the drawings and for switches controlling remote devices. Custom Engraved coverplates may be substituted for nameplates.

2.3 PANELBOARD IDENTIFICATION

- A. Provide one engraved nameplate on the exterior trim of each Panelboard, visible without opening the door, to include the Panel Designation and the System Voltage.
 - 1. Example: PANEL 'A'
120/208 V, 3Ø

2.4 CONDUCTOR IDENTIFICATION

- A. Identify each branch circuit and each feeder conductor at each outlet box, pull box or other accessible

location with hand lettering in black India ink in the enclosure to indicate panel and circuit numbers of all conductors in the enclosure.

- B. Identify individual control conductors, etc., as indicated on the drawings, in each outlet box, pull box or other accessible location according to the circuit number with self adhesive printed markers equal to Thomas & Betts "E-Z Code" markers.

2.4 PANELBOARD CIRCUIT INDEX

- A. Provide a neatly typed index, to include type of load served and the specific location of the load for each branch circuit of each panelboard.
- B. Examples
 1. Lighting, Southwest Conference Room
 2. Lighting, 2nd Floor Conf. Rm and Office 208
 3. Outlets, SW Conf. Rm, west and north walls
- C. Do not use room numbers shown on plans, use room numbers or nomenclature assigned to rooms by the Owner. Do not use remarks from panel schedules on drawing, the remarks are for the Contractor's reference only.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install nameplates to be visible from normal viewing angles.
- B. Attach nameplates to equipment enclosures with stainless steel screws or rivets. Adhesives are not acceptable.
- C. Install panel index behind protective plastic covering.

END OF SECTION 16195

SECTION 16470 - PANELBOARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, Division 1 Specification Sections and Section 16000 - General Provisions, Electrical apply to work of this section.

1.2 SCOPE

- A. Provide new panelboards complete with all necessary accessories as shown on drawings and as specified herein.

1.3 SUBMITTALS

- A. Provide shop drawing submittals for each Panelboard in accordance with Division 1 Specifications and Section 16000 - General Provision, Electrical to verify compliance with the Contract Documents.
- B. Include dimensioned construction drawings for each Panelboard. Clearly indicate voltage, ampacities, breaker types, conduit entrance areas, materials, options, accessories, finishes, etc., to be provided with each Panelboard. Include Series-Rated verification where required.

PART 2 - PRODUCTS

2.1 PANELBOARDS

- A. Provide dead front safety type panelboards, constructed in accordance with NEMA and UL standards, with plated aluminum or copper bus bars.
- B. Provide each panelboard with main circuit breaker, single lugs or double lugs for attaching feeder conductors and/or sub-feeder conductors as shown on the drawings.
- C. All panelboards to be 20" wide minimum.
- D. Provide panelboards with NEMA 1 enclosures unless indicated otherwise on the drawings.
- E. Arrange circuit breakers in double vertical row configuration with bolted bus connections.
- F. Provide panelboard fronts with concealed indicating trim clamps, concealed steel door hinges and a flush mounted combination latch and lock. Key all locks alike for all panelboards furnished for the project.
- G. Provide each panelboard with an approved circuit index holder with transparent protective cover on the inside of panelboard door.
- H. Provide a ground bus in each panelboard with a separate terminal for connection of each feeder and each branch circuit ground conductor.
- I. Panelboard schedules as shown on drawings.

2.2 CIRCUIT BREAKERS

- A. Provide thermal-magnetic type circuit breakers unless noted otherwise.
- B. Provide multi-pole breakers with trip elements in each pole and common trip handle.

- C. Provide "HACR" rated circuit breakers to serve heating, ventilating and air conditioning equipment branch circuits.
- D. Provide "SWD" rated circuit breakers to serve all lighting and outlet branch circuits.
- E. Plug-in breakers are not acceptable.

2.3 INTERRUPTING RATING

- A. Provide panelboards with minimum short circuit current interrupting ratings as shown on the drawings.
- B. The interrupting rating of circuit breakers shall be at least equal to the available short circuit current at the line terminals of the circuit breaker and correspond to the UL listed integrated short circuit current rating specified for the panelboards.
- C. The minimum interrupting ratings of circuit breakers used as feeders and branches may be in accordance with UL 489 tested and certified series-connected circuit breaker combinations. All electrical equipment using the Series Rated circuit breaker combinations shall be clearly marked on the panel nameplate and feeder breaker indicating the same.

2.4 ACCEPTABLE MANUFACTURERS

- A. Challenger
- B. Cutler Hammer
- C. General Electric
- D. Siemens
- E. Square 'D'

PART 3 - EXECUTION

3.1 SUPPORTS

- A. Provide a minimum of four supports, located at each corner of each panelboard. Where the enclosure exceeds 36 inches in any dimension, provide additional supports at 24 inches on center maximum.

3.2 MOUNTING HEIGHT

- A. In general, mount panelboards 6 feet above finished floor or grade to top of panel.
- B. Where panelboard exceeds 6 feet in height, arrange the panelboard so that the top operating handle does not exceed 6'-6" above finished floor or grade.

