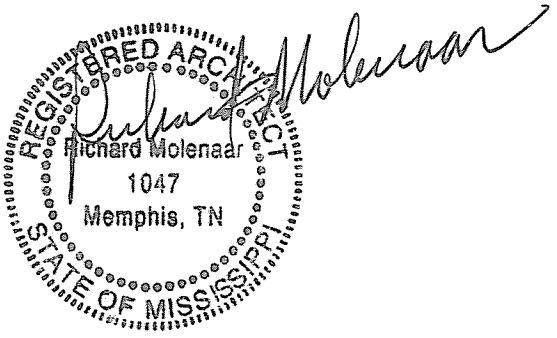
COMFORT SUITES

BERRYMAN ROAD
VICKSBURG, MISSISSIPPI



Richard Molenaar, Architect

November 1, 2007

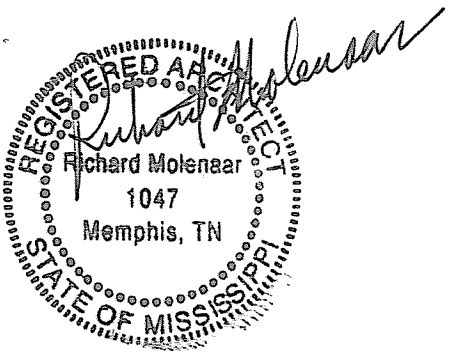


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COMFORT SUITES

SECTION 00100 – INSTRUCTIONS TO BIDDERS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

INSTRUCTIONS TO BIDDERS:

AIA documents A701, 1997 Edition, is hereby incorporated in and made a part of this Project Manual.

END OF SECTION 00100

SECTION 00220 - SOIL INVESTIGATION DATA

PART 1 - GENERAL

Incorporated Information: The following information incorporated in the Project Manual is information supplied by the Owner for reference, and is not part of the Contract.

Borings: Soil borings have been made at the site to assist in the design process. Soil data and/or logs which are attached and in the Documents are for the information and convenience of Bidders.

Data Use Limitations: Because the sub-surface conditions indicated by the borings are a sampling in relation to the entire construction area and for other reasons, the Owner, the Architect, and the firm reporting the sub-surface conditions based on the borings, do not implicitly or expressly warrant the conditions adjacent to the borings or below the depths of the borings, or surrounding them, or that the strata logged from the borings are necessarily typical of the entire site.

Bidder/Sub-Bidder Resonsibility: Persons using soil information described in this section shall accept full responsibility for its use in preparing Bids/Subbids and in obtaining additional soil information that may be required.

Extra Payment: No consideration for extra payment will be given for conditions that occur which could or could not have been anticipated from the soil information. If conditions occur resulting in additional work which could have or could not have been anticipated or reasonably inferred from the soil information, the Conditions of the Contract shall apply.

Soil Investigation Data: Reproduced on the following pages are soil boring logs and report entitled:

Subsurface Investigation
For
Comfort Suites
Berryman Road
Warren County
Vicksburg, Mississippi

dated: November, 2006

Prepared by: GEOTECHNICAL ASSOCIATES NETWORK, LLC
110 Beechtree Road
Vicksburg, Mississippi 39183-7464

END OF SECTION

LADNER

JACKSON - HATTIESBURG - GULFPORT
(601) 362-5421 (601) 544-5782 (228) 604-2527

SUBSURFACE INVESTIGATION

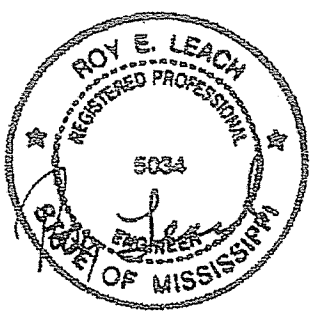
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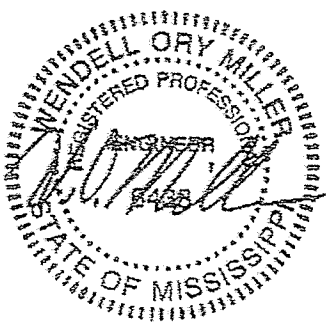
COMFORT SUITES
BERRYMAN ROAD
WARREN COUNTY
VICKSBURG, MISSISSIPPI

NOVEMBER 2006

BY

GEOTECHNICAL ASSOCIATES NETWORK, LLC
110 BEECHTREE ROAD
VICKSBURG, MISSISSIPPI 39183-
7464





SUBSURFACE INVESTIGATION FOR
COMFORT SUITES
BERRYMAN ROAD
WARREN COUNTY
VICKSBURG, MISSISSIPPI

PURPOSE

The purposes of this subsurface investigation are:

a. To determine the general characteristics of the subsurface soils within the area of the proposed construction;

b. To determine by field and laboratory testing, the physical characteristics of the foundation soils and the soil samples collected; and

c. To make recommendations for foundation construction at this particular location.

FIELD INVESTIGATION

Nine subsurface borings were made at the site of the proposed construction. The borings were advanced with a truck mounted, powered, continuous flight auger. Auger cuttings of the soil medium were collected at changes in strata, and at intervals not exceeding five feet in depth. All samples taken were stored in sealed containers for later classification and testing. In addition, standard penetration resistance values (see ASTM D-1586-84) were determined and recorded on the boring logs for the various materials encountered. The Standard Penetration Test (SPT) gives an indication of the consistency and the in-place shear strength of cohesive soils and the relative density of cohesionless soils by recording the number of blows required, by a 140-pound hammer falling 30 inches, to drive a 2-inch O.D. splitspoon sampler one foot. No water levels were observed or recorded during drilling and sampling operations at the site.

LABORATORY INVESTIGATION

Laboratory testing of selected soil samples included visual classification, Atterberg limits on cohesive soils with determination of the plasticity index (PI), grain size analyses, and in situ moisture contents. Atterberg limits (ASTM D-4318-93) were run on the clayey soils in an effort to estimate the susceptibility of these soils to shrink and swell with changes in moisture content. Liquid and plastic limits were run on samples selected from some of the various materials encountered. The liquid limit (LL) is the moisture content at which a soil changes from a plastic state to a viscous liquid state. The plastic limit is the moisture content at which a soil changes from a solid state to a plastic state. The plasticity index (PI) is the numerical difference between the liquid limit and the plastic limit and is indicative of the relative activity or sensitivity of a cohesive soil.

Grain size analyses (ASTM D-422-63) were conducted on representative samples of the various soils encountered to determine the particle size distribution of materials comprising the strata. Results of these tests were utilized in classifying the soils by the Unified Soil Classification System and in estimating the California Bearing Ratio (CBR) of the prospective subgrade soils. Classifications for each of the soil samples are shown on the boring logs and test results attached to this report.

To aid in the general interpretation of the soil conditions at the site, in situ moisture contents were determined for samples selected from the various soils encountered. This determination was made possible by placing extracted samples in sealed containers immediately upon removal from each interval. The results of these and other tests are recorded on the attached boring logs.

SUBSURFACE CONDITIONS

The site of the proposed construction is in Section 22, Township 16 North, Range 4 East, on Berryman Road in Vicksburg, Warren County, Mississippi. This site lies in the Gulf Coastal Plain of North America in the Loess Hills physiographic province of Mississippi. Structurally, the site is in the Mississippi

Embayment. Stratigraphically, the site is on Pleistocene loess deposits. These deposits are aeolian in nature and locally, if undisturbed, have fairly uniform index properties. From an engineering point of view, the undisturbed loess in Vicksburg has excellent strength properties because of its cementitious properties. The strength properties decrease rapidly if the soil is disturbed or becomes saturated.

Nine borings were placed at the site. Three borings were drilled to depths of 20 feet (Boring Nos. B-1, B-2, and B-4) and one boring (Boring No. B-3 was drilled to a depth of 10 feet, where an obstruction was encountered) in the building footprint. One boring (Boring No. B-5) was drilled to a depth of 40 feet under the pool area. Four boring borings (Boring Nos. B-6 through B-9) were drilled to depths of 5 feet in the parking lot areas. The soils consisted of layers of silty clay (CL-ML) and lean clay (CL). Note that obstructions were encountered at a depth of 10 feet in both Boring Nos. B-3 and B-5. Colors of the soils at the site were brown, brown and tan, tan, tan and gray, and gray and tan. These materials had consistencies which ranged from soft to stiff, as inferred from Standard Penetration Test (SPT) blow counts.

The silty clay (CL-ML) was encountered in every boring except two of the shallow borings (Boring Nos. B-7 and B-8) in the parking areas. The consistencies of these silty clays ranged from soft to stiff, with SPT blow counts varying from 3 to 16 blows (averaging approximately 9 blows). The field moisture contents within these strata ranged from 9.4 percent to 28.2 percent, and averaged 19.0 percent. These are low plasticity silty clays with liquid limits ranging from 29 percent to 33 percent (averaging approximately 31 percent) and plasticity indices ranging from 4 percent to 7 percent (averaging approximately 6 percent). The shrink/swell potential is low in these materials and only small changes in volume should be noted with changes in moisture content. The percentages of samples of these materials passing through the #200 grain-size sieve ranged from 83.5 percent (in Boring No. B-3) to 99.8 percent, and averaged 98.0 percent. Sand and gravel were noted in Boring No. B-3 between 5 and 10 feet deep. Note that this was the boring that was terminated at 10 feet deep because of an obstruction.

Lean clays (CL) were encountered in six out of the nine borings (Boring Nos. B-1 and B-4 through B-8. Consistencies of these

lean clays ranged from medium to stiff, as inferred from the Standard Penetration Test (SPT) blow counts. Blow counts within these lean clays varied from 8 blows to 12 blows, averaging approximately 10 blows. The field moisture contents varied from 14.5 percent to 24.5 percent, and averaged 19.2 percent. These are, also, low plasticity materials with liquid limits ranging from 32 percent to 36 percent (averaging approximately 34 percent) and plasticity indices ranging from 8 percent to 13 percent (averaging approximately 10 percent). The shrink/swell potential is, also, low and only small changes in volume should be noted with changes in moisture content. The percentages of samples of these CL materials passing through the #200 grain-size sieve ranged from 96.6 percent to 99.8 percent, and averaged 98.9 percent.

No static water levels were noted on the boring logs after completion of drilling and sampling operations. However, we note that groundwater levels and soil moisture contents in this area do fluctuate during the year with variations in rainfall and other environmental factors. Therefore, the groundwater levels and soil moisture contents will vary throughout the year and will probably be different if tested at a different time.

RECOMMENDATIONS FOR SITE PREPARATION AND FOUNDATIONS

We understand that this project will consist of a Comfort Suites motel located on Berryman Road, Vicksburg, Mississippi. The following conclusions and recommendations are based on our understanding of the proposed construction, information gathered during the exploration, accepted geotechnical engineering principles and practices, and our experience with similar sites and subsurface conditions. This report has been prepared for the exclusive use of Roy Patel, CHA, Brandon, Mississippi in the planning and design of the motel. We request that we be informed of any significant changes to the proposed construction so we might review our recommendations in light of the new information. We are available to review the final foundation and grading plans, as well as applicable portions of the project specifications, prior to construction.

Final plans and specifications were not available at the time of this geotechnical report, but it is our assumption that the placement of the building will be on a lot that is essentially

flat. Based upon our interpretation of the soil conditions at the site, proper placement of the foundation soil, and the assumption that no large or unusual loads are anticipated, it is our opinion that the proposed construction could be supported by a combination of foundation units, such as grade beams and spread footings. The foundation could consist of a monolithically cast, reinforced concrete, slab on-grade with turned-down, continuous grade beams and interior stiffeners to produce a beam diaphragm system. Column loads could be supported by isolated spread footings or thickened sections.

SITE PREPARATION

The near-surface material occurring in the borings at the site consisted of layers of silty clay (CL-ML) and lean clay (CL). Obstructions that caused auger refusal were encountered at a depth of 10 feet in both Boring Nos. B-3 and B-5 and soft material was encountered at 10 feet in Boring No. B-2.

The boring data have indicated both soft soil and some type of obstruction across the building footprint at approximately 10 feet deep and it is our opinion that the foundation soil should be excavated a minimum of 10 feet deep to remove the soft soil within an area beneath and extending a minimum of 10 feet beyond the perimeter of the structure, if possible. The obstruction may have to be removed. Properly compacted select fill should be placed to bring the foundation up to construction grade.

Following excavation we recommend that the subgrade in all fill areas be evaluated by a geotechnical engineer or his representative prior to fill placement. The engineer may recommend proof-rolling the areas as a means of evaluating the suitability of the subgrade for fill. Proof-rolling consists of systematically patrolling the area preferably in perpendicular directions, utilizing a heavily loaded dump truck (minimum 20 tons) or other suitable vehicle approved by the engineer. Any areas which pump or rut excessively and which cannot be densified by continued rolling should be undercut to suitable material and properly backfilled. If the construction footprint is too small for proof-rolling, numerous density tests or hand held cone penetration tests should be conducted to determine soft areas.

Select structural fill material should be placed in maximum loose lifts of 8 inches and should be compacted to 98 percent standard Proctor density (ASTM D-698-91) within 2 percentage points of optimum moisture content. Sufficient field density tests should be conducted to insure compaction requirements are met during construction. As a rule of thumb, we recommend that two density tests per lift be performed for each 2000 square feet of surface area. In addition, monitoring of fill construction and compaction will result in minimizing future settlement of the fill and the structure. We, therefore, believe that it is important that a qualified geotechnical engineer or certified technician monitor earthwork operations and that this work not be controlled by the earthwork contractor.

The select, structural fill material should consist of a material having a liquid limit of less than 40 percent and a plasticity index between 8 percent and 20 percent. The excavated materials, that contain topsoil and any debris, should not serve as select fill and should be disposed of outside the foundation area. On site excavated lean clay (CL) and silty clay (CL-ML) could be used as select fill with proper moisture content and compaction control.

FOUNDATION STRENGTHS

The foundation system should bear at a minimum depth 24 inches below the finished grade elevation. Minimum depths needed to offset wind forces should be verified by your structural engineer. All foundation members should be reinforced both top and bottom, sufficient to resist differential movement, and the completed foundation system should provide for uniform distribution of applied loads to the bearing soils. The maximum soil pressure under the foundation members should not exceed 2.2 kips per square foot for continuous foundation units or 2.8 kips per square foot for individual spread footings. Foundations sized in accordance with recognized criteria for the above stated allowable soil bearing pressure should provide a factor of safety of 2.0 - 3.0 against ultimate failure of the soil medium with total estimated settlements of 1 inch, more or less.

Note that the soils at this site contain lean clay (CL) and silty clay (CL-ML) that can lose strength with increases in moisture content. It is important to properly control the moisture

content of these soils during construction. The final site grading plan should provide for quick runoff of surface waters away from the building foundation in all directions. In addition, any foundation soils in exposed excavations that become wet or soft should be removed and replaced prior to footing installation. The landscape plans should insure that large water consuming trees and shrubs are not located within 50 feet of the perimeter of the foundation members. Where any large trees or stumps are removed or where any plumbing or electrical trenches are cut under the foundation, select fill material should be used and compacted.

All foundation recommendations made in this report are contingent upon proper execution of the earthwork requirements noted herein. We believe that it is very important that a qualified geotechnical engineer, familiar with working with such soils, be present during foundation construction.

RECOMMENDATIONS FOR PARKING AREAS AND ACCESS DRIVES

The near-surface materials at the site, which will be the in situ material for the subgrade for the parking areas and access drives, were primarily composed of silty clay (CL-ML) and lean clay (CL). The consistency of these soils were not determined for these borings but consistencies as noted in the foundation borings ranged from soft to stiff.

The foundation soil should be excavated a minimum of 2 feet, independent of the amount of select fill to be used, to remove any topsoil, roots, and organics. The soils at this site are variable in both strength and composition. Every effort should be made to insure that the exposed soils do not "dry out" during construction. Any soft or wet areas encountered during construction which cannot be stabilized should be undercut and filled with compacted select material.

We recommend proof-rolling the area as a means of evaluating the suitability of the subgrade for fill or pavement support. Proof-rolling is defined above. We recommend that, after proof-rolling, the subgrade soils for any cut sections should be compacted to 98 percent standard Proctor density (ASTM D-698-91) within 2 percentage points of optimum moisture content to a depth of 8 inches.

Compacted fill should then be placed to bring the subgrade up to elevation where required. Prior to placing the select fill in any area, we recommend that the subgrade be evaluated by a geotechnical engineer or his representative to determine the suitability of the subgrade.

Select fill material should consist of a soil having a liquid limit of not more than 40 percent and a plasticity index between 8 percent and 22 percent. This soil should be placed in maximum loose lifts of 8 inches and also compacted to a minimum of 98 percent standard Proctor density. Compaction for the entire site could be attained using a rubber tired or sheeps foot roller. After preparation of the subgrade, the remaining pavement structure can then be placed according to the recommendations provided below.

Based on the type of soils encountered, we anticipate that a CBR value greater than 3 will be representative of the strength of the prepared subgrade soils and compacted fill placed at this site, assuming proper control of the soil moisture content. It is our assumption that the parking lot and access drive will be used by the customers, employees, and a minimum of two-axle trucks for any deliveries; this precludes street traffic. Based on that assumption and the soil properties, we have selected a Structural Number (SN) of 2.0 for the parking lot and 2.9 for the access drive design and the dumpster pad (based on AASHTO Guide for Design of Pavement Structures, Chapter 4, Low-Volume Road Design, 1986). One of the following pavement alternatives should be used, assuming proper compaction of the subgrade soils:

LIGHT PARKING

Alternative #1

a) Base Course - Six (6) inches of hot mixed Bituminous Base course (Type BB-1) conforming to Mississippi State Highway Department (MSHD) Specifications.

b) Surface Course - One and one half (1 ½) inches of hot mixed bituminous Surface Course (Type SC-1) conforming to MSHD Specifications.

Alternative # 2

a) Clay Gravel Base or Subbase - Eight (8) inches of clay gravel subbase course, Class 4, Group B conforming to MSHD Specifications.

b) Base Course - Four (4) inches of hot mix Bituminous Base, (Mix Number BB-1) conforming to MSHD Specifications.

c) Surface Course - One and one-half (1 ½) inches of hot mix bituminous Surface Course, (Mix Number SC-1) conforming to MSHD Specifications.

Alternative #3

Surface Course - Five (5) inches of Portland Cement Concrete.

ACCESS ROADS

Alternative #1

a) Base Course - Six and one-half (6 ½) inches of hot mix Bituminous Base, (Mix Number BB-1) conforming to Mississippi State Highway Department (MSHD) Specifications.

b) Surface Course - One and one-half (1 ½) inches of hot mix bituminous Surface Course, (Mix Number SC-1) conforming to MSHD Specifications.

Alternative # 2

Surface - Six (6) inches of Portland Cement Concrete.

DUMPSTER PAD

Alternative # 1

Surface - Six (6) inches of Portland Cement Concrete. The dumpster pad should be the total length of dumpster and the

garbage truck.

The concrete pavement recommendations are for non-reinforced Portland Cement concrete pavement placed on a six-inch-thick clay gravel base course placed on the compacted subgrade. The clay gravel base course should be compacted to a minimum of 98% standard Proctor density immediately prior to concrete placement. The concrete should have a minimum 28-day flexural strength of 650 psi and a compressive strength of 3000 psi. Joint spacing, joint configuration, mix design, mix placement, and curing should conform to the recommendations of the American Concrete Institute (ACI) and the Portland Cement Association (PCA).

Applicable Mississippi State Highway Department specifications and structural number coefficients utilized in the pavement recommendations are provided as follows:

a) Bituminous Surface Course - Structural Coefficient = 0.44 - hot mixed bituminous Surface Course (Type SC-1) - Mississippi Standard Specifications for Road and Bridge Construction (1976 edition) or from the AASHTO Interim Guide for Design of Pavement Structures.

b) Bituminous Base Course - Structural Coefficient = 0.34 - hot mixed Bituminous Base course (Type BB-1) - Mississippi Standard Specifications for Road and Bridge Construction (1976 edition), Section 301, page 257 and Section 703, page 785 or from the AASHTO Guide.

c) Clay Gravel Base or Subbase - Structural Coefficient = 0.11 - Class 4, Group B - Mississippi Standard Specifications for Road and Bridge Construction (1976 edition), Section 304, page 275 and Section 703, page 773 or from the AASHTO Guide.

All pavement design recommendations made in this report are contingent upon proper execution of the subgrade requirements noted herein. We believe that it is very important that a qualified geotechnical engineer, familiar with working with such soils, be present after excavation and during proof-rolling, fill, and compaction. In addition, sufficient field density tests should be taken to insure that the compaction criteria are satisfied, and to reduce the possibility of settlement at this location. It is important that a good drainage system be established to quickly remove surface water, thus leaving no

standing water.

REPORT LIMITATIONS

The recommendations made in this report are based on the assumption that the borings are representative of the subsurface conditions throughout the site. Therefore, we cannot warrant that our boring logs represent subsurface conditions at other locations or times. If during construction, any unusual or significantly different conditions are encountered, we should be advised in order to review the changed conditions, and subsequently reconsider any of the above recommendations.

Further, we are available to review those portions of the plans and specifications relating to earthwork and foundations for this particular project and request that we be retained to do so in order to determine whether the plans and specifications are consistent with the recommendations contained within this report. In addition, we are available to observe foundation construction procedures, including interpretation of the use of on-site materials and compaction of the structural fill, quality control of concrete placement, and other field observations and quality control measures as required.

Other information, such as is outlined by the Association of Soil and Foundation Engineers (ASFE), regarding the use of this geotechnical report follows.

IMPORTANT INFORMATION ABOUT YOUR GEOTECHNICAL ENGINEERING REPORT

More construction problems are caused by site subsurface conditions than any other factor. As troublesome as subsurface problems can be, their frequency and extent have been lessened considerably in recent years, due in large measure to programs and publications of the (ASFE).

The following suggestions and observations are offered tohelp you reduce the geotechnical-related delays, cost-overruns and other costly headaches that can occur during a construction project.

A GEOTECHNICAL ENGINEERING REPORT IS BASED ON A UNIQUE SET OF PROJECTSPECIFIC FACTORS

A geotechnical engineering report is based on a subsurface exploration plan designed to incorporate a unique set of projectspecific factors. These typically include: the general nature of the structure involved, its size and configuration, the location of the structure on the site, and its orientation;

physical concomitants such as access roads, parking lots, and underground utilities, and the level of additional risk which the client assumed by virtue of limitations imposed upon the exploratory program. To help avoid costly problems, consult the geotechnical engineer to determine how any factors which change subsequent to the date of the report may affect its recommendations.

Unless your consulting geotechnical engineer indicates otherwise your geotechnical engineering report shouldnot be used:

When the nature of the proposed structure is changed, for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one.

When the size or configuration of the proposed structure is altered.

When the location or orientation of the proposed structure is modified.

When there is a change of ownership.

For application to an adjacent site.

Geotechnical engineers cannot accept responsibility for problemswhich may develop if they are not consulted after factors considered in their report's development have changed.

MOST GEOTECHNICAL "FINDINGS" ARE PROFESSIONAL ESTIMATES

Site exploration identifies actual subsurface conditions only at those points where samples are taken, when they are taken. Data derived through sampling and subsequent laboratory testing are extrapolated by geotechnical engineers who then render an opinion about overall subsurface conditions, their likely reaction to proposed construction activity, and appropriate foundation design. Even under optimal circumstances actual conditions may differ from those inferred to exist, because no geotechnical engineer, no matter how qualified, and no subsurface exploration program, no matter how comprehensive, can reveal what is hidden by earth, rock, and time. The actual conditions in areas not sampled may differ from predictions. Nothing can be done to prevent the unanticipated, but steps can be taken to help minimize their impact. For this reason, most experienced owners retain their geotechnical consultants through the construction stage, to identify variances, conduct additional tests which may be needed, and to recommend solutions to problems encountered on site.

SUBSURFACE CONDITIONS CAN CHANGE

Subsurface conditions may be modified be constantlychanging natural forces. Because a geotechnical engineering report is based on conditions which existed at the time of subsurface exploration, construction decisions should not be based on a geotechnical engineering report whose adequacy may have been affected by time. Speak with the geotechnical consultant to learn if additional tests are advisable before construction starts.

Construction operations at or adjacent to the site and natural eventssuch as floods, earthquakes, or ground water fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical report. The geotechnical engineer should be kept apprised of any such events, and should

be consulted to determine if additional tests are necessary.

GEOTECHNICAL SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND PERSONS

Geotechnical engineers' reports are prepared to meet the specific needs of specific individuals. A report prepared for a consulting civil engineer may not be adequate for a construction contractor, or even some other consulting civil engineer. Unless indicated otherwise, this report was prepared expressly for the client involved and expressly for purposes indicated be the client. Use by any other persons for any purpose, or by the client for a different purpose, may result in problems. No individual other than the client should apply this report for its intended purpose without first conferring with the geotechnical engineer. No person should apply this report for any purpose other than that originally contemplated without first conferring with the geotechnical engineer.

ladner testing laboratories, inc

2832 Utica Avenue/Post Office Box 10778/Jackson, Mississippi 39289-0778 / (601) 362-5421
2123 Glendale Avenue/ Hattiesburg, Mississippi 39402/ (601) 544-5782
P.O. Box 2363/ Gulfport, Mississippi 39505/ (228) 604-2527

PROJECT: COMFORT SUITES VICKSBURG MS	**CLIENT:** ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 11/1/2006 **LAB NO.** 761-06-A **BORE NO.** B-1 **TECHNICIAN** MILYN

SAMPLES: | AUGER(ASTM D-1452) | TUBE(ASTM D-1582) | X | PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN LEAN CLAY (0 - 3.5')		23.0	32.0	8.0	98.8	CL	
	X		MEDIUM						8
	X	BROWN SILTY CLAY (3.5' - 10')	STIFF	19.6	29.0	5.0	98.2	CL-ML	10
5									
			MEDIUM						8
10	X	BROWN SILTY CLAY (10' - 15')		19.7	30.0	4.0	99.0	CL-ML	
			STIFF						11
15	X	BROWN & TAN SILTY CLAY (15' - 20')		16.6	32.0	7.0	98.8	CL-ML	
	X		STIFF						12
20									
25									
30									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 20 FT.

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P.O. Box 2363/ Gulfport, Mississippi 39505/ (228) 604-2527

PROJECT: COMFORT SUITES VICKSBURG MS	**CLIENT:** ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 11/1/2006 **LAB NO.** 761-06-A **BORE NO.** B-2 **TECHNICIAN** MILYN

SAMPLES: | AUGER(ASTM D-1452) | TUBE(ASTM D-1582) | X | PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN SILTY CLAY (0 - 2.5')		18.0	31.0	7.0	99.0	CL-ML	
	X		STIFF						16
		BROWN SILTY CLAY (2.5' - 8.5')		17.1	32.0	7.0	99.0	CL-ML	
	X		STIFF						9
5									
	X	BROWN SILTY CLAY (8.5' - 13.5')	SOFT	15.5	33.0	7.0	99.0	CL-ML	3
10									
	X	TAN SILTY CLAY (13.5' - 15')	STIFF	9.4	29.0	4.0	98.4	CL-ML	9
15									
	X		STIFF						10
20									
25									
30									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 20 FT.

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PROJECT: COMFORT SUITES VICKSBURG MS	**CLIENT:** ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 11/1/2006 **LAB NO.** 761-06-A **BORE NO.** B-3 **TECHNICIAN** MILYN

SAMPLES: | AUGER(ASTM D-1452) | TUBE(ASTM D-1582) | X | PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN SILTY CLAY (0 - 2.5')		24.4	30.0	6.0	99.0	CL-ML	
	X		MEDIUM						7
		BROWN SILTY CLAY (2.5' - 5')		21.3	29.0	5.0	98.8	CL-ML	
	X		STIFF						12
5		BROWN SILTY CLAY W/SAND, GRAVEL (5' - 10')		21.0	33.0	7.0	83.5	CL-ML	
	X	(HIT OBSTRUCTION & TERMINATED SOIL BORING)	STIFF						14
10									
15									
20									
25									
30									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 10 FT.

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PROJECT: COMFORT SUITES VICKSBURG MS	**CLIENT:** ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 11/1/2006 **LAB NO.** 761-06-A **BORE NO.** B-4 **TECHNICIAN** MILYN

SAMPLES: | AUGER(ASTM D-1452) | TUBE(ASTM D-1582) | X | PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN SILTY CLAY (0 - 5')		21.9	30.0	6.0	99.0	CL-ML	
	X		MEDIUM						6
	X		MEDIUM						7
5	X	BROWN LEAN CLAY (5' - 13.5')		19.4	36.0	13.0	96.6	CL	
	X		STIFF						9
10									
	X	BROWN & TAN LEAN CLAY (13.5' - 20')	STIFF	14.5	36.0	10.0	99.8	CL	10
15									
	X		STIFF						12
20									
25									
30									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 20 FT.

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PROJECT: COMFORT SUITES VICKSBURG MS	**CLIENT:** ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 11/1/2006 **LAB NO.** 761-06-A **BORE NO.** B-5 **TECHNICIAN** MILYN

SAMPLES: AUGER(ASTM D-1452) | TUBE(ASTM D-1582) | X PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN SILTY CLAY (0 - 5')		16.4	31.0	7.0	99.8	CL-ML	
	X		MEDIUM						6
	X		MEDIUM						7
5		GRAY & TAN LEAN CLAY (5' - 8.5)		18.4	34.0	10.0	97.8	CL	
	X	BROWN & TAN LEAN CLAY (8.5' - 15')	MEDIUM	14.9	35.0	11.0	99.6	CL	8
10		(HIT DEBRIS @ 10'/OFF-SET HOLE TO COMPLETE)							
	X		STIFF						11
15		BROWN & TAN LEAN CLAY (15' - 20')		11.1	33.0	9.0	99.2	CL	
	X		STIFF						12
20		TAN SILTY CLAY (20' - 28.5')		12.7	32.0	6.0	99.0	CL-ML	
25									
	X	TAN & GRAY SILTY CLAY (28.5' - 33.5')	STIFF	19.2	32.0	7.0	99.2	CL-ML	10
30									

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING ELEVATION** 0 **FT.**

WATER DEPTH 0 **FT.** **AFTER** 0 **HRS.** **BORING TERMINATED AT** 40 **FT.**

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PROJECT: COMFORT SUITES VICKSBURG MS	**CLIENT:** ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 11/1/2006 **LAB NO.** 761-06-A **BORE NO.** B-5 **TECHNICIAN** MILYN

SAMPLES: | AUGER(ASTM D-1452) | TUBE(ASTM D-1582) | X | PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
30									
	X	TAN SILTY CLAY (33.5' - 40')	MEDIUM	28.2	31.0	7.0	98.4	CL-ML	6
35									
	X		SOFT						3
40									
45									
50									
55									
60									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 40 FT.

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PROJECT:	CLIENT:	DATE	11/1/2006
COMFORT SUITES	ROY PATEL, CHA	LAB NO.	761-06-A
	84 GRANDVIEW CIRCLE	BORE NO.	B-6
VICKSBURG MS		TECHNICIAN	MILYN
	BRANDON MS 39047		

SAMPLES: | AUGER(ASTM D-1452) | TUBE(ASTM D-1582) | X | PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN LEAN CLAY (0 - 1')		24.5	33.0	9.0	99.6	CL	
		BROWN SILTY CLAY (1' - 5')		16.7	30.0	6.0	98.0	CL-ML	
5									
10									
15									
20									
25									
30									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 5 FT.

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PROJECT:	CLIENT:	DATE	11/1/2006
COMFORT SUITES	ROY PATEL, CHA	LAB NO.	761-06-A
	84 GRANDVIEW CIRCLE	BORE NO.	B-7
VICKSBURG MS		TECHNICIAN	MILYN
	BRANDON MS 39047		

SAMPLES: | AUGER(ASTM D-1452) | TUBE(ASTM D-1582) | X | PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN LEAN CLAY (0 - 1')		20.6	32.0	9.0	99.2	CL	
		BROWN LEAN CLAY (1' - 5')		17.2	32.0	8.0	98.8	CL	
5									
10									
15									
20									
25									
30									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 5 FT.

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PROJECT: COMFORT SUITES VICKSBURG MS	**CLIENT:** ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 11/1/2006 **LAB NO.** 761-06-A **BORE NO.** B-8 **TECHNICIAN** MILYN

SAMPLES: AUGER(ASTM D-1452) ▒ TUBE(ASTM D-1582) X PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN LEAN CLAY (0 - 1')		23.2	33.0	10.0	99.4	CL	
		BROWN LEAN CLAY (1' - 5')		16.8	35.0	11.0	99.7	CL	
5									
10									
15									
20									
25									
30									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 5 FT.

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PROJECT: COMFORT SUITES VICKSBURG MS	**CLIENT:** ROY PATEL, CHA 84 GRANDVIEW CIRCLE BRANDON MS 39047	**DATE** 11/1/2006 **LAB NO.** 761-06-A **BORE NO.** B-9 **TECHNICIAN** MILYN

SAMPLES: | AUGER(ASTM D-1452) | TUBE(ASTM D-1582) | X | PENETRATION TEST(ASTM D-1596)

DEPTH	SAMPLE	VISUAL DESCRIPTION - REMARKS	CONSISTENCY	FIELD MOIST %	LL%	PI %	PASS #200 %	UNIFIED CLASS	STD. PEN
0		BROWN SILTY CLAY (0 - 3')		22.5	32.0	6.0	99.4	CL-ML	
		BROWN SILTY CLAY (3' - 5')		22.4	31.0	6.0	98.6	CL-ML	
5									
10									
15									
20									
25									
30									

WATER DEPTH 0 FT. AFTER 0 HRS. BORING ELEVATION 0 FT.

WATER DEPTH 0 FT. AFTER 0 HRS. BORING TERMINATED AT 5 FT.

SECTION 00330 - BID FORM

BID FOR SITE IMPROVEMENTS AND NEW CONSTRUCTION

TO: Roy Patel
84 Grandview Circle
Brandon, MS 39047

PROJECT: Comfort Suites Hotel
Berryman Road
Vicksburg, Mississippi

SUBMITTED: (Bidder's Name):_____

(Address):_____

(City, State, Zip):_____

(Telephone #):_____ (Facsimile #):_____

(Submittal Date):_____

The undersigned, in submitting this bid, understands and agrees that the Instructions to Bidders control, and, without limiting the foregoing, that this Bid Proposal is based upon the following:

1. That they have visited the site of the Work and have familiarized themselves with conditions as they affect the cost of the work.

2. That they have received and examined the Contract Documents, including all addenda issued by the Architect and have acknowledged same herein.

3. Proposes to furnish and install items as defined below and as required by the Contract Documents and All Addenda.

BASE BID : The four story Comfort Suites Hotel

Interior and exterior finishes, systems and equipment for the Comfort Suites Hotel as indicated on the Contract Documents.

BID AMOUNT:_____

_____Dollars ($_____)

AGREEMENT:

The Bidder agrees this Bid shall be good and may not be withdrawn for a period of thirty (30) days after the scheduled time and date for receiving bids. A bid bond is included with this bid form and shall be accepted by the Owner in the event of a withdrawal or forfeiture by the Bidder.

The Bidder understands the Owner reserves the right to accept or reject any or all bids and to waive informalities in bids received and monitor discrepancies in bidding procedures. If the Owner or Architect, in reviewing this Bid Form, discovers that the information provided has been falsified or exaggerated, or if the Contractor does not meet the pre-established criteria, same Contractor shall forfeit his/her right to the contract.

The Bidder also agrees, if awarded the Contract, to complete his work in accordance with the Owner's schedule and Milestone dates listed in Section 1040, Project Coordination.

The Contractor/Bidder agrees to forfeit the following penalties, for each area and phase of work, to the Owner in the event that the same contractor, through no fault of the Owner, fails to meet his/her obligations to complete the work on schedule, as follows:

Substantial Completion: $_____/day until a certificate of substantial completion is certified.

Project Close-Out:$_____/day until "punch list" completed and signed.

The final corrections to the contract shall be made through a "Change Order". The cost of the Performance/Material Payment Bond is included in the contract sum.

BID GUARANTEE:

The undersigned agrees that the Owner shall have the right to retain this bid for a period of thirty (30) days from the date and time of receiving bids and guarantee through a bid bond in the amount of five percent (5%) for the same thirty (30) day period.

BID ACCEPTANCE:

If written notice of the acceptance of this bid is mailed, telegraphed or delivered to the undersigned within the time noted herein, after the date of the opening of bids or any time thereafter before this bid is withdrawn, the undersigned agrees that he will execute a construction contract (AIA document A101, 1997 edition) in accordance with the Bid as accepted and will furnish contract security in the form of Performance and Material and Labor Payment Bonds with such surety or sureties as the Owner may approve. The cost of the Performance and Material and Labor Payment Bonds is included in the base bid contract sum.

It is understood and agreed that the Owner reserves the right to award the contract to his best interests, to reject any or all bids, to waive any informalities in bidding, and to hold all bids for the bid guarantee period.

ADDENDUM/ADDENDA :

The Bidder acknowledges that he has received the following Addenda and that each Addenda has been included in his Bid:

Addenda No._____Dated:_____
Addenda No._____Dated:_____
Addenda No._____Dated:_____
Addenda No._____Dated:_____
Addenda No._____Dated:_____

The undersigned Bidder represents that the above information and assurances are accurate to the best of his knowledge.

Signed and sealed this_____day of _____, 2005.

_____
Business Name

_____
Business Name

_____
Telephone #

BY: _____
Printed Name of Signer

_____
Signature

_____
Title

Corporate Seal

Attest if a Corporation

Title

END OF SECTION 00300

REQUEST FOR SUBSTITUTION

To: Mr. Roy Patel
84 Grandview Circle
Vicksburg, Mississippi 39047
(601) 829-9898

From: _____
name of company

_____
address

_____
city, state, zip code phone

Please fully answer all of the information requested below. Failure to answer any of the items below may cause rejection of request for substitution. Please use one form for each product being requested. Only the first product listed will be considered on forms with more than one product listed.

Specification Drawing Number
Section Number Detail Number

Specified Product Proposed Substitute

Product or part number
Color or finish
Pattern or profile
Weight or service rating

Please answer the following questions. Attach an explanation sheet on your company's letterhead when required.

Does the proposed substitution affect dimensions indicated on Drawings? No Yes (explain how).

Does the proposed substitution require changes in the drawings and/or design or installation changes? No Yes
(if yes, is the cost of these changes included in the proposed amount? No Yes)

Does the proposed substitution affect other trades?
No Yes (explain who and how).

If the proposed product does affect the work of other trades, has the cost impact on their work been included in the price of the proposed substitution? No Yes

Does the proposed product's guarantee differ from that of the specified product's? No Yes (explain how).

Why is this proposal for substitution being submitted? (list reasons below)

Attach a listing of 3 projects using the proposed substitution that have been completed within the past 5 years in the geographic and climatic region of this project. One of the applications must have been in service for at least 3 years.

Attach product data/brochures for the substitute product:

The undersigned represents that he has examined the Construction Documents and is familiar with the specified products, that he understands the indicated application of those products and the design intent of the Architect, and that the proposed substitution complies with the Construction Documents and will perform at least equally to the specified product within the limitations stated above. Additionally, the undersigned accepts responsibility for coordinating application and installation of the proposed substitution and waives all claims for additional costs resulting from the incorporation of the proposed substitution into the Project or its subsequent failure to perform according to specified requirements.

The undersigned represents that he has examined the specific provisions contained in Section 00800, the Supplementary General Conditions as negotiated between Owner and Contractor and agrees to comply with all of the provisions contained therein, or elsewhere in the Contract Documents.

Submitted by:_____
typed signature

Date: _____

The decision of the Owner regarding the acceptance or rejection of the proposed substitution will be based, at least in part, on the information supplied above and in the attached explanations and product data. The Owner, prior to the acceptance of the bid must receive requests for substitution.

SECTION 00500 –CONTRACT FORMS, BONDS AND CERTIFICATES

PART 1 - GENERAL

RELATED DOCUMENTS:

Applicable provisions of the General conditions and of Division 1, General Requirements govern all work in this Section.

WORK INCLUDED:

The following forms will be used during the construction of this Project. It shall be the Contractor's responsibility to obtain copies of these forms for his use.

CONTRACT FORMS:

A. Standard form of Agreement Between Owner and Contractor, AIA document A101, 1997 Edition.

FORMS AND CERTIFICATES:

A. File with Owner Prior to starting Work:
   1. Certificate of Insurance
   2. Performance Bond and Payment Bond, AIA Document A312, 1984 Edition.

B. Construction Change Order, AIA Document G701, 2000 Edition.

C. Application and Certificate for Payment, AIA Document G702 and G703, 1992 Edition.

D. Architect will prepare at Substantial Completion: Certificate of Substantial completion, AIA Document G704, 2000 Edition.

E. Closeout documents to be filed with Owner in accordance with Section 01700.

   1. Contractor's Affidavit of Payment of Debt's and Claims, AIA Document G706, 1994 edition.
   2. Contractor's Affidavit of Release, AIA Document G706A, 1994 Edition.
   3. Consent of Surety Company to final Payment, AIA Document G707, 1994 Edition.

END OF SECTION 00500

SECTION 00700 – AIA GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

PART 1 - GENERAL

A. The contractor and all persons whom he may employ or contract to do Work on this Project, shall be bound by these General conditions as if repeated in each Section of this Project Manual.

B. The General Conditions of the Contract for Construction, Fourteenth Edition, AIA Document A201, 1987 Edition, are hereby made a part of this Project Manual.

C. The failure on the part of the Contractor to familiarize himself or examine these Documents will in no way relieve him of the responsibilities and conditions set out herein.

END OF SECTION 00700

Section 00800

SUPPLEMENTAL CONDITIONS:

The Supplemental Conditions shall be those agreed to between the Owner and the Contractor at a future date.

END OF SECTION 00800

COMFORT SUITES

SECTION 00850 – SCHEDULE OF DRAWINGS

GENERAL

G001	Cover Sheet
G002	Project Information Sheet

CIVIL ENGINEERING

C1.1	General Construction Notes & Details
C2.1	Site Plan
C3.1	Utility Layout
C3.2	Grading & Drainage Plan
C3.3	Erosion Control Layout
C4.1	Water Distribution System & Sanitary Sewer System Details
C4.2	Storm Drain Details

ARCHITECTURAL

A101	Architectural Site Plan
A102	Architectural Site Details
A103	Ground Floor Plan
A104	Second Floor Plan
A105	3rd Floor Plan
A106	4^{th} Floor Plan
A107	Rated Partition Plan
A201	Ground Floor Ceiling Plan
A202	Second Floor Ceiling Plan
A203	3^{rd}-4^{th} Floor Ceiling Plan
A204	Roof Plan
A301	Large Scale Guestroom Plans
A302	Large Scale Lobby Plan
A401	Exterior Elevations
A402	Exterior Elevations
A403	Building Sections
A501	Wall Sections
A502	Wall Sections
A503	Wall Sections
A504	Exterior Details
A505	Stair Details
A601	Interior Elevations
A601.1	Interior Elevations
A602	Interior Elevations
A603	Interior Details
A604	Schedules
A605	Schedules
A606	Registration Desk Details
A607	Registration Desk Details

STRUCTURAL ENGINEERING

S-1	Foundation Plan
S-2	2^{nd} Floor Framing Plan
S-3	3^{rd}-4^{th} Floor framing Plan
S-4	Roof Framing Plan
S-5	Details/ Sections
S-6	Details/ Sections

MECHANICAL ENGINEERING

M101	Mechanical First Floor Plan & Schedules
M102	Mechanical 2nd Floor Plan, Schedules & Details
M103	Mechanical 3rd Floor Plan
M104	Mechanical 4th Floor Plan
M105	Mechanical Roof Plan & Details

P101	Plumbing First Floor Plan-DWV
P102	Plumbing First Floor Plan-Domestic Water
P103	Plumbing Second Floor Plan
P104	Plumbing Third & Fourth Floor Plan
P105	Plumbing Risers Diagrams-DWV
P106	Plumbing Risers Diagrams-DWV
P107	Plumbing Risers Diagrams-Domestic Water
P108	2nd & 3rd Floor Water
P109	Plumbing Details

ELECTRICAL ENGINEERING

E101	Electrical Site Plan
E201	Ground Floor Power Plan
E202	Ground Floor Lighting Plan
E203	2nd Floor Electrical Plan
E204	3rd Floor Electrical Plan
E205	4th Floor Electrical Plan
E206	Electrical Roof Plan
E301	Typical Guest Rooms Electrical Plans
E401	Electrical Panelboards One-Line Diagram
E402	Electrical Panelboards Schedules
E403	Electrical Panelboards Schedules
E404	Electrical Panelboards Schedules

END OF SECTION 00850

SECTION 01010 - SUMMARY OF THE WORK

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification section, apply to work of this section.

PROJECT/WORK IDENTIFICATION:

General: Project name is Comfort Suites Hotel shown on the Contract Documents prepared by Richard Molenaar, Architect. Drawings and specifications for this work are dated November 1, 2007. The project consists of the construction of the Comfort Suites Hotel; a four story, limited service hotel; constructed of wood studs exterior and interior bearing walls and pre-engineered factory wood joists floor roof framing with plywood decking, brick masonry and an exterior insulation/finish system with a single-ply membrane roof and a standing seam metal roof, extruded aluminum windows and entry system doors. All site work, utility work, unless noted otherwise is a part of this contract.

Summary by References: Work of the Contract shall include all contract documents and these can be summarized by references to the Contract, General Conditions, Supplementary Conditions, Specification Sections, the Construction Contract, Drawings, Addenda and modifications to the Contract Documents issued subsequent to the initial printing of this project manual and including but not necessarily limited to printed material referenced by any of these. It is recognized that work of the Contract is also unavoidably affected or influenced by governing regulations, natural phenomenon including weather conditions and other forces outside the contract documents.

All survey documents referencing or indicating "Existing Conditions", or "Existing Conditions Map", are not a part of the Contract Documents. The Owner, Owner's Representative(s), and the Architect assume no responsibility or liability for the Contractor's performance to carry out the work and verification of all existing conditions in accordance with the Contract Documents. It is the Contractor's responsibility to verify all existing conditions.

The building systems and components include all interior and exterior non-bearing walls and wall, floor and roof finishes, and coordination with the mechanical/electrical systems. Exterior non-bearing walls include metal stud framing and gypsum wallboard interior cladding and exterior sheathing, concrete and brick masonry, structural steel framing, a covered entry canopy with metal roof. Also included is an elevator system, swimming pool and , laundry room, serving kitchen and breakfast lounge, offices, 66 total Guest rooms scheduled as Queen/Queen standard guestrooms, Executive Suite guestrooms, Accessible standard guestrooms, Accessible Suite guestrooms and King Suite guestroom as indicated on drawings.

The site work includes coordination with excavation, earthwork, site clearing, installation of a foundation system, parking lot construction, site utilities, parking lot and accent lighting, sidewalks and patterned concrete area under Entrance Canopy.

The construction includes several logistical and organizational requirements. Included are the following:

1. Contractors performing the work shall endeavor to maintain the schedule for the project. Contractors performing the work shall be responsible for developing and submitting detailed schedules in accordance with Section 01310, Schedules, Reports, and Payments.

2. Protect all non-construction persons at the site by means of barricades, enclosures and warning signs. Provide professionally made signs as specified to direct and instruct the public on acceptable entries, construction zones and areas of no-admittance.

3. Maintain all means of egress, and do not interfere with other contractors work on site.

The new work also includes all equipment, products, coordination, temporary facilities, clean up, and all other requirements for a complete job. Refer to all other division one sections included herein for further requirements of Contractor.

Contractor shall be responsible for obtaining all permits. The Contractor shall pay for all demolition and building permits, mechanical and electrical permits, and plan review as required by the City of Olive Branch, Mississippi.

CONTRACTOR USE OF PREMISES:

General: The Contractors shall limit their use of the premises to the work indicated.

Use of the Site: Confine operations at the site to the areas permitted under the Contract. Portions of the site beyond areas on which work is indicated are not to be disturbed. Conform to site rules and regulations affecting the work while engaged in project construction.

Keep existing roads, driveways, and entrances not under construction and serving the premises clear and available to the public or other contractors at all times. Do not use these areas for parking or storage of materials. Barricade or fence off entrances and parking exit lanes from construction areas to maintain them in operating condition during construction.

Do not encumber the site with materials or equipment. Confine stockpiling of materials and location of storage sheds and office trailers within the confines of the site and site fencing. If additional storage is necessary, obtain and pay for such storage off-site.

Lock automotive type vehicles such as passenger cars and trucks and other types of mechanized and motorized construction equipment, when parked and unattended, so as to prevent unauthorized use. Do not leave such vehicles or equipment unattended with the motor running or the ignition key in place.

Repair damage caused by construction or demolition operations. Take all precautions necessary to protect all adjacent buildings, sitework, and its occupants during the construction period.

OWNER'S MILESTONE DATES:

The milestone dates indicated on the Owner's construction schedule included in Section 01310; Schedules, Reports, and Payments are provided as part of the Contract Documents. Liquidated Damages as negotiated between Owner and Contractor will be assessed against the Contractor for failure to complete on the milestone dates.

SPECIAL REQUIREMENTS:

No blasting of any kind is allowed on site.

Construction traffic shall give the right-of-way to the general public, public safety vehicles, and other commercial traffic at all times.

Throughout construction, protect all finished concrete slabs, including but not limited to the finished structural slabs in the hotel first floor and paving, form abrasion, chipping, staining (i.e., from rust, oil, paint, etc.), wheel marks, skid marks, and any other damage. Protection shall remain in place until surrounding work is completed and building is accepted by the Owner.

ALTERATIONS AND COORDINATION:

General: The work of this Contract includes coordination of the entire work of the project, and all sub-contractors. General Contractor shall prepare coordination drawings, diagrams and schedules as necessary for the proper communication between all interested parties. Contractor shall also control site utilization, from beginning of construction activity through project close-out and warranty periods. Contractor shall secure all areas within the prescribed construction limits.

WORK BY OTHERS

Responsibility for the Work shall be as listed below. Items not listed below shall be included in the Contract.

Comfort Suites – Vicksburg, MS

Item Furnishing Schedule

ITEM	FURNISHED BY	INSTALLATION BY
VWC Prep and adhesives	Contractor	Contractor
Wall Coverings (Selected by Owner and to meet Franchisor Standards)	Owner	Contractor
Vanity Mirrors (Decorative/Framed)	Contractor	Contractor
Furniture - Public Rooms	Owner	Contractor
Granite vanity tops, apron, splash with white china bowl, faces, framing and blocking	Contractor	Contractor
Shower Curtains & Hooks	Owner	Contractor
Shower Curtains Rods (Curved)	Contractor	Contractor
Lamps	Owner	Contractor
All Blocking for fixtures	Contractor	Contractor
Guest Room Coat Racks with Hangers	Contractor	Contractor
Wall-Mounted Light Fixtures in Guest Rooms	Owner	Contractor
Vanity Lights in typical Guest Rooms	Contractor	Contractor
Draperies & Tracks	Owner	Contractor
Carpet, Carpet Pad & Carpet Base-Public Areas (Selected by Owner)	Owner	Contractor
Carpet prep (floor leveler),adhesive and tack strips	Owner	Contractor
Bathroom Accessories	Contractor	Contractor
Television Conduit System with Pull	Contractor	Contractor
Television Wiring	Owner	Owner
Fire Alarm System Conduit	Contractor	Contractor
Fire Alarm Wiring	Contractor	Contractor
Telephone Conduit System with Pull	Contractor	Contractor
Telephone Wiring	Owner	Contractor
Card Holder (Back of Guest Room Door)	Owner	Contractor
Hardware and Keys	Contractor	Contractor
Doors	Contractor	Contractor
Painting & Staining	Contractor	Contractor
Room Numbers	Owner	Contractor
Night Registration Window	Contractor	Contractor
Lockers	Owner	Contractor
Safety Deposit Boxes	Contractor	Contractor

Full Height Dressing Mirrors	Owner	Contractor
Suite Cabinetry	Contractor	Contractor
Plumbing and Electrical @ Guest Room Wet Bar	Contractor	Contractor
Freezer/Rfg. At Prep. Storage	Owner	Contractor
Microwave at Guest Room Wet Bar	Owner	Contractor
Refrigerator at Guest Room Wet Bar	Owner	Contractor
Ice Machines	Owner	Contractor
All Rough-In and Hook-Up of Owner Furnished Equipment (U.N.O.)	Contractor	Contractor
Wood Shelves in Storage Room & Laundry Room	Contractor	Contractor
Registration Desk	Contractor	Contractor
Front Desk Equipment	Owner	Owner
Fire Extinguishers	Contractor	Contractor
Vending Machine	Owner	Contractor
Door Plaques	Owner	Contractor
Irrigation Sleeves	Contractor	Contractor
Landscaping & Irrigation	Contractor	Contractor
Area Signs (Comfort Suites)	Owner	Contractor
Washers / Dryers	Owner	Contractor
Handicapped Parking Signage	Contractor	Contractor
Resilient Base	Contractor	Contractor
Wall Corner Guards	Contractor	Contractor
Thru-Wall HVAC Units	Contractor	Contractor
Guestroom Entry & Remote Electric Locks (Ilco Brand)	Contractor	Contractor
Janitor Sign Package	Owner	Contractor
Site & Pool Signage	Owner	Contractor
Flag Pole	Contractor	Contractor
Security System/Camera	Contractor	Contractor
Stamped Concrete at Porte Cochere & Pool	Contractor	Contractor
Ceramic Tile in Lobby 18" x 18"	Contractor	Contractor
Ceramic Tile in Guest Rooms 8" x 8"	Contractor	Contractor
Granite Window Sills	Contractor	Contractor
Tub Surrounds at Full Height man-made marble	Contractor	Contractor
Building Permits	Contractor	Contractor
Tap & Impact Fees	Contractor	Contractor
Testing Fees	Contractor	Contractor
All millwork per plans	Contractor	Contractor
Gypsum Board at Guest Room Ceilings	Contractor	Contractor
Indoor Pool & Equipment	Contractor	Contractor

PART 2 - PRODUCTS (Not applicable).

PART 3 - EXECUTION (Not applicable).

END OF SECTION 01010

SECTION 01020 - ALLOWANCES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

This section includes furnishing materials and installation of materials as defined herein under "Allowance".

Product Allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts. Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum and not in the allowance.

Comprehensive Allowances shall include the total cost to the Contractor including overhead for products, installation, service, or other work directed by the Architect. Contractor's profit shall be included in the Contract Sum and not in the allowance. The cost of work performed under a Comprehensive Allowance shall be determined in accordance with the procedures set forth for Change Orders excluding Contractor's profit.

The Allowances shall be:

A. Lobby Floor Tile $3.00 per square foot (Product Allowance)
B. Landscaping & Irrigation System: $50,500.00 (Comprehensive Allowance)
C. Interior in-ground swimming pool as shown on plans: $55,000.00 (Comprehensive Allowance)
D. Guest Bath Floor & Base Tile: $3.00 per square foot (Product Allowance)
E. Public Toilets Floor & Base Tile: $5.00 per square foot (Product Allowance)
F. Pool Area Floor & Wall Tile: $3.25 per square foot (Product Allowance)
G. Pantry Area Floor & Base Tile: $2.25 per square foot (Product Allowance)
H. Entertainment Cabinet @ Breakfast Area: $12,000 (Comprehensive Allowance)
I. Art Glass @ Breakfast Area/Corridor: (Product Allowance)

The Contractor shall assist the Owner in obtaining bids for the materials covered by allowances and shall contract for such materials with the material bidder selected by the Owner.

All unused portions of allowances shall be refunded to the Owner by an appropriate change order.

END OF SECTION 01020

SECTION 01040 - PROJECT COORDINATION

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Unless otherwise agreed to in writing with the Owner, the General Contractor together with their selected Subcontractors shall include all items listed below as a part of their work and shall not rely upon the Architect or Owner to provide any product or work except where explicitly stated, in order to provide a completed product. Contractor shall perform all preparatory work and integral work items necessary to complete the work as contracted. Contractor shall include all cleaning, temporary equipment and accessories as itemized below in order to complete the work as contracted.

Minimum administrative and supervisory requirements necessary for coordination of work on the project include but are not necessarily limited to the following:

Coordination with all sub-contractors and Prime Contractor.
Commencing with preparation work, relocation or hook-up to utilities at the appropriate stages.
Means and methods of construction.
Lead and coordination at meetings.
Administrative and supervisory personnel.
Prompt ordering of critical, long-lead items.
Notification of anticipated construction problems immediately.
Advance Notification of utility shut downs.
Safety, barricades, signs and protection of the public.
Surveys, records or reports.
Limitations for use of site.
Special reports.
General installation provisions.
Cleaning and protection.
Conservation and salvage.

Contractor shall provide a field superintendent that will be ultimately responsible for all coordination, construction methods, communication and field decisions. This job superintendent shall be on site during all working hours, unless otherwise accepted to the contrary by the Owner.

COORDINATION AND MEETINGS:

General: Contractor shall prepare a brief written memorandum for construction meetings and special coordination activities. Include such items as required notices, requirements and reports. Distribute this memorandum to the Architect, Owner and other entities performing work at the project site. Prepare similar memorandum for separate contractors where interfacing of their work is required.

SURVEYS AND RECORDS/REPORTS:

General: Working from lines and levels established by the property survey, establish and maintain bench marks and other dependable markers. Establish bench marks and markers to set lines and levels for work at each story of construction and elsewhere as needed to properly locate each element of the project. Calculate and measure required dimensions as shown within recognized tolerances. Drawings shall not be scaled to determine dimensions. Advise entities performing work, of marked lines and levels provided for their use.

Survey Procedures: Before proceeding with the layout of actual work, verify the layout information shown on the drawings, in relation to the property survey, location of surrounding structures, and existing benchmarks. Notify the Architect of any discrepancies immediately. As work proceeds, check every major element for line, level and plumb. Maintain a surveyor's log or record book of such checks; make this log or record book available for the Architect or Engineer's reference. Record deviations from required lines and levels, and advise the Architect or Engineer promptly upon detection of deviations that exceed indicated or recognized tolerances. Record deviations which are accepted, and not corrected, on record drawings.

LIMITATIONS ON USE OF THE SITES:

General: Limitations on site usage as well as specific requirements that impact site utilization are indicated on the drawings and by other contract documents, and are consistent with previous construction activities in locality of Project. In addition to these limitations and requirements the Contractor shall administer allocation of available space equitably among entities needing both access and space so as to produce the best overall efficiency in performance of the total work of the project. Schedule deliveries so as to minimize space and time requirements for storage of materials and equipment on site.

Contractors shall provide temporary storage of items that need to be stored under cover, or under controlled conditions in a separate temporary structure, and not within the existing building areas.

SPECIAL REPORTS:

General: Submit special reports directly to the Owner within two days of an occurrence. Submit a copy of the report to the Architect/Engineer and other entities that are affected by the occurrence.

Reporting Unusual Events: When an event of an unusual and significant nature occurs at the site, the Prime Contractor shall prepare and submit a special report. List chain of events, persons participating, response by the Contractor's personnel, an evaluation of the results or effects and similar pertinent information. Advise the Owner in advance when such events are known or predictable.

Reporting Accidents: Contractor shall prepare and submit reports of significant accidents, at site and anywhere else work is in progress. Record and document data and actions. For this purpose, a significant accident is defined to include events where personal injury is sustained, or property loss of substance is sustained, or where the event posed a significant threat of loss or personal injury. Submit a copy of all accidents to Owner and Architect/Engineer.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

GENERAL INSTALLATION PROVISIONS:

Pre-Installation Conferences: Contractor shall hold a preinstallation meeting at the project site approximately 72 hours (3 calendar days) before installation of each unit of work which requires coordination with other work. Installer and representatives of the manufacturers and fabricators who are involved in or affected by that unit of work, and with its coordination or integration with other work that has preceded or will follow shall attend this meeting. Advise the Architect/Engineer of scheduled meeting dates for their attendance.

Refer to each specification section for required pre-installation conferences, including concrete, roof work and overhead cranes.

Installer's Inspection of Conditions: The Installer of each major unit of work, or Prime Contractor, shall inspect the substrate to receive the work and conditions under which the work is to be performed. Do not proceed with the work until unsatisfactory conditions are properly prepared.

Recheck measurements and dimensions of the work, as an integral step of starting each installation.

Install each unit-of-work during weather conditions and project status which will ensure the best possible results in coordination with the entire work. Isolate each unit of work from incompatible work as necessary to prevent deterioration.

Coordinate enclosure of the work with required inspections and tests, so as to minimize the necessity of uncovering the work for that purpose.

Mounting Heights: Where mounting heights are not indicated, mount individual units of work at industry recognized standard mounting heights for the particular application indicated. Refer questionable mounting height choices to the Architect/Engineer for final decision.

CLEANING AND PROTECTION:

General: During handling and installation of work at the project site, clean and protect work in progress and adjoining work at the basis of continuous maintenance. Contractor shall ensure that protective covering is on installed work where it is required to ensure freedom from damage or deterioration at time of substantial completion.

Clean and perform maintenance on installed work as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to ensure operability without damaging effects.

Limiting Exposures of Work: To the extent possible through reasonable control and protection methods, prime contractor shall supervise performance of the work in such a manner and by such means which will ensure that none of the work, whether completed or in progress, or existing conditions which are to remain after construction will be subjected to harmful, dangerous, damaging or otherwise deleterious exposure during the construction period. Such exposures include, where applicable, but not by way of limitation the following:

Excessive static or dynamic loading.
Excessive internal or external pressures.
Excessively high or low temperatures.
Thermal shock.
Excessive Vibration.
Excessively high or low humidity.
Air contamination or pollution.

Water or ice.
Solvents.
Chemicals.
Light.
Radiation.
Puncture.
Abrasion.
Heavy traffic.
Soiling.
Combustion.
Electrical current.
High speed operation, improper lubrication, unusual wear
Incompatible interface.
Destructive testing.
Misalignment.
Excessive weathering.
Unprotected storage.
Improper shipping or handling.
Theft.
Vandalism.

END OF SECTION 01040

SECTION 01045 - CUTTING AND PATCHING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

Definition: "Cutting and patching" includes cutting into existing construction to provide for the installation or performance of other work and subsequent fitting and patching required to restore surfaces to their original condition.

"Cutting and patching" is performed for coordination of the work, to uncover work for access or inspection, to obtain samples for testing, to permit alterations to be performed or for other similar purposes.

Cutting and patching performed during the manufacture of products, or during the initial fabrication, erection or installation processes is not considered to be "cutting and patching" under this definition. Drilling of holes to install fasteners and similar operations are also not considered to be "cutting and patching".

Contractor shall perform the cutting and patching required to complete the work, or shall subcontract such work for a complete job and final product.

Refer to other sections of these specifications for specific cutting and patching requirements and limitations applicable to individual units of work.

Unless otherwise specified requirements of this section apply to mechanical and electrical work. Refer to Division-15 and Division-16 sections for additional requirements and limitations on cutting and patching of mechanical and electrical work.

QUALITY ASSURANCE:

Requirements for Structural Work: Do not cut and patch structural work in a manner that would result in a reduction of load- carrying capacity or of load-deflection ration. Examples of products and assemblies include the following:

Structural Steel.
Cast-in-place Concrete Slabs, Columns, Walls or beams.
Structural Wood Columns, Beams, or Walls.
Miscellaneous structural metals, including lintels, equipment supports, stair systems and similar categories of work.
Miscellaneous Structural Concrete.
Foundation Construction.
Piping, ductwork, vessels and equipment.

Operational and Safety Limitations: Do not cut and patch operational elements or safety related components in a manner that would result in a reduction of their capacity to perform in the manner intended, including energy

performance, or that would result in increased maintenance, or decreased operational life or decreased safety.

Visual Requirements: Do not cut and patch work exposed on the building's exterior or in its occupied spaces in a manner that would, in the Architect/Engineer's opinion, result in lessening the building's aesthetic qualities. Do not cut and patch work in a manner that would result in substantial visual evidence of cut and patch work. Remove and replace work judged by the Owner and Architect/Engineer to be cut and patched in a visually unsatisfactory manner.

If possible retain the original installer or fabricator, or another recognized experienced and specialized firm to cut and patch the following categories of exposed work.

Processed concrete finishes.
Roofing.
Exterior insulation finish system.
Face Brick.
Preformed metal panels.

Acoustical ceilings.
Carpeting.
Gypsum Board.
Acoustical Panels.
HVAC enclosures, cabinets or covers.

PART 2 - PRODUCTS

MATERIALS:

General: Except as otherwise indicated, or as directed by the Architect/Engineer, use materials for cutting and patching that are identical to existing materials. If identical materials are not available, or cannot be used, use materials that match existing adjacent surfaces to the fullest extent possible with regard to visual effect. Use materials for cutting and patching that will result in equal-or-better performance characteristics.

PART 3 - EXECUTION

INSPECTION:

Before cutting, examine the surfaces to be cut and patched and the conditions under which the work is to be performed. If unsafe or otherwise unsatisfactory conditions are encountered, take corrective action before proceeding with the work.

Before the start of cutting work, meet at the work site with all parties involved in cutting and patching, including mechanical and electrical trades. Review areas of potential interference and conflict between the various trades. Coordinate layout of the work and resolve potential conflicts before proceeding with the work.

PREPARATION:

Temporary Support: To prevent failure provide temporary support of work to be cut.

Protection: Protect other work during cutting and patching to prevent damage. Provide protection from adverse weather conditions for that part of the project that may be exposed during cutting and patching operations.

Avoid interference with use of adjoining areas or interruption of free passage to adjoining areas.

Take precautions not to cut existing pipe, conduit or duct serving the building or existing buildings, but scheduled to be relocated until provisions have been made to bypass them.

PERFORMANCE:

General: Employ skilled workmen to perform cutting and patching work. Except as otherwise indicated or as approved by the Architect/Engineer, proceed with cutting and patching at the earliest feasible time and complete work without delay.

Cutting: Cut the work using methods that are least likely to damage work to be retained or adjoining work. Where possible review proposed procedures with the original installer; comply with original installer's recommendations.

In general, where cutting is required use hand of small power tools designed for sawing or grinding, not hammering and chopping. Cut through concrete and masonry using a cutting machine such as a carborundum saw or core drill to insure a neat hole. Cut holes and slots neatly to size required with minimum disturbance of adjacent work. To avoid marring existing finished surfaces, cut or drill from the exposed or finished side into concealed surfaces. Temporarily cover openings when not in use.

Comply with requirements of applicable sections of Division 2 where cutting and patching requires excavating and backfilling.

By-pass utility services such as pipe and conduit, before cutting, where such utility services are shown or required to be removed, relocated or abandoned. Cut-off conduit and pipe in walls or partitions to be removed. After by-pass and cutting, cap, valve or plug and seal tight remaining portion of pipe and conduit to prevent entrance of moisture or other foreign matter.

Patching: Patch with seams which are durable and as invisible as possible. Comply with specified tolerances for the work.

Where feasible, inspect and test patched areas to demonstrate integrity of work.

Restore exposed finishes of patched areas and where necessary extend finish restoration into retained adjoining work in a manner which will eliminate evidence of patching and refinishing.

Where removal of walls or partitions extends one finished area into another finished area, patch and repair floor and wall surfaces in the new space to provide an even surface of uniform color and appearance. If necessary to achieve uniform color and appearance, remove existing floor and wall coverings and replace with new materials.

Where patch occurs in a smooth painted surface, extend final paint coat over entire unbroken surface containing patch, after patched area has received prime and base coat.

Patch, repair or rehang existing ceilings as necessary to provide an even plane surface of uniform appearance.

CLEANING:

Thoroughly clean areas and spaces where work is performed or used as access to work. Remove completely point, mortar, oils, putty and items of similar nature. Thoroughly clean piping, conduit and similar features before painting or other finishing is applied. Restore damaged pipe covering to its original condition.

END OF SECTION 01045

SECTION 01090 - DEFINITIONS AND STANDARDS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

General: This section specifies procedural and administrative requirements for compliance with governing regulations and codes and standards imposed upon the Work. These requirements include the obtaining permits, licenses, inspections, releases and similar documentation, as well as payments, statements and similar requirements associated with regulations, codes and standards.

> The term, "Regulations", is defined to include laws, statutes, ordinances and lawful orders issued by governing authorities, as well as those rules, conventions and agreements within the construction industry which effectively control the performance of the work regardless of whether they are lawfully imposed by governing authority or not.

Governing Regulations: Refer to General and Supplementary Conditions for requirements related to compliance with governing regulations.

DEFINITIONS:

General Explanation: A substantial amount of specification language constitutes definitions of terms found in other contract documents, including the drawings. (Drawings are recognized as being diagrammatic in nature and not completely descriptive of the requirements indicated thereon). Certain terms used in contract documents are defined in this article. Definitions and explanations of this section are not necessarily either complete or exclusive, but are general for the Work to the extent that they are not stated more explicitly in another element of the contract documents.

General Requirements: The provisions or requirements of other Division-1 sections apply to entire work of the Contract and, where so indicated, to other elements which are included in the project.

Indicated: The term "indicated" is a cross-reference to graphic representations, notes or schedules on the Project Drawings. Where terms such as "shown," "noted," "scheduled," and "specified" are used in lieu of "indicated," it is for the purpose of helping the reader locate the cross-reference, and no limitation of location is intended except as specifically noted. Use of the words, "as specified" shall mean "as specified in the Project Specifications, or as specified on the Project Drawings".

Contractor or Prime Contractor: The term "Contractor" is defined as the entity that has a direct contract with the Owner, a document signed by both the Owner and the Contractor. The Contractor may otherwise perform work as a General Contractor, Sub- contractor, Sub-sub-contractor, or supplier. The Contractor shall act as an independent contactor except that he/she is responsible for coordination with the other Prime Contractors.

Directed, Requested, etc.: Where not otherwise explained, terms such as "directed," "requested," "authorized,"

"selected," "approved," "required," "accepted," and "permitted" mean "directed by Architect/Engineer," "requested by the Architect/Engineer," and similar phrases. However, no such implied meaning will be interpreted to extend Architect's/Engineer's responsibility into the Contractor's area of construction supervision.

Approve: Where used in conjunction with the Architect's/ Engineer's response to submittals, requests, applications, inquiries, reports and claims by the Contractor, the meaning of the term "approved" will be held to limitations of the Architect's/Engineer's responsibilities and duties as specified in General and Supplementary Conditions. In no case will the Architect/Engineer's approval be interpreted as a release of the Contractor from responsibilities to fulfill requirements of contract documents.

Project Site: The term "project site," is defined as the space available to the Contractor for performance of the Work, either exclusively or in conjunction with others performing other work as part of the project. The extent of the project site is shown on the drawings, and may or may not be identical with the description of the land upon which the project is to be built.

Furnish: Except as otherwise defined in greater detail, the term "furnish" is used to mean "supply and deliver to the project site, ready for unloading, unpacking, assembly, installation, and similar operations," as applicable in each instance.

Install: Except as otherwise defined in greater detail, the term "install" is used to describe operations at project site including the actual "unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing protecting, cleaning and similar operations," as applicable in each instance.

Provide: Except as otherwise defined in greater detail, the term "provide" means "to furnish and install, complete and ready for intended use," as applicable in each instance.

Installer: The term "installer" is defined as "the entity" (person or firm) engaged by the Contractor, its subcontractor or sub-subcontractor for performance of a particular unit of work at the project site, including installation, erection, application and similar required operations. It is a requirement that installers are experienced in the operations they are engaged to perform.

Testing Laboratories: The term "testing laboratory" is defined as an independent entity engaged to perform specific inspections or tests of the work, either at the project site or elsewhere, and to report, and (if required) interpret results of those inspections or tests. "Testing Engineer" shall be the designated manager of the testing laboratory.

Owner: The term "Owner" is defined as _____.

Architect: Whenever the term "Architect", is used, it shall refer to Richard Molenaar or his assigned representative, who by contract with the Owner is authorized to prepare all drawings and specifications for the new Hotel .

For the terms "discover, recognize, reasonably inferable, approved, knowledge, persistently discover," refer to the Section 00800, Supplementary General Conditions.

DRAWING SYMBOLS:

General: Except as otherwise indicated, graphic symbols used on the drawings are those symbols recognized in the construction industry for purposes indicated. Where not otherwise noted, symbols are defined by "Architectural Graphic Standards," published by John Wiley & Sons, Inc., seventh edition.

Mechanical/Electrical Drawings: Graphic symbols used on mechanical and electrical drawings are generally aligned with symbols recommended by ASHRAE. Where appropriate, these symbols are supplemented by more specific

symbols as recommended by other technical associations including ASME, ASPE, IEEE and similar organizations. Refer instances of uncertainty to the Architect/Engineer for clarification before proceeding.

INDUSTRY STANDARDS:

Applicability of Standards: Except where more explicit or stringent requirements are written into the contract documents, applicable construction industry standards have the same force and effect as if bound into or copied directly into the contract documents. Such industry standards are made a part of the contract documents by reference. Individual specification sections indicate which codes and standards the Contractor must keep available at the project site for reference.

Referenced standards (standards referenced directly in the contract documents) take precedence over non-referenced standards that are recognized in the industry for applicability to the Work.

Non-referenced Standards: Except as otherwise limited by the contract documents, non-referenced standards recognized in the construction industry are defined as having direct applicability to the Work and will be enforced for the performance of the Work. The decision as to whether an industry code or standard is applicable to the Work, or as to which of several standards are applicable, is the sole responsibility of the Architect/Engineer.

Publication Dates: Except as otherwise indicated, where compliance with an industry standard is required, comply with standard in effect as of date of contract documents.

Updated Standards: At the request of the Architect/Engineer, Contractor or governing authority, submit a change order proposal where an applicable industry code or standard has been revised and reissued after the date of the contract documents and before the performance of the work affected. The Architect/Engineer will decide whether to issue the change order to proceed with the updated standard.

Conflicting Requirements: Where compliance with two or more standards is specified, and where these standards establish different or conflicting requirements for minimum quantities or quality levels, the most stringent requirement will be enforced, unless the contract documents specifically indicate a less stringent requirement. Refer requirements that are different, but apparently equal, and uncertainties as to which quality level is more stringent to the Architect/Engineer for a decision before proceeding.

Minimum Quantities or Quality Levels: In every instance the quantity or quality level shown or specified is intended to be the minimum for the work to be provided or performed. Unless otherwise indicated, the actual work may either comply exactly, within specified tolerances, with the minimum quantity or quality specified, or may exceed that minimum within reasonable limits. In complying with these requirements, the indicated numeric values are either minimum or maximum values, as noted, or as appropriate for the context of the requirements. Refer instances of uncertainty to the Architect/Engineer for decision before proceeding.

Copies of Standards: The contract documents require that each entity performing work be experienced in that part of the work being performed. Each entity is also required to be familiar with industry standards applicable to that part of the work. Copies of applicable standards are not bound with the contract documents.

Where copies of standards are needed for proper performance of the Work, the Contractor is required to obtain such copies directly from the publication source.

Although certain copies of standards needed for enforcement of the requirements may be required submittals, the Architect/Engineer reserves the right to require the Contractor to submit additional copies of these standards as necessary for enforcement of requirements.

Abbreviations and Names: Trade association names and titles of general standards are frequently abbreviated. The following acronyms or abbreviations as referenced in contract documents are defined to mean the associated names. Both names and addresses are subject to change, and are believed to be, but are not assured to be, accurate and up-to-date as of date of contract documents:

AA Aluminum Association
818 Connecticut Ave. NW; Washington DC 20006;
202/862-5100

AABC Associated Air Balance Council
1518 K Street, NW, Suite 503
Washington, DC 20005; 202/737-0202

AAMA American Architectural Manufacturers Association
2700 River Road, Suite 118; Des Plaines, IL;
312/699-7310

AAN American Association of Nurserymen
1250 Eye Street, NW; Suite 500; Washington, DC 20005
202/789-2900

AASHTO American Association of State Highway & Transportation Officials
444 North Capitol St.; Washington, DC 20001;
202/624-5800

AATCC American Association of Textile Chemists and Colorists
P.O. Box 12215; Research Triangle Park, NC 27709;
919/549-8141

ACI American Concrete Institute
P. O. Box 19150
Detroit, MI 48219; 313/532-2600

ACIL American Council of Independent Laboratories
1725 K Street, NW
Washington, DC 20006; 202/887-5872

ACPA American Concrete Pipe Association
8320 Old Courthouse Rd
Vienna, VA 22180; 703/821-1990

ACS Acoustical Society of America
335 East 45th Street
New York, NY 10017; 212/661-9404

ADC Air Diffusion Council
230 N. Michigan Ave.; Suite 1200
Chicago, IL 60611; 312/372-9800

AGA American Gas Association

1515 Wilson Blvd.; Arlington, VA 22209; 703/841-8400

AHA American Hardboard Association
877-B Wilmette Road; Palatine,IL 60067;
312/934-8800

AHAM Association of Home Appliance Manufacturers
20 N Wacker Dr.; Chicago, IL 60606; 312/984-5800

AI Asphalt Institute
Asphalt Inst. Bldg.; College Park, MD 20740;
301/227-4258

AIA American Institute of Architects
1735 New York Ave.NW;Washington,DC 20006;
202/626-7300

A.I.I. American Insurance Institute
85 John Street; New York, NY 10038; 212/669-0400

AIHA American Industrial Hygiene Association
475 Wolf Ledges Parkway; Akron, OH 44311; 216/762-2794

AISC American Institute of Steel Construction
400 N. Michigan Ave.; 8th Floor; Chicago, IL 60611;
312/670-2400

AISI American Iron and Steel Institute
1000 16th St., NW; Washington, DC 20036; 202/452-7100

AITC American Institute of Timber Construction
333 W. Hampden Ave.; Englewood, CO 80110; 303/76l-3212

ALI Associated Laboratories, Inc.
Eight Brush Street; Pontiac, MI 48053; 313/335-6114

ALSC American Lumber Standards Committee
P.O. Box 210; Germantown, MD 20874; 301/972-1700

AMCA Ais Movement and Control Association
30 W. University Dr.; Arlington Heights, IL 60004;
312/394-0150

ANSI American National Standards Institute
655 Fifteenth Street, NW,Suite300;
Washington, DC 20015; (202) 639-4090

APA American Plywood Association
P.O. Box 11700; Tacoma, WA 98411; 206/565-6600

A.P.A. American Parquet Association
1650 Union National Plaza; Little Rock, AR 72201;

501/375-5561

API American Petroleum Institute
1220 L Street, NW; Washington, DC 20005
202/682-8000

ARI Air Conditioning and Refrigeration Institute
1501 Wilson Blvd.; Arlington, VA 22209; 703/524-8800

ARMA Asphalt Roofing Manufacturers Association
6288 Montrose Road
Rockville, MD 20852; 301/231-9050

ASC Adhesive and Sealant Council
1600 Wilson Blvd.; Suite 910; Arlington, VA 22209;
703/841-1112

ASHRAE American Society of Heating, Refrigerating & Air-Conditioning Engineers
1791 Tullie Circle, NE; Atlanta, GA 30329; 404/636-8400

ASME American Society of Mechanical Engineers
345 East 47th St.; New York, NY 10017; 212/705-7722

ASPE American Society of Plumbing Engineers
15233 Ventura Blvd.; Sherman Oaks, CA 91403;
213/783-4845

ASSE American Society of Sanitary Engineers
P.O. Box 40362; Bay Village, OH 44140; 216/835-3040

ASTM ASTM
1916 Race St.; Philadelphia, PA 19103; 215/299-5400

AWI Architectural Woodwork Institute
2310 S. Walter Reed Dr.; Arlington, VA 22206;
703/671-9100

AWPA American Wood-Preservers' Association
P.O. Box 849; Stevensville, MD 21666; 301/643-4163

AWPB American Wood Preservers Bureau
P.O. Box 6085; 2772 S. Randolph Street;
Arlington, VA 22206; 703/931-8180

AWS American Welding Society
P.O. Box 351040; 550 Le Jeune Rd., NW; Miami, FL 33135
305/443-9353

AWWA American Water Works Association
6666 W. Quincy Ave., Denver, CO 80235; 303/794-7711

BANC Brick Association of North Carolina
P.O. Box 6305; Greensboro, NC 27415; 919/273-5566

BHMA Builders' Hardware Manufacturers Association
60 East 42nd St., Room 511; New York, NY 10165;
212/682-8142

BIA Brick Institute of America
11490 Commerce Park Drive, Suite 300;
Reston, VA 22091; 703/620-0010

BIFMA Business and Institutional Furniture Manufacturer's Association
2335 Burton St., S.E.; Grand Rapids, MI 49506;
616/243-1681

CAUS Color Association of the United States
343 Lexington Avenue; New York, NY; 10016
212/683-9531

CAGI Compressed Air and Gas Institute
c/o Thomas Associates, Inc.
1230 Keith Building; Cleveland, OH 44115; 216/241-7333

CBM Certified Ballast Manufacturers Association
Hanna Building, Suite 772; 1422 Euclid Avenue;
Cleveland, OH 44115; 216/241-0711

CDA Copper Development Association
Box 1840; Greenwich Office Part 2; Greenwich, CT 06836
203/625-8210

CGA Compressed Gas Association
1235 Jefferson Davis Highway; Arlington, VA 22202
703/979-0900

CISPI Cast Iron Soil Pipe Institute
1499 Chain Bridge Rd.; Suite 203; McLean, VA 22101;
703/827-9177

CLPA California Lathing and Plastering Association
25332 Narbonne, Suite 170; Lomita, CA 90717
213/539-6080

CRI Carpet and Rug Institute
Box 2048; Dalton, GA 30720; 404/278-3176

CRSI Concrete Reinforcing Steel Institute
933 Plum Grove Road; Schaumburg, IL 60195;
312/490-1700

CTI Ceramic Tile Institute

700 N. Virgil Ave.; Los Angeles, CA 90029; 213/660-1911

DHI Door and Hardware Institute
7711 Old Springhouse Rd.; McLean, VA 22102; 703/556-3990

DLPA Decorative Laminate Products Association (Formerly the National Association of Plastic Fabricators)
Hulman Building; 20th Floor; 120 West Second Street; Dayton, OH 45402; 513/228-1041

ECSA Exchange Carriers Standards Association
Four Century Drive, 3rd Floor; Parsippany, NJ 07054; 201/538-6111

EIA Electronic Industries Association
2001 Eye St., NW; Washington, DC 20006; 202/457-4900

EIMA Exterior Insulation Manufacturers Association
P.O. Box 75037; Washington, DC 20013; 202/783-6582

ETL ETL Testing Laboratories, Inc.
P.O. Box 2040; Route 11, Industrial Park; Courtland, NY 13045; 607/753-6711

FCI Fluid Controls Institute
P.O. Box 9036; Morristown, NJ 07960; 201/829-0990

FGMA Flat Glass Marketing Association
White Lakes Professional Bldg; 3310 Harrison; Topeka, KS 66611; 913/266-7013

FM Factory Mutual System
1151 Boston-Providence Turnpike; Norwood, MA 02062
617/762-4300

FTI Facing Tile Institute
c/o Box 8880; Canton, OH 44711 216/488-1211

GA Gypsum Association
1603 Orrington Ave.; Evanston; IL 60201; 312/491-1744

HEI Heat Exchange Institute
1230 Keith Building; Cleveland, OH 44115; 216/241-7333

HI Hydronics Institute
P.O.Box218;35 Russo Place;Berkeley Heights,NJ 07922
201/464-8200

HMA Hardwood Manufacturers Association
805 Sterick Building; Memphis, TN 38103 901/525-8221

ICEA Insulated Cable Engineers Association, Inc.
P.O. Box P; South Yarmouth, MA 02664; 617/394-4424

IEC International Electrotechnical Commission (Available from ANSI)
655 Fifteenth Street, NW, Suite 300;
Washington, DC 20015; 202/639-4090

IEEE Institute of Electrical and Electronic Engineers, Inc.
345 E. 47th St.; New York, NY 10017; 212/705-7926

IES Illuminating Engineering Society of North America
345 E. 47th Street; New York, NY 10017; 212/705-7926

IGCC Insulating Glass Certification Council
Route 11; Industrial Park; Cortland, NY 13045
607/753-6711

ILI Indiana Limestone Institute of America
Stone City Bank Bldg.; Suite 400; Bedford, IN 47421;
812/275-4426

IMSA International Municipal Signal Association
P.O. Box 8249; Fort Worth, TX 76112; 817/429-8638

IRI Industrial Risk Insurers
85 Woodland St.; Hartford, CT 06102; 203/525-2601

ISA Instrument Society of America
P.O. Box 12277; 67 Alexander Drive;
Research Triangle Park, NC 27709; 919/549-8411

LPI Lightning Protection Institute
P.O. Box 406; 48 N. Ayer Street; Harvard, IL 60033;
815/943-7211

MBMA Metal Building Manufacturer's Association
1230 Keith Bldg; Cleveland, OH 44115; 216/241-7333

MCA Mechanical Contractors Association of America
5410 Grosvenor Lane; Suite 120; Bethesda, MD 20814;
301/897-0770

MIA Marble Institute of America
33505 State St.; Farmington, MI 48024; 313/746-5558

ML/SFA Metal Lath/Steel Framing Association
221 N. LaSalle St., Suite 2026; Chicago, IL 60601;
312/346-1600

MSS Manufacturers Standardization Society of the Valve and Fittings Industry
127 Park Street, NE; Vienna, VA 22180; 703/281-6613

NAAMM National Association of Architectural Metal Mfrs.
221 N. La Salle St.; Chicago, IL 60601; 312/346-1600

NAPF National Association of Plastic Fabricators (Now DLPA)

NBGQA National Building Granite Quarries Association
c/o H.E. Fletcher Co.; West Chelmsford, MA 08163

NBHA National Builders Hardware Association (Now Part of DHI)
711 Old Springhouse Rd.; McLean, VA 22101; 703/556-3990

NCMA National Cement Masonry Association
P.O. Box 781; Herndon, VA 22070; 703/435-4900

NCRPM National Council on Radiation Protection and Measurement
7910 Woodmont Ave.; Suite 1016; Bethesda, MD 20814;
301/657-2652

NEC National Electrical Code (by NFPA)

NECA National Electrical Contractors Association
7315 Wisconsin Ave.; Bethesda, MD 20814; 301/657-3110

NEII National Elevator Industry, Inc.
600 Third Ave.; New York, NY 10016; 212/986-1545

NEMA National Electrical Manufacturers Association
2101 L St., NW, Suite 300;
Washington, D. C. 20037; 202/457-8400

NFPA National Fire Protection Association
Batterymarch Park, Quincy, MA 02269; 617/770-3000

N.F.P.A. National Forest Products Association
1619 Massachusetts Ave., NW; Washington, DC 20036
202/797-5800

NHLA National Hardwood Lumber Association
P.O. Box 34518; Memphis, TN 38184; 901/377-1818

NKCA National Kitchen Cabinet Association
P.O. Box 6830; Falls Church, VA 22046; 703/237-7580

NOFMA National Oak Flooring Manufacturers Association
804 Sterick Bldg.; Memphis, TN 38013; 901/526-5016

NPA National Particleboard Association
18928 Premier Court, Gaithersburg, MD 20879;
301/670-0604

NPCA National Paint and Coating Association

1500 Rhode Island Avenue, N.W.; Washington, DC 20005;
202/462-6272

NRCA National Roofing Contractors Association
8600 Bryn Mawr Ave.; Chicago, IL 60631; 312/693-0700

NSF National Sanitation Foundation
P.O. Box 1468; 3475 Plymouth Rd.; Ann Arbor, MI 48106;
313/769-8010

NSSEA National School Supply and Equipment Association
1500 Wilson Blvd.; Arlington, VA 22209; 703/524-8819

NTMA National Terrazzo and Mosaic Association
3166 Des Plaines Ave.; Suite 24; Des Plaines, IL 60018;
312/635-7744

NWMA National Woodwork Manufacturers Association (Now NWWDA)

NWWDA National Wood Window and Door Association
(Formerly NWMA)
205 West Touhy Avenue; Park Ridge, IL 60068;
312/823-6747

PCI Prestressed Concrete Institute
20 N. Wells St.; Chicago, IL 60606; 312/346-4071

PDI Plumbing and Drainage Institute (c/o Austin O.Roche,Jr.)
5342 Blvd. Pl.; Indianapolis, IN 46208; 317/251-5298

PEI Porcelain Enamel Institute
1911 N. Fort Myer; Arlington, VA 22209; 703/527-5257

RFCI Resilient Floor Covering Institute
966 Hungerford Drive; Suite 12-B; Rockville, MD 20805;
301/340-8580

RIS Redwood Inspection Service
591 Redwood Highway; Suite 3100; Mill Valley, CA 94941;
415/381-1304

RMA Rubber Manufacturers Association
1400 K Street, NW; Washington, DC 20005 202/682-4800

SAMA Scientific Apparatus Makers Association
1101 16th St., NW; Washington, DC 20036; 202/223-1360

SDI Steel Deck Institute
P.O. Box 3812; St. Louis, MO 63122; 314/965-1741

S.D.I. Steel Door Institute
(c/o A.P. Wherry and Associates, Inc.)

14600 Detroit Avenue; Cleveland, OH 44107; 216/266-7700

SGCC Safety Glazing Certification Council
Route 11; Industrial Park; Cortland Park, NY 13045;
607/753-6711

SHLMA Southern Hardwood Lumber Manufacturers Association
(Now HMA)

SIGMA Sealed Insulating Glass Manufacturers Association
111 E. Wacker Dr.; Chicago, IL 60601; 312/644-6610

SJI Steel Joist Institute
1205 48th Street, North; Suite A;
Myrtle Beach, SC 29577; 803/449-0487

SMACNA Sheet Metal & Air Conditioning Contractors' National
Association
P.O. Box 70; Merrifield, VA 22116; 703/790-9890

SPIB Southern Pine Inspection Bureau
4709 Scenic Hgy.; Pensacola, FL 32504; 904/434-2611

SPRI Single Ply Roofing Institute
1800 Pickwick Avenue; Glenview, IL 60025; 312/724-7700

SSPC Steel Structures Painting Council
4400 5th Avenue; Pittsburgh, PA 15213; 412/578-3327

SWI Steel Window Institute (c/o Thomas Associates, Inc.)
1230 Keith Bldg, Cleveland, OH 44115; 216/241-7333

TCA Tile Council of America
P.O. Box 326; Princeton, NJ 08540; 609/921-7050

TIMA Thermal Insulation Manufacturers Association
7 Kirby Plaza; Mt. Kisco, NY 10549; 914/241-2284

TPI Truss Plate Institute
583 D'Onofrio Drive; Suite 200; Madison, WI 53719
608/833-5900

UL Underwriters Laboratories
333 Pfingsten Rd.; Northbrook, IL 60062; 312/272-8800

WCLIB West Coast Lumber Inspection Bureau
P.O. Box 23145; Portland, OR 97223; 503/639-0651

WIC Woodwork Institute of California
P.O. Box 11428; Fresno, CA 93773; 209/233-9035

WRI Wire Reinforcement Institute
8361 A Greensboro Drive; McLean, VA 22102; 703/790-9790

WSC Water Systems Council
221 N. LaSalle St.; Chicago, IL 60601; 312/346-1600

WSFI Wood and Synthetic Flooring Institute
4415 West Harrison Street; Suite 242 C;
Hillside, IL 60162; 312/449-2933

WWPA Western Wood Products Association
1500 Yeon Blg.; Portland, OR 97204; 503/224-3930

W.W.P.A. Woven Wire Products Association
2515 N. Nordica Ave.; Chicago, IL 60635; 312/637-1359

Federal Government Agencies: The names and titles of federal government standard or specification producing agencies are frequently abbreviated. The following acronyms or abbreviations as referenced in the contract documents indicate the names of standard or specification producing agencies of the federal government. Names and addresses are subject to change but are believed to be, but are not assured to be, accurate and up-to-date as of the date of the contract documents.

CE Corps of Engineers
(US Dept. of the Army); Chief of Engineers - Referral;
Washington, DC 20314; 202/693-6456

CFR Code of Federal Regulations
Available from the Government Printing Office;
North Capitol Street between G and H Streets, NW;
Washington, DC 20402; 202/783-3238;
(Material is usually first published in the Federal Register)

CPSC Consumer Product Safety Commission
1111 Eighth Street, NW; Washington, DC 20207;
202/634-7700

CS Commercial Standard (U.S. Dept. of Commerce)
Government Printing Office; Washington, DC 20402;
202/377-2000

DOC Department of Commerce
14th Street and Constitution Avenue, NW;
Washington, DC 20230; 202/377-2000

DOT Department of Transportation
400 Seventh Street, NW; Washington, DC 20590;
202/426-4000

EPA Environmental Protection Agency
401 M Street, SW; Washington, DC 20460; 202/829-3535

FAA Federal Aviation Administration
(U.S. Dept. of Transportation)

800 Independence Avenue, SW; Washington, DC 20590;
202/426-4000

FCC Federal Communications Commission
1919 M Street, NW; Washington, DC 20554; 202/632-7000

FHA Federal Housing Administration
(U.S. Dept. of Housing and Urban Development)
451 Seventh Street, SW; Washington, DC 20201
202/755-5995

FS Federal Specification
(General Services Administration)
Specifications Unit (WFSIS); 7th and D Streets, NW;
Washington, DC 20406; 202/472-2205 or 472-2140

GSA General Services Administration
F Street and 18th Street, NW; Washington, DC 20405;
202/655-4000

MIL Military Standardization Documents
(U.S. Dept. of Defense)
Naval Publications and Forms Center; 5801 Tabor Avenue;
Philadelphia, PA 19120

NBS National Bureau of Standards
(U.S. Dept. of Commerce)
Gaithersburg, MD 20234; 301/921-1000

OSHA Occupational Safety and Health Administration
(U.S. Dept. of Labor)
Government Printing Office; Washington, DC 20402;
202/783-3238

PS Product Standard of NBS
(U.S. Dept. of Commerce)
Government Printing Office; Washington, DC 20402;
202/783-3238

REA Rural Electrification Administration
(U.S. Dept. of Agriculture)
14th Street and Independence Avenue, SW;
Washington, DC 20250; 202/382-1255

USDA U.S. Department of Agriculture
Independence Avenue between 12th & 14th Streets, NW;
Washington, DC 20250; 202/447-4929

USPS U.S. Postal Service
475 L'Enfant Plaza, SW; Washington, DC 20260;
202/245-4000

GOVERNING REGULATIONS/AUTHORITIES:

General: The procedure followed by the Architect/Engineer has been to contact governing authorities where necessary to obtain information needed for the purpose of preparing contract documents; recognizing that such information may or may not be of significance in relation to the Contractor's responsibilities for performing the Work. Contact governing authorities directly for necessary information and decisions having a bearing on performance of the Work.

Copies of Correspondence: During the preparation of the contract documents, the Architect/Engineer maintained a file of correspondence with governing authorities. This file is available at the Architect's/Engineer's office for reference by bidders/contractors. The Architect/Engineer will provide, if requested, copies of such applicable correspondence at the cost of reproduction.

Attached Copies: Certain items of correspondence are believed to include information which is generally applicable to performance of the Work. These items have been reproduced and included in the Project Manual at the end of this section, as follows:

Copies of Regulations: Obtain copies of the following regulations and retain at the project site during the Contract Time, available for reference by parties at the site who have a reasonable need for such reference.

Trade Union Jurisdictions: The Contractor shall maintain, and shall require prime subcontractors to maintain, complete current information on jurisdictional matters, regulations actions and pending actions, as applicable to the Work. Discuss new developments at appropriate project meetings at the earliest feasible dates. Record information of relevance along with the action agreed upon. The manner in which contract documents have been organized and subdivided is not intended to be an indication of jurisdictional or trade union agreements. Assign and subcontract the work, and employ tradesmen and laborers, in a manner which will not unduly risk jurisdictional disputes of a kind which could result in conflicts, delays, claims and losses in the performance of the Work.

SUBMITTALS:

Permits, Licenses and Certificates: For the Owner's records, submit copies of permits, licenses, certifications, inspection reports, releases, jurisdictional settlements, notices, receipts for fee payments, judgments, and similar documents, correspondence and records established in conjunction with compliance with standards and regulations bearing upon performance of the work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01090

SECTION 01310 - SCHEDULES, REPORTS, PAYMENTS

PART 1 - GENERAL:

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

COORDINATION:

The General Contractor shall provide the arena for all subcontractors to list and submit all reports and activities required by provisions of this section and other sections, so as to provide consistency and logical coordination between the reports. The Contractor shall maintain coordination and correlation between separate reports by updating the Architect/Engineer at WEEKLY time intervals.

PROGRESS SCHEDULE:

Bar-Chart Schedule: Contractor(s) shall adhere to project schedule and lists of deadlines and dates included at the end of this section and as required to sequence or complete the various components of the work. The Contractor(s) shall then prepare and submit a bar-chart type progress schedule for their work component(s) not more than 7 days after the date established for commencement of the work. On the schedule, indicate a time bar for each category or unit of work to be performed on or off-site, properly sequenced and coordinated with other elements of work. Show completion of the work sufficiently in advance of the date established for substantial completion of the work.

Resubmit updated charts as necessary to accurately reflect to progess of the work, or as requested by Owner or Architect.

SUBMITTAL SCHEDULE:

General: Immediately after the development and acceptance of the fully developed progress schedule, prepare a complete schedule of work-related submittals. Submit this schedule within 10 days of the date required for establishment of progress schedule. Correlate this submittal schedule with the listing of principal subcontractors, as required by the General Conditions, and with the "listing of products" or "procurement schedule" as specified in "Products and Substitutions" sections and elsewhere in contract documents.

PROGRESS MEETINGS, REPORTING:

General: In addition to specific coordination and pre- installation meetings for each element of work, and other regular project meetings held for other purposes, the General Contractor shall hold a general progress meeting, on an average basis of every other week, or more frequently as required by the General Contractor or Owner. Progress meeting shall be held in the offices of the General Contractor until such time that facilities are made available on-site. The sub-contractor(s) shall make the arrangements for all meetings and use of the General Contractor's offices with the General Contractor.

Each Sub-contractor that is then involved in planning, coordination or performance of work, shall be properly represented at each meeting. The General Contractor shall review each entity's present and future needs including

interface requirements, time, sequences, deliveries, access, site utilization, temporary facilities and services, hours of work, hazards and risks, housekeeping, change orders, and documentation of information for payment requests. Parties shall discuss whether each element of current work is ahead of schedule, on time, or behind schedule in relation with updated progress schedule. Determine how behind-schedule work will be expedited, and secure commitments from entities involved in doing so. Discuss whether schedule revisions are required to ensure that current work and subsequent work will be completed within Contract Time. Review everything of significance which could affect progress of the work.

Initial Progress Meeting: Schedule initial progress meeting, recognized as "Pre-Construction Meeting", for a date not more than 5 days after date of commencement of the work. Use it as an organizational meeting, and review responsibilities and personnel assignments.

Schedule Updating: Immediately following each progress meeting, where revisions to progress schedule have been made or recognized, the Contractor shall revise progress schedule.

Pre-installation conferences shall be held at the project site, and shall be coordinated by the General Contractor.

The General Contractor shall record and distribute meeting notes for all progress meetings and pre-installation conferences.

CONDITION APPRAISAL REPORT:

General: **Prior to construction, and Contractor's initial Application for Payment,** Contractor shall prepare a Condition Appraisal Report to the Owner and the Architect. The report shall document as a matter of record the existing condition of the project area and work in place which could reasonably be susceptible to damage or disturbance as a result of the construction. The report shall also indicate the Contractor's recommendations for protection of the in-place construction components.

Unless otherwise stated herein, the extent of the Condition Appraisal shall be determined by the Contractor as deemed necessary to protect himself and the Owner against future claims of property damage and personal injury by anyone.

SCHEDULE OF VALUES:

General: Contractor shall prepare the schedule of values, as required by the General Conditions, in conjunction with the preparation of the progress schedule. Correlate the preparation of schedule of values and the progress schedule. Correlate preparation of schedule of values and progress schedule. Correlate line items with other administrative schedules and forms required for the work, including the progress schedule, payment request form, listing of subcontractors, schedule of allowances, schedule of alternates listing of products and principal suppliers and fabricators, and schedule of submittals. Provide breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of payment requests and progress reports.

Breakdown principal subcontract amounts into several line items.

Material/Fabrication Values: For each unit of work where payment requests will be made on account of materials or equipment purchased, fabricated, delivered, but not yet installed, show "initial value" for payment request and "value added" for subsequent stage or stages of completion on that unit of work.

Unit Cost Allowances: Show the line item value as a product of the unit cost x measured quantity as estimated from the best indication in the Contact Documents. Approved changes in the work on unit cost

items shall be recorded for each unit cost allowance as a product of the unit cost x measured quantity actually constructed. Provide separate columns in the application for payment which record a total of unit quantities constructed to date, and unit quantities requested on each application for payment.

PAYMENT REQUESTS:

General: Except as otherwise indicated, the progress payment cycle is to be regular. Contractor's application must be consistent with previous applications and payments. Certain applications for payment, such as the initial application, the application at substantial completion, and the final payment application involve additional requirements.

Waivers of Lien: For each payment application, submit waivers of lien from every entity (including Contractor) who could lawfully and possibly file a lien in excess of $100 arising out of the Contract, and related to work covered by the payment. Submit partial waivers for the amount requested prior to deduction or retainage on each item. When the application shows completion of an item, submit final or full waivers. Owner reserves the right to designate which entities involved in the work must submit waivers.

Waiver Delays: Each progress payment must be submitted with Contractor's waiver for period of construction covered by application. At the Contractor's option, each progress payment may be submitted with waivers from the subcontractors, or sub- contractors and suppliers for the previous period of construction covered by previous application. The final payment application must be submitted together with or preceded by final or complete waivers from every entity involved with performance of the work covered by the previous payment request.

Waiver Forms: Submit waivers on forms, and executed in a manner, acceptable to Owner.

Payment Application Times: The "date" for each progress "payment" is as indicated in Owner-Contractor Agreement or, if none is indicated therein, it is the 15th day of each month. The period of construction work covered by each payment request is the period indicated in Owner-Contractor Agreement or, if none is indicated therein, it is period ending 15 days prior to date for each progress payment, and starting day following end of preceding period.

The "date" for each progress "payment" to sub-contractors and suppliers is as indicated in Owner-Contractor Agreement or, if none is indicated therein, Contractor shall make payment to sub-contractors and suppliers no later than seven (7) days after receiving payment from the Owner.

Payment Applications Forms: AIA Document G702 and Continuation Sheets; available from "Publications, a Division of the AIA Service Corporation", 1735 New York Ave., NW, Washington, DC 20006 (also available at most local AIA chapter offices). Continuation form, showing a breakdown of values, must be used. At least one submittal shall be made on the original AIA form, published and distributed by the AIA Service Corporation.

Application Preparation: Except as otherwise indicated, complete every entry provided for on the form, including notarization and execution by authorized persons. Incomplete applications will be returned by Architect/Engineer without action. Entries must match current data of schedule of values and progress schedule and report. Listing must include amounts of change orders issued prior to last day of the "period of construction" covered by application.

Initial Payment Application: Unless otherwise required, the principal administrative actions and submittals which must precede or coincide with submittal of first payment application can be summarized as follows, but not necessarily by way of limitation:

Schedule of Values for Project Components - building, site, site utilities (overall format to be used)
Listing of subcontractors and principal suppliers and fabricators.

Progress schedule (preliminary if not final).
Schedule of principal products.
Condition Appraisal Report for surrounding buildings and site.
Performance and/or payment bonds (if required).
Evidence satisfactory to Owner that Contractor's insurance coverages have been secured.
Initial progress report, including report of pre-construction meeting.
Schedule of unit prices.

Application at Time of Substantial Completion: Following issuance of Architect's or Engineer's final "certificate of substantial completion," and also in part as applicable to prior certificates on portions of completed work as designated, a "special" payment application may be prepared and submitted by Contractor. The principal administrative actions and submittals which must proceed or coincide with such special applications can be summarized as follows, not necessarily by way of limitation:

Occupancy permits and similar approvals or certifications by governing authorities and franchised services, assuring Owner's full access and use of completed work.

Warranties (guarantees), maintenance agreements and similar provisions of contract documents.

Test/adjust/balance records, maintenance instructions, meter readings, start-up performance reports, and similar change- over information germane to Owner's occupancy, use, operation and maintenance of completed work.

Final cleaning of the work.

Application for reduction (if any) of retainage, and consent of surety.

Advice to Owner on coordination of shifting insurance coverages, including proof of extended coverages as required.

Final progress photographs, where required.

Listing of Contractor's incomplete work, recognized as exceptions to Architect's/Engineer's certificate of substantial completion.

Final Condition Appraisal Report from Contractor.

Record Shop Drawings as requested by Owner for Owner's File.

For Final Payment Application refer to Section 01700, project Closeout.

Application Transmittal: Submit 3 copies of each payment application, one copy of which is completed with waivers of lien and similar attachments. Transmit each copy with a transmittal form listing those attachments, and recording appropriate information related to application in a manner acceptable to Architect/Engineer. Transmit to Architect/Engineer by means of ensuring receipt within 24 hours.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01310

SECTION 01340 - SHOP DRAWINGS AND SAMPLES

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

General: This section specifies procedural requirements for non- administrative submittals including shop drawings, product data, samples and other miscellaneous work-related submittals. Shop drawings, product data, samples and other work-related submittals are required to amplify, expand and coordinate the information contained in the Contract Documents.

Shop drawings are technical drawings and data that have been specially prepared for this project, including but not limited to the following items:

- Fabrication and installation drawings.
- Setting diagrams.
- Shopwork manufacturing instructions.
- Templates.
- Patterns.
- Coordination drawings (for use on-site).
- Schedules.
- Design mix formulas.
- Contractor's engineering calculations.

Standard information prepared without specific reference to a project is not considered to be shop drawings.

Product data includes standard printed information on manufactured products that has not been specially-prepared for this project, including but not limited to the following items:

- Manufacturer's product specifications and installation
- Standard color charts.
- Catalog cuts.
- Roughing-in diagram and templates.
- Standard wiring diagrams.
- Printed performance curves.
- Operational range diagrams.
- Mill reports.
- Standard product operating and maintenance manuals.
- Pre-engineered calculations.
- Existing test reports demonstrating product performance.

Samples are physical examples of work, including but not limited to the following items:

- Partial sections of manufactured or fabricated work.
- Small cuts or containers of materials.
- Complete units of repetitively-used materials.

Swatches showing color, texture and pattern.
Prefinished products.
Color range sets.
Units of work to be used for independent inspection and testing.

Mock-ups are special forms of samples, which are too large or otherwise inconvenient for handling in the manner specified for transmittal of sample submittals.

Miscellaneous submittals are work-related, non-administrative submittals that do not fit in the three previous categories, including, but not limited to the following:

Specially-prepared and standard printed warranties.
Maintenance agreements.
Workmanship bonds.
Survey data and reports.
Project photographs.
Testing and certification reports.
Record drawings.
Field measurement data.
Operating and maintenance manuals.
Keys and other security protection devices.
Maintenance tools and spare parts.
Overrun stock.

RELATED WORK:

Refer to all other sections within this specification as each section will have specific requirements that relate to this section.

Refer to other Division-1 sections and other contract documents for specifications on administrative, non-work-related submittals. Such submittals include, but are not limited to the following items:

Permits.
Payment applications.
Performance and payment bonds.
Insurance certificates.
Inspection and test reports.
Schedule of values.
Progress reports.
Listing of subcontractors.

SUBMITTAL PROCEDURES:

General: Refer to the General Conditions for basic procedures for submittal handling:

Coordination: Coordinate the preparation and processing of submittals with the performance of the work. Coordinate each separate submittal with other submittals and related activities such as testing, purchasing, fabrication, delivery and similar activities that require sequential activity.

Coordinate the submittal of different units of interrelated work so that one submittal will not be delayed by the Architect need to review a related submittal. The Architect reserves the right to withhold action on any

submittal requiring coordination with other submittals until related submittals are forthcoming.

Note that the specification has been pre-editted to include only those items specifically required for visual inspection and verification. The Architect reserves the right to reject and disallow all work related to a specific product when the contractor fails to submit per the specification. Any work that is a result of this failure shall be corrected at no expense to the Owner and shall have no effect on the Contract Time. The onus is therefore on the contractor to ensure that all submittals are made to the Architect.

Scheduling: In each appropriate administrative submittal, such as the progress schedule, show the principal work- related submittals and time requirements for coordination of submittal activity with related work.

Coordination of Submittal Times: Prepare and transmit each submittal to the Architect/Engineer sufficiently in advance of the scheduled performance of related work and other applicable activities. Transmit different kinds of submittals for the same unit of work so that processing will not be delayed by the Architect's need to review submittals concurrently for coordination.

Review Time: Allow sufficient time so that the installation will not be delayed as a result of the time required to properly process submittals, including time for resubmittal, if necessary. Advise the Architect on each submittal, as to whether processing time is critical to the progress of the work, and if the work would be expedited if processing time could be shortened.

Allow approximately one week for the Architect's initial processing of each submittal. Allow a longer time period where processing must be delayed for coordination with subsequent submittals. The Architect will attempt to process the submittals in a shorter period of time when possible. The Architect will advise the Contractor promptly when it is determined that a submittal being processed must be delayed for coordination.

Allow one week for reprocessing each submittal.

No extension of time will be authorized because of the Contractor's failure to transmit submittals to the Architect/Engineer sufficiently in advance of the work: plan ahead!

Submittal Preparation: The Architect shall submit to the Contractor the standard office form which is to be attached to each submittal. A set of these copies shall be given to the Contractor prior to the first submittal. Complete the entire left section of each sheet, using separate sheets for work of differing divisions or sections.

Submittal of Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to the Architect, and to other destinations as indicated, by use of a transmittal form. Submittals received from sources other than the Contractor will be returned to the sender "without action".

Shop Drawings: Information required on shop drawings includes, dimensions, identification of specific products and materials which are included in the work, compliance with specified standards and notations of coordination requirements with other work. Provide special notation of dimensions that have been established by field measurement. Highlight, encircle or otherwise indicate deviations from the contract documents on the shop drawings.

Do not permit shop drawings copies without an appropriate final "Action" marking by the Architect/Engineer to be used in connection with the work.

Preparation: Submit newly prepared information, drawn to accurate scale on sheets not less than 8-1/2" x 11"; except for actual pattern or template type drawings, the maximum sheet size shall not exceed 36" x 48". Indicate the name of the firm that prepared each shop drawing and provide appropriate project identification

in the title block. Provide a space not less than 20 sq. in. beside the title block for marking the record of the review process and the Architect/Engineer's "Action" marking.

Do not reproduce contract documents or copy standard printed information as the basis of shop drawings.

Submittal: Provide one correctable translucent reproducible print and three blue-line or black-line prints; the reproducible print will be returned. Architect shall retain a copy from the reproducible sheets for himself.

Product Data: General information required specifically as product data includes manufacturer's standard printed recommendations for application and use, compliance with recognized standards of trade associations and testing agencies, and the application of their labels and seals (if any), special notation of dimensions which have been verified by way of field measurement, and special coordination requirements for interfacing the material, product or system with other work.

Whereas manufacturer, fabricator or similar entity shown on the product data submittal is a firm listed on the Owner's preferred vendor listing, mark the Architect/Engineer's copies with "Owner`s List" notation.

ARCHITECT'S ACTION:

General: Except for submittals for the record and similar purposes, where action and return on submittals is required or requested, the Architect will review each submittal, mark with appropriate "Action", and where possible return within 2 weeks of receipt. Where the submittal must be held for coordination the Architect/Engineer will so advise the Contractor without delay.

Retain shop drawings in the field that are marked with the Architects/Engineers stamp of acceptance or approval.

PART 2 - PRODUCTS (Not Applicable),

PART 3 - EXECUTION (Not Applicable).

END OF SECTION 01340

SECTION 01400 - QUALITY CONTROL SERVICES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

General: Required inspection and testing services are intended to assist in the determination of probable compliance of the work with requirements specified of indicated. These required services do not relieve the Contractor of responsibility for compliance with these requirements or for compliance with requirements of the contract documents. The contractor shall coordinate the request for inspection and testing services with the Construction Coordinator and the Architect/Engineer for all testing and inspection.

Definitions: The requirements of this section relate primarily to customized fabrication and installation procedures, not to the production of standard products. Quality control services include inspections and tests and related actions including reports, performed by independent agencies and governing authorities, as well as directly by the Contractor. These services do not include Contract enforcement activities Construction Observation/Contract Administration performed directly by the Architect or Engineer.

Specific quality control requirements for individual units of work are specified in the section of these specifications that specify the individual element of the work. These requirements, including inspections and tests, cover both production of standard products, and fabrication of customized work. These requirements also cover quality control of the installation procedures.

Inspections, tests and related actions specified in this section and elsewhere in the contract documents are not intended to limit the Contractor's own quality control procedures which facilitate overall compliance with requirements of the contract documents.

Requirements for the Contractor to provide quality control services as required by the Architect/Engineer, the Owner, governing authorities or other authorized entities are not limited by the provisions of this section.

RESPONSIBILITIES:

Contractor Responsibilities: Except where they are specifically indicated as being the Owner's responsibility, or where they are to be provided by another identified entity, inspections, tests and similar quality control services are each separate Contractor's responsibility; these services also include those specified to be performed by an independent agency and not directly by the Contractor. Costs for these services shall be included in the Contract Sum.

The Owner through the Architect/Engineer will engage and pay an independent agency, testing laboratory or other qualified firm to perform quality control services specified as being the Owner's responsibility.

Retest Responsibility: Where results of required inspections, tests or similar services prove unsatisfactory and do not indicate compliance of related work with the requirements of the contract documents, then retests are the responsibility of the Contractor, regardless of whether the original test was the Contractor's responsibility, or paid for by the Contractor. Retest the work revised or replaced by the Contractor is the Contractor's responsibility, where required tests were performed on original work.

Responsibility for Associated Services: Each Contractor is required to cooperate with the independent agencies performing required inspections, tests and similar services. Provide such auxiliary services as are reasonably requested. Notify the testing agency sufficiently in advance of operations to permit assignment of personnel. These auxiliary services include but are not necessarily limited to the following:

Providing access to the work.
Taking samples or assistance with taking samples.
Delivery of samples to test laboratories.
Security and protection of samples and test equipment at the project site.

Coordination: The Contractor and each independent agency engaged to perform inspections, tests and similar services for the project shall coordinate the sequence of their activities so as to accommodate required services with a minimum of delay in the progress of the work. In addition to Contractor and each independent testing agency shall coordinate their work so as to avoid the necessity of removing the replacing work to accommodate inspections and tests. The Contractor is responsible for scheduling times for inspections, tests, taking of samples and similar activities.

QUALITY ASSURANCE:

Qualification for Service Agencies: Except as otherwise indicated, engage inspection and test service agencies, including independent testing laboratories, which are prequalified as complying with "Recommended Requirements for Independent Laboratory Qualification" by the American Council of Independent Laboratories, and which are recognized in the industry as specialized in the types of inspections and tests to be performed.

SUBMITTALS:

General: Refer to Division-1 section on "Submittals" for the general requirements on submittals. Submit a certified written report of each inspection, test or similar service, directly to the Architect/Engineer, in duplicate, unless the Contractor is responsible for the service. If the Contractor is responsible for the service, submit a certified written report of each inspection, test or similar service through the Contractor, in duplicate. Submit additional copies of each written report directly to the governing authority, when the authority so directs.

Report Data: Written reports of each inspection, test or similar service shall include, but not be limited to the following:

Name of testing agency or test laboratory.
Dates and locations of samples and tests or inspections.
Names of individuals making the inspection or test.
Designation of the work and test method.
Complete inspection or test data.
Test results.
Interpretations of test results.
Notation of significant ambient conditions at the time of sample-taking and testing.
Comments or professional opinion as to whether inspected or tested work complies with requirements of the contract
documents.
Recommendations on retesting, if applicable.

PART 2 - PRODUCTS (Not Applicable).

PART 3 - EXECUTION

REPAIR AND PROTECTION:

General: Upon completion of inspection, testing, sample-taking and similar services performed on the work, repair damaged work and restore substrates and finishes to eliminate deficiencies, including deficiencies in the visual qualities of exposed finishes. Comply with the contract document requirements for "Cutting and Patching". Protect work exposed by or for quality control service activities, and protect repaired work. Repair and protection is the Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing or similar services.

END OF SECTION 01400

SECTION 01500 - TEMPORARY FACILITIES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

This section specifies administrative and procedural requirements for temporary services and facilities, including such items as temporary utility services, temporary construction and support facilities, and project security and protection.

Temporary Walls: Construct temporary walls that are required to secure or protect areas of the work.

Use Charges: No cost or usage charges for temporary services or facilities are chargeable to the Owner or Architect. Verify all charges and other fees with the City of Olive Branch and local utilities. Refer to Section 01010, on permits required. Cost or use charges for temporary services or facilities will not be accepted as a basis for claims for a change-order extra.

Temporary utility services required for use at the project site and are to be paid for by the Contractor to include but are not limited to the following:

Water service and distribution.
Temporary electric power and light as needed.
Telephone service: contractor shall obtain separate line.

Provide adequate utility capacity at each stage of construction. Prior to availability of temporary utilities at the site, provide trucked-in services for start-up of construction operations.

Temporary construction and support facilities required for the project include but not limited to the following:

Temporary heat, as necessary, as determined by the contractor.
Sanitary facilities.
Portable Toilets.
Temporary enclosures.
Temporary exit doors.
Temporary Hoists and Cranes.
First aid station.
Project identification, bulletin boards and signs.
Waste disposal services.
Rodent and pest control.
Construction aids and miscellaneous general services and facilities.

Security and protection facilities and services required for the project include but are not limited to the following:

Temporary fire protection.
Barricades, warning signs, lights.
Environmental protection.

Signage.
Site Fence.

QUALITY ASSURANCE:

1. Regulations: Comply with requirements of local laws and regulations governing construction and local industry standards, in the installation and maintenance of temporary services and facilities, including but not limited to the following:

Building Codes, including local requirements for permits, testing and inspection.
Health and safety regulations.
Utility company regulations and recommendations governing temporary utility services.
Police and Fire Department rules and recommendations.
Police and Rescue Squad recommendations.
Environmental protection regulations governing use of water and energy, and the control of dust, noise and other nuisances.

In addition, comply with "Environmental Impact" commitments the Owner or previous Owners of the site may have made to secure approval to proceed with construction of the project.

2. Pre-construction Meeting: Refer to Section 03310 and other sections, for pre-construction meeting requirements.

3. Standards: Comply with the requirements of NFPA Code 241, "Building Construction and Demolition Operations", the ANSI-A10 Series standards for "Safety Requirements for Construction and Demolition", and the NECA National Joint Guideline NJG-6 "Temporary Job Utilities and Services".

Refer to "Guidelines for Bid Conditions for Temporary Job Utilities and Services", as prepared jointly by AGC and ASC for industry recommendations.

Trade Jurisdictions: The assigned responsibilities for the installation and operation of temporary utilities are not intended to interfere with the normal application of trade regulations and union jurisdictions applicable to the work.

SUBMITTALS:

Reports and Permits: During progress of the work, submit copies of reports and permits required by governing authorities, or necessary for installation and efficient operation of temporary services and facilities.

Submit copies of reports of tests, inspections, meter readings and similar procedures performed on temporary utilities before, during and after performance of the work. Submit copies of permits, easements and similar documentation necessary for the installation, use and operation of temporary utility services. Reports and permits required for the use of temporary utility services and their use include but are not limited to the following:

Temporary heat.
Ventilation.
Temporary electric power and light.

JOB CONDITIONS:

General: Contractor shall provide temporary service at each strategic location, when the service or facility is first needed to avoid delay in performance of the work. Maintain, expand as required and modify temporary services and facilities as needed throughout the progress of the Work. Do not remove until services or facilities are no longer needed, or are replaced by the authorized use of completed permanent facilities.

With the establishment of the job progress schedule, establish a schedule for the implementation and termination of service for each temporary utility. At the earliest feasible time, and when acceptable to the Construction Manager, change over from the use of temporary utility service to the use of the permanent service, to enable removal of the temporary utility and to eliminate possible interference with completion of the work.

Conditions of Use: Operate temporary services and facilities in a safe and efficient manner. Do not overload temporary services or facilities, and do not permit them to interfere with the progress of the work. Do not allow unsanitary conditions, public nuisances or hazardous conditions to develop or persist on the site.

Temporary Utilities: Do not permit the freezing of pipes, flooding or the contamination of water sources.

Temporary Construction and Support Facilities: Maintain temporary facilities in such a manner as to prevent discomfort to other contractors' employees and users. Take necessary fire prevention measures. Maintain temporary support facilities in a sanitary manner so as to avoid health problems and other deleterious effects.

Security and Protection: Maintain site security and protection facilities in a safe, lawful and publicly acceptable manner. Take necessary measures to prevent erosion of the site.

PART 2- PRODUCTS:

MATERIALS AND EQUIPMENT:

General: Contractor shall provide new materials and equipment for temporary services and facilities as required; used materials and equipment that are undamaged in serviceable condition may be used, if acceptable to the Architect/Engineer. Provide only materials and equipment that are recognized as being suitable for the intended use, by compliance with appropriate standards.

Temporary Utilities: When the local utility company provides only a portion of the temporary utility, provide the remainder with matching, compatible materials and equipment. Comply with the utility company's recommendations.

Water Hoses: Where shut-off nozzles are used at the water hose discharge, provide heavy-duty abrasion-resistant hoses with a pressure rating greater than the maximum pressure of the water distribution system.

Non-potable water is not at all permitted on site.

Electrical Service: Coordinate with the all trades the use of all temporary service, hook up and capacities. Comply with applicable NEMA, NECA and UL standards and governing regulations for materials and layout of temporary electric service.

Voltage Differences: Provide identification warning signs at power outlets which are other than 110-120 volt power. Provide polarized outlets for plug-in type outlets, to prevent insertion of 110-120 volt plugs into higher voltage outlets.

Ground-Fault Protection: Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button and pilot light, for plug-in connection of power tools and equipment.

Electrical Power Cords: Use only grounded extension cords; use "hard-service" cords where exposed to abrasion and traffic. Use single lengths or use waterproof connectors to connect separate lengths of electric cords, if single lengths will not reach areas of work.

Lamps and Light Fixtures: General contractor shall provide general service incandescent lamps of wattage indicated or required for adequate illumination. Protect lamps with guard cages or tempered glass enclosures, where fixtures are exposed to breakage by construction operations. Provide exterior fixtures where fixtures are exposed to the weather or moisture.

Temporary Construction and Support Facilities: Provide facilities that can be maintained properly throughout their use at the project site.

Heating Units: Provide temporary heating units that have been tested and labeled by UL, FM or another recognized trade association related to the fuel being consumed.

Temporary Offices and Similar Construction: For temporary offices, fabrication shops, storage sheds and similar construction, provide either standard prefabricated or mobile units or the equivalent job-built construction. Provide insulated, weathertight units, heated or air-conditioned where indicated, lockable entrances, operable windows, roofing, foundations adequate for normal loading, including wind loads, serviceable finishes, and mechanical and electrical equipment necessary to achieve ambient conditions indicated.

Hoists, Cranes and Material Lifts: Each Contractor is responsible for their own mechanisms for vertical transport of equipment, materials and employees for the duration of the Project.

Self-Contained Toilet Units: Provide single-occupant self- contained toilet units of the chemical, aerated recirculation, or combustion type, properly vented and fully enclosed with a glass fiber reinforced polyester shell or similar non- absorbent material.

Tarpaulins: Provide waterproof, fire-resistant, UL labeled tarpaulins with a flame-spread rating of 15 or less. For temporary enclosures where work is being or will be performed, provide translucent tarpaulins made of nylon reinforced laminated polyethylene to admit the maximum amount of daylight and reduce the need for temporary lighting.

First Aid Supplies: Comply with governing regulations and recognized recommendations within the construction industry.

Drinking Water: Provide potable water approved by local health authorities. Where well water must be used, comply with local health authorities recommendations for type and frequency of testing water for potability.

Security and Protection Facilities. Provide as required:

Fire Extinguishers: Provide Type "A" fire extinguishers for temporary offices and similar spaces where there is minimal danger of electrical or grease-oil-flammable liquid fires. In other locations provide type "ABC" dry chemical extinguishers, or a combination of several extinguishers of NFPA recommended types for the exposures in each case.

Plywood: For fences and vision barriers, provide exterior types, minimum 1/2" thick plywood, prime and finish painted. For safety barriers, sidewalk bridges and similar direct-contact uses, provide minimum 5/8" thick exterior plywood, prime and finish painted.

Open-Mesh Fencing: Provide No. 11-gage galvanizing chain link fabric fencing 6 feet high with galvanized barbed wire top strand and galvanized steel pipe posts, 1-1/2" I.D. for line posts, and 2-1/2" I.D. for corner posts.

TEMPORARY SIGNAGE:

Temporary Signage: Professionally made and painted, weatherproof, temporary signage shall be provided to orient, instruct and warn city employees, the public and workers of hazards, temporary entrances and other conditions. Letters and numbers on any given sign shall be at least 4" in height. These signs shall be installed and moved on a daily basis if necessary. Under this contract, at a minimum provide one of the following signs at various locations on the project site.

AUTHORIZED PERSONNEL ONLY
CONSTRUCTION ZONE

Architect and Owner shall identify locations. Contractor shall provide installation and reinstallation.

Job Sign: Provide a project sign that includes the name of the Owner, Architect, and General Contractor. Architect shall provide a basic layout for sign painter. Sign shall be painted on 4' by 8' sheet of plywood, mounted to the ground as required. Contractor shall include all preparation and erection costs. No other signage shall be allowed on the site for purposes of advertising alone. Contractor shall provide a job information sign.

PART 3- EXECUTION

INSTALLATION, GENERAL:

General: Use qualified tradesmen for installation of temporary
services and facilities. Locate temporary services and facilities where they will serve the entire project adequately and result in minimum interference with the performance of the Work.

Relocate, modify and extend services and facilities as required during the course of work so as to accommodate the entire work of the project.

Temporary Electric Power Service: Install as necessary, with service and grounding in compliance with the National Electric Code (NFPA 70). Include necessary meters, transformers, overload protected disconnect and main distribution switch gear.

Power Distribution System: Provide circuits of adequate size and proper characteristics for each use. In general run wiring overhead, and rise vertically where wiring will be at least exposed to damage from construction operations. Provide rigid steel conduit or equivalent raceways for wiring which must be exposed on grade, floors, decks or other areas of possible damage or abuse.

Provide overload-protected disconnect switch for each temporary circuit and each temporary lighting circuit, located at the power distribution center.

For power hand tools and task lighting, provide temporary 4- gang outlets at each floor level, spaced so that a 100 foot extension cord can reach each area of work. Provide a separate 110-120 Volt, 20 Amp circuit for each 4-gang outlet (4 outlets per circuit).

Temporary Lighting: Provide local switching of temporary lighting, spaced to allow lighting to be turned off in patterns

to conserve energy and retain light suitable for work-in-progress, access traffic, security check and project lock-up.

Install and operate temporary lighting that will fulfill security and protection requirements, without the necessity of operating the entire temporary lighting system.

Temporary Telephones: Arrange for the local telephone company to install temporary service to the project, for local calls only. Provide service of the type and capacity indicated in other Division-1 sections.

Sewers and Drainage: If existing sewers are available for temporary drainage near the site prior to completion of permanent sewers, provide temporary connections to remove effluent that can be lawfully discharged into the sewers. If existing sewers cannot be used for discharge, provide drainage ditches, dry wells, waste stabilization ponds and similar discharge facilities to remove effluent that can be lawfully discharged in that manner. If neither existing sewers nor drainage facilities can be lawfully used for discharge of effluent, provide containers to remove and dispose of effluent off the site in a lawful manner.

Connect temporary sewers to the municipal sewer systems in the manner directed by the sewer department officials, located at the site.

TEMPORARY CONSTRUCTION AND SUPPORT FACILITIES INSTALLATION:

General: Provide a job office at the site acceptable to the Architect and the Owner. Job office shall have a heated/air conditioned office, with table and chairs for at least 6 people.

Temporary Heat: If required for the work, provide temporary heat where indicated or needed for performance of the Work, curing or drying of recently installed work or protection of work in place from adverse effects of low temperatures or high humidity. Select facilities known to be safe and without deleterious effect upon the work in place or being installed. Coordinate with ventilation requirements to produce the indicated ambient condition required and to minimize the consumption of fuel or energy.

Maintain a minimum temperature of 45°F (7°C) in permanently enclosed portions of the building and areas where finished work has been installed.

Heating Facilities: Except where conditions make it necessary to use another system, and where use of the permanent heating system is available and authorized, provide properly vented self- contained LP gas or fuel oil heaters with individual space thermostatic control for temporary heat.

Limit use of gasoline-burning space heaters to the indirect- fired type, located outside the building space or space being heated. Use gasoline-burning space heaters only where the specified system for temporary heating cannot be used.

Do not use open burning or salamander type heating units where prohibited by governing regulations, or when combustible materials are located in or near the space being heated, or when the work installed or being installed includes work which will be exposed to view in the completed project.

Collection and Disposal of Wastes: Establish a system for daily collection and disposal of waste materials from construction areas and elsewhere on the site. Enforce requirements strictly. Do not hold collected materials at the site longer than 7 days during normal weather or 3 days when the daily temperature is expected to rise above 80°F (27°C). Handle waste materials that are hazardous, dangerous, or unsanitary separately from other inert waste by containerizing appropriately. Dispose of waste material in a lawful manner.

Storing of waste on site, burying or burning of waste materials on the site will not be permitted.

Washing waste materials down sewers or into waterways will not be permitted.

Provide rodent proof containers located on each floor level of construction work, to encourage depositing of garbage and similar wastes by construction personnel.

Construction Aids and Miscellaneous Services and Facilities:

General: Design, construct, and maintain construction aids and miscellaneous general services and facilities as needed to accommodate performance of the work. Construction aids and miscellaneous general services and facilities include, but are not limited to the following:

Temporary stairs and ladders.
Temporary hoists, cranes and lifts.
Guardrails and barriers.
Covered walkways.
Walkways.

SECURITY AND PROTECTION FACILITIES INSTALLATION:

General: Provide a reasonably neat and uniform appearance in security and protection facilities acceptable to the Architect and Owner. If conditions get unacceptable the Architect shall have the final say as to what is "acceptable and reasonable".

Except for utilization of permanent fire protection facilities, as soon as available in each area, do not change over from use of temporary security and protection facilities to use of permanent facilities until substantial completion, or for longer periods of time as requested by the Architect.

Temporary Fire Protection: Until fire protection needs may be fulfilled by permanent facilities, install and maintain temporary fire protection facilities of the types needed to adequately protect against reasonably predictable and controllable fire losses. Comply with the applicable recommendations of NFPA Standard 10 "Standard for Portable Fire Extinguishers". Locate fire extinguishers where they are most convenient and effective for their intended purpose, but provide not less than one extinguisher on each floor at or near each usable stairwell. Store combustible materials in containers in recognized fire-safe locations.

Develop and supervise an overall fire prevention and first-aid fire protection program for personnel at the project site. Review needs with the local fire department officials and establish procedures to be followed. Instruct personnel in methods and procedures to be followed. Post warnings and information and enforce strict discipline. Maintain unobstructed access to fire extinguishers, fire hydrants, temporary fire protection facilities, stairways and other access routes for fighting fires. Prohibit smoking in hazardous fire exposure areas. Provide supervision of welding operations, combustion type temporary heating units, and similar sources of ignition for possible fires.

Where temporary water outlets are available, provide hoses of sufficient length to reach construction areas. Hang hoses with a warning sign, to the effect that hoses are for fire protection purposes and are not to be removed. Match hose size with outlet size and equip with suitable nozzles.

Permanent Fire Protection: At the earliest feasible date in each area of the project, complete installation of the permanent fire protection facility, including connected services, and place into operation and use. Instruct key personnel at the site on how to use facilities which may not be self-explanatory.

Barricades, Warning Signs and Lights: Comply with recognized standards and code requirements for the erection of substantial, structurally adequate barricades where needed to prevent accidents and losses. Paint with appropriate

colors, graphics and warning signs to inform personnel at the site and the public, of the hazard being protected against. Provide lighting where appropriate and needed, including flashing red lights where appropriate.

Environmental Protection: Provide general protection facilities, operate temporary facilities, conduct construction activities, and enforce strict discipline for personnel on the site in ways and by methods that comply with environmental regulations, and that minimize the possibility that air, waterways and subsoil might be contaminated or polluted, or that other undesirable effects might result from the performance of work at the site. Avoid the use of tools and equipment which produce harmful noise. Restrict the use of noise making tools and equipment to hours of use that will minimize noise complaints from persons or firms near the project site.

Termination and Removal: Unless the Architect or Owner requests that it be maintained for a longer period of time, remove each temporary service and facility promptly when the need for it or a substantial portion of it has ended, or when it has been replaced by the authorized use of a permanent facility, or no later than substantial completion. Complete, or, if necessary, restore permanent work which may have been delayed because of interference with the temporary service or facility. Repair damaged work, clean exposed surfaces and replace work which cannot be satisfactorily repaired.

END OF SECTION 01500

SECTION 01631 - PRODUCTS AND SUBSTITUTIONS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

Definitions:

Substitutions: The Contractor's requests for changes in the products, materials, equipment and methods of construction required by the contract documents are considered requests for "substitutions", and are subject to the requirements specified herein. All substitutions shall be made through the "Substitution Request Form" only.

Substitutions shall only be considered during the bidding phase and in accordance with the limits defined in the General Conditions. Once a contract is signed, substitutions shall not be considered except if proposed by the Owner/Architect or under unusual circumstances.

All requests for "substitution' or "approved equal" shall be strictly followed by submittal of the "Substitution Request form", included within this section, and at the beginning of this specification. It shall be the contractor's responsibility to ensure that the substitute product is equal to that specified, or to state any differences on the form. Substitutions shall be reviewed by the Architect during the bidding phase of the project.

Revisions to the contract documents, where requested by the Owner, Architect or Engineer are considered as "changes" not substitutions.

Standards: Refer to Division-1 section "Definitions and Standards" for the applicability of industry standards to the products specified for the project, and for the acronyms used in the text of the specification sections.

QUALITY ASSURANCE:

Source Limitations: To the fullest extent possible, provide
products of the same generic kind, from a single source, for each unit of work, wherever options are available to the contractor.

When it is discovered that specified products are available only from sources that do not or cannot produce an adequate quantity to complete project requirements in a timely manner, consult with the Architect for a determination of what product qualities are most important before proceeding. The Architect will designate those qualities, such as visual, structural, durability, or compatibility, that are most important. When the Architect's determination has been made, select products from those sources that produce products that possess the most important qualities, to the fullest extent possible.

Compatibility of Options: Compatibility of products is a basic requirement of product selection. When the Contractor is given the option of selecting between two or more products for use on the project, the product selected must be compatible with other products previously selected, even if the products previously selected were also Contractor options. The complete compatibility between the various choices available to the Contractor is not assured by the various requirements of the Contract documents, but must be provided by the Contractor.

SUBMITTALS:

Substitution Request Submittal:

Requests for Substitutions: During the bidding phase, submit each request for substitution, using the "Substitution Request Form" furnished within this specification. Contractor shall fill out form completely: in each request identify the product or fabrication or installation method to be replaced by the substitution; include related specification section and drawing numbers, and complete documentation showing compliance with the requirements for substitutions.

It is in the best interest of the submitting contractor to attach a list of projects built in the State of Mississippi or Tennessee where the proposed product has been previously installed. Include a contact name and date of construction whenever possible.

Substitution requests shall be received by the Architect no later that five (5) days prior to bid due date as established by Owner. Contractor shall include a stamped, self-addressed envelope with the form, if a written response is requested from the Architect. Approvals shall otherwise be indicated in addendum form, but only if accepted.

PART 2 - PRODUCTS

NOT USED

PART 3 - EXECUTION

NOT USED:

END OF SECTION 01631

COMFORT SUITES

SECTION 01700 - PROJECT CLOSEOUT

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF REQUIREMENTS:

Definitions: Project closeout is the term used to describe certain collective project requirements, indicating completion of the Work, or a specific portion of the work, that is to be fulfilled near the end of the Contract time in preparation for final acceptance and occupancy of the Work by the Owner, as well as final payment to the Contractor and the normal termination of the Contract.

Specific requirements for individual units of work are included in the appropriate sections in Divisions 2 through 16.

Time of closeout is directly related to "Substantial Completion" and shall be 30 days after Substantial Completion except where noted otherwise.

PREREQUISITES TO SUBSTANTIAL COMPLETION:

General: Contractor shall complete the following before requesting the Architect's inspection for certification of substantial completion, either for the entire Work or for portions of the Work. List known exceptions in the request. For a precise, contractual definition of "Substantial Completion", refer to the 'General Conditions of the Contract', AIA document A 201. The following information is in addition, but not in lieu of, the definitions and requirement as set for in document A201.

If substantial completion is to be requested prior to the final payment request, indicate the portion of the Work yet to be 100 % complete, item by item, and indicate the value of incomplete work, and reasons for the Work being incomplete. This shall be included on a separate document(s), and shall be included along with payment request.

Include supporting documentation for completion as indicated in these contract documents.

Submit a statement showing an accounting of changes to the Contract Sum.
Advise Owner of pending insurance change-over requirements.

Submit specific warranties, workmanship/maintenance bonds, maintenance agreements, final certifications and similar documents.

Obtain and submit releases enabling Owner's full, unrestricted use of the Work and access to services and utilities. Where required, include occupancy permits, operating certificates and similar releases.

Submit record drawings, maintenance manuals, final project photographs, damage or settlement survey, property survey, and similar final record information.

Deliver tools, spare parts, extra stocks of material and similar physical items to the Owner.

Make the final change-over of locks and transmit the keys to the Owner. Advise the Owner's personnel of the change-over in security provisions.

Complete start-up testing of systems, and instruction of the Owner's operating and maintenance personnel. Discontinue or change over and remove temporary facilities and services from the project site, along with construction tools and facilities, mock-ups, and similar elements.

Complete final cleaning up requirements, including touch-up painting of marred surfaces.

Touch-up and otherwise repair and restore marred exposed finishes.

Inspection Procedures: Upon receipt of Contractor's request for inspection, the Architect/Engineer will either proceed with inspection or advise Contractor of unfulfilled prerequisites.

Note that the responsibility is on the contractor to ensure that the work is complete, and that minor "touch ups" are performed prior to inspection by Architect for "punch list" items. It is not the desire of the Architect to create a document the size of the specification.

Following the initial inspection, the Architect/Engineer will either prepare the certificate of substantial completion, or will advise Contractor of work which must be performed before the certificate will be issued. The Architect/Engineer will repeat the inspection when requested and when assured that the Work has been substantially completed.

Results of the completed inspection will form the initial "punch-list" for final acceptance.

SUBSTANTIAL COMPLETION FOR VARIOUS PHASES OF COMPLETED WORK

At the request of the General Contractor, for each or any major portion of the phased work that has been substantially completed and is ready for the Owner's use, the Architect will perform a "Punch List" for that segment of the work. After the Substantial Completion date, the Owner may choose to occupy part or all of the facility, therefore it is in the Contractor's best interest to advise the Architect that the punch list is requested, with a minimum of one week's notice, and that the work is ready for occupancy, including all walls, floors, ceilings, roof, mechanical equipment, electrical equipment, finishes, equipment and other items as specified.

The Architect shall not review or assemble a punch list at any area of work where there are a variety of incomplete items to be performed, where there is no heat or electricity, where the space is not fully enclosed, where finishes have not been installed or other similar situations.

PREREQUISITES TO FINAL ACCEPTANCE:

General: Complete the following before requesting the Architect/Engineer's final inspection for certification of final acceptance, and final payment as required by the General Conditions. List known exceptions, if any, in request:

Submit the final payment request with final releases and supporting documentation not previously submitted and accepted. Include certificates of insurance for products and completed operations where required.

Submit an updated final statement, accounting for final additional changes to the Contract Sum.

Submit a 'Sworn Construction Statement'.

Submit a certified copy of the Architect/Engineer's final punch-list of itemized work to be completed or corrected, stating that each item has been completed or otherwise resolved for acceptance and has been

endorsed and dated by the Architect/Engineer.

Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of substantial completion, or else when the Owner took possession of and responsibility for corresponding elements of the Work.

Submit consent of surety.

Submit a final liquidated damages settlement statement, acceptable to Owner.

Submit evidence of final, continuing insurance coverage complying with insurance requirements.

Reinspection Procedure: The Architect/Engineer will reinspect the Work upon receipt of the Contractor's notice that the work, including punch-list items resulting from earlier inspections, has been completed, except for these items whose completion has been delayed because of circumstances that are acceptable to the Architect/Engineer.

Upon completion of reinspection, the Architect/Engineer will either prepare a certificate of final acceptance, or will advise the Contractor of work that is incomplete or of obligations that have not been fulfilled, but are required for final acceptance.

If necessary, the reinspection procedure will be repeated.

RECORD DOCUMENT SUBMITTALS:

General: Specific requirements for record documents are indicated in the individual sections of these specifications. Other requirements are indicated in the General Conditions. General submittal requirements are indicated in "submittals" sections.

Do not use record documents for construction purposes; protect from deterioration and loss in a secure, fire-resistive location; provide access to record documents for the Architect/Engineer's reference during normal working hours.

Record Drawings: Maintain a record set of blue or black line white-prints of contract drawings and shop drawings in a clean, undamaged condition. Mark-up the set of record documents to show the actual installation where the installed work varies substantially from the work as originally shown. Mark whichever drawing is most capable of showing the actual "field" condition fully and accurately; however, where shop drawings are used for mark-up, record a cross-reference at the corresponding location on the working drawings. Give particular attention to concealed work that would be difficult to measure and record at a later date.

Mark record sets with red erasable pencil and, where feasible, use other colors to distinguish between variations in separate categories of work.

Mark-up new information which is known to be important to the Owner, but for some reason was not shown on either contract drawings or shop drawings.

Note related change-order number where applicable.

Organize record drawing sheets into manageable sets, bind with durable paper cover sheets, and print suitable titles, dates and other identification on cover of each set.

Record Specifications: Maintain one complete copy of the Project Manual, including specifications and addenda, and one copy of other written construction documents such as change orders and similar modifications issued in printed form during construction. Mark these documents to show substantial variations in the actual work performed in

comparison with the text of the specifications and modifications as issued. Give particular attention to substitutions, selection of options and similar information on work where it is concealed or cannot otherwise be readily discerned at a later date by direct observation. Note related record drawing information and product data, where applicable.

Upon completion of the Work, submit record specifications to the Architect for the Owner's records.

Record Product Data: Maintain one copy of each product data submittal. Mark these documents to show significant variations in the actual Work performed in comparison with the submitted information. Include both variations in the products as delivered to the site, and variations from the manufacturer's instructions and recommendations for installation. Give particular attention to concealed products and portions of the Work which cannot otherwise be readily discerned at a later date by direct observation. Note related change orders and mark-up of record drawings and specifications.

Upon Completion of mark-up, submit complete set of record product data to the Architect/Engineer for the Owner's records.

Record Samples Submitted: Immediately prior to date or dates of substantial completion, the Contractor will meet at the site with the Architect/Engineer and the Owner's personnel, if desired, to determine which, if any, of the submitted samples that have been maintained by the Contractor during progress of the Work, are to be transmitted to the Owner for record purposes. Comply with delivery to the Owner's sample storage space.

Miscellaneous Record Submittals: Refer to other sections of these specifications for requirements of miscellaneous record- keeping and submittals in connection with the actual performance of the Work. Immediately prior to the date or dates of substantial completion, complete miscellaneous records and place in good order, properly identified and bound or filed, ready for continued use and reference. Submit to the Architect/Engineer for the Owner's records.

Maintenance Manuals: Organize operating and maintenance data into suitable sets of manageable size. Bind data into individual binders properly identified and indexed. Bind each set of data in a heavy-duty 2-inch, 3-ring vinyl-covered binder, with pocket folders for folded sheet information. Mark the appropriate identification on both front and spine of each binder.

Include the following types of information in operation and maintenance manuals:

Emergency instructions.
Spare parts