3.3 IDENTIFICATION

- A. Provide nameplates and neatly typed circuit index for each panelboard in accordance with Section 16195 - Electrical Identification.

END OF SECTION 16470

SECTION 16500 - LIGHTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General Conditions, Supplemental General Conditions, Division 1 Specification Sections and Section 16000 - General Provisions, Electrical apply to work of this section.

1.2 SCOPE

- A. Provide all lighting fixtures, as shown on drawings and as described herein, complete with all necessary wiring, sockets, lamps, auxiliaries, supports, etc..

1.3 SUBMITTALS

- A. Provide shop drawing submittals for each Fixture and Ballast type in accordance with Division 1 Specifications and Section 16000 - General Provision, Electrical to verify compliance with the Contract Documents.
- B. Include Manufacturer's standard published literature for each fixture type. Clearly indicate all options, accessories, finishes, etc., to be provided with each fixture type.
- C. Provide construction drawings for custom fixtures and/or accessories to include mounting details, manufacturing methods, wiring methods, finishes, materials, etc., as required.
- D. Include Manufacturer's standard published literature for each ballast type to be used on the project. Provide literature for each ballast manufacturer which the fixture manufacturer may use depending upon availability at the time the fixtures are manufactured.

PART 2 - PRODUCTS

2.1 FIXTURES

- A. Provide fixtures which comply with the appropriate Underwriters Laboratories (UL) Standards for the fixture type and which are UL Listed and UL Labeled.
- B. Acceptable fixture manufacturers and types are indicated on the Fixture Schedule included with the Drawings.
 - 1. Listing of the manufacturer's catalog numbers on the Fixture Schedule is intended to establish the general fixture type required and does not relieve the contractor and/or supplier from the responsibility to provide all accessories and options included in the fixture description nor from meeting the requirements of this specification.
- C. Provide all recessed light fixtures with thermal protection in compliance with NEC Article 410-65 (c) and UL Test Standard 1571.
- D. Provide individual fixtures with multiple ballasts as required to meet lamp switching requirements shown on the drawings.

2.2 FLUORESCENT BALLASTS

- A. Provide UL Listed, CBM-Certified by ETL, Premium Class 'P', Solid State Electronic, fluorescent ballasts with Class 'A' sound rating which meet the energy efficient requirements of Public Law 100-357 (National Appliance Energy Conservation Amendment of 1988 to the Energy Policy and

Conservation Act of 1987) for the lamp types to be served by the ballast.

- B. Electronic Ballasts shall operate lamps at a frequency of 20 to 35 KHz with no detectable lamp flicker, shall comply with FCC and NEMA limits governing EMI and RFI, and shall not interfere with the operation of other normal electric and electronic equipment.
- C. Ballasts shall be potted, in a steel case and contain no PCBs. Operating temperature of the ballasts shall not exceed 60⁰ C at any point on the case during normal operation.
- D. Provide fluorescent ballasts with the proper lamp circuit voltage and rating for the lamp types to be served by the ballast and with the following operating characteristics:
 - 1. Minimum Ballast Factor 0.88
 - 2. Minimum Power Factor 95%
 - 3. Maximum Total Harmonic Distortion (THD) 10%
- E. Ballasts shall be marked with manufacturer's name, part number, supply voltage, power factor, open circuit voltage, current draw for each lamp type, UL listing, CBM Certification and Date of Manufacture Code.
- F. Electronic Ballast Warranty shall be 5 Years from the "Date of Manufacture" Code on the ballast.
- G. Fluorescent Ballasts shall be of U.S. Manufacture. Acceptable Manufacturers, subject to compliance with Contract Documents, are Advance, Magnetek and Motorola.

2.3 HIGH INTENSITY DISCHARGE (HID) BALLASTS

- A. Provide UL Listed, High Power Factor, High Intensity Discharge (HID) Ballasts which conform to the applicable ANSI Designation for the wattage and type of lamp served.
- B. Ballasts shall be marked with manufacturer's name, part number, supply voltage, power factor, open circuit voltage, current draw for each lamp type, UL listing and Date of Manufacture Code.
- C. HID Ballasts shall contain no PCB's.
- D. HID Ballast Warranty shall be 2 Years from the "Date of Manufacture" Code on the ballast.

2.4 LAMPS

- A. Provide lamps of the Wattages, Types, and with color characteristics as indicated on the Fixture Schedule included with the Drawings.
- B. Provide fluorescent lamps which conform to the Energy Policy Act of 1992 and the applicable ANSI Designations for the lamp wattage and type.
 - 1. Fluorescent Lamps shall be compatible with supplied ballasts to meet the energy conservation requirements of Public Law 100-357.
- C. Provide new fluorescent lamps with reduced mercury content, such as Phillips "Alto" Series Fluorescent Lamps, to meet the requirements of the EPA Resource Conservation Recovery Act for Toxic Characteristic Leaching Procedure.
 - 1. Reduced mercury content lamps will not be required for lamp types which are not available from any of the acceptable lamp manufacturers with reduced mercury content.
- D. Provide High Intensity Discharge (HID) lamps suitable for the installed burning position which conform to applicable ANSI designations for the wattage and type of lamps specified on the drawings.
- E. Acceptable Lamp Manufacturers, subject to compliance with the Contract Documents are General Electric, Phillips, Sylvania and Venture.

2.5 LIGHTING POLES

- A. Provide all outside lights and poles.
- B. Provide reinforced concrete bases for the lighting poles in accordance with the applicable Division 3 Specification Sections and as detailed on the drawings.

2.6 EMERGENCY FLUORESCENT BATTERY PACKS

- A. Provide emergency battery pack in fluorescent fixtures where indicated on drawings. Connect battery packs to the same branch circuit as the fixture, ahead of any local switches.
- B. The emergency battery packs shall consist of a high temperature nickel cadmium battery, battery charger and electronic circuitry contained in a single case furnished with charging indicator light and test switch for field installation in the fixture housing.
- C. The emergency battery pack shall be capable of operating with either a magnetic or electronic fluorescent ballast, produce between 1,100 and 1,200 initial lumens from a single lamp and provide a minimum of 90 minutes of emergency illumination.
- D. The emergency battery pack shall have UL Component Recognition and be UL listed.
- E. The emergency battery pack shall be fully guaranteed for five years.
- F. Acceptable Manufacturers, subject to compliance with the Contract Documents:
 - 1. Bodine B50
 - 2. Iota I-80
 - 3. Lithonia PS1100
 - 4. Mule MF40-50

2.7 EXTERIOR LIGHTED SIGNS

- A. Provide circuits for exterior lighted signs as indicated on the drawings and make final electrical connections to the signs. Signs will be furnished and installed by others.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Properly center fixtures in each room. Where multiple fixtures occur, space them uniformly and in straight lines with each other.
- B. Locate recessed ceiling light fixtures to center on a single tile or at the intersection of four tiles.
- C. Carefully lay out all openings required for recessed lighting units. Cooperate with other contractors and make provisions for openings of exact dimensions required and provide all required plaster rings and ground frames to be inserted in openings.
- D. Where lighting fixtures are shown to conflict with locations of structural members and mechanical or other equipment, provide adequate supports and wiring to clear same.

3.2 SUPPORTS

- A. Provide all necessary connectors, straps, etc., for secure mounting of all fixtures.
- B. Secure fixtures in suspended grid type ceilings to the grid members using a device capable of holding

100% of the fixture weight acting in any direction. Provide 12 gauge galvanized steel ceiling support wires attached to grid members within 3" of each corner of the fixture. Tandem fixtures may utilize common grid member support wires.

1. Fixtures weighing less than 56 pounds in suspended grid type ceilings shall also be secured to building structure independent of the ceiling support system with a 12 gauge galvanized steel wire or #10 jack chain located at diagonally opposite corners of the fixture. These wires or chains may be slack.
 - a. Provide recessed can type fixtures with metal bar hangers attached to the ceiling grid system. Secure fixtures to the building structure as specified above.
 - b. Support surface mounted fluorescent fixtures installed on suspended grid type ceilings from the building structure by means of independent support clips equal to Caddy No. IDS with proper stud length for fixture installed, and minimum of two 12 gauge galvanized steel support wires.
 2. Fixture weighing 56 pounds or more in suspended grid type ceilings shall be supported directly from the structure above by approved hangers.
- C. Support recessed fixtures installed in gypsum board ceilings to the ceiling support system with metal bar hangers or suitable brackets.
- D. Support surface mounted fluorescent fixtures installed on gypsum board or concrete ceilings from the ceiling with proper anchors at each corner of the fixture.
- E. Fixtures designed to be supported from the outlet box will not require any additional support. Provide proper outlet box with fixture stud or plaster ring suitable to support the fixture. Secure the outlet box to the building structure with suitable anchors capable of supporting not less than 200 lbs or 4 times the fixture weight, whichever is greater.
- F. Provide suspended fixtures with swivel hangers to insure plumb installation. Secure hangers to the building structure with suitable anchors capable of supporting not less than 200 lbs or 4 times the fixture weight, whichever is greater. Install hangers such that the motion of swivels or hinged joints will not cause sharp bends in conductors or damage to insulation.

3.3 LAMP BURN-IN

- A. Burn-in all fluorescent and HID lamps for a minimum of 100 hours prior to completion of the project and replace all defective lamps.

3.4 COORDINATION

- A. Coordinate ceiling types with General Contractor and verify compatibility with fixture mounting provisions prior to ordering fixtures. Immediately notify the Architect in writing of any discrepancies between ceiling types and specified fixture types.
- B. Verify available voltages and coordinate fixture voltage with the fixture supplier prior to ordering fixtures. Immediately notify the Architect in writing of any discrepancies between available voltages and the specified fixture voltages.
- C. Coordinate fixture locations with other contractors to provide adequate clearance between fixtures and ductwork, piping, structural members, etc., for proper installation of fixtures and provide access for maintenance or replacement of the fixtures.

END OF SECTION 16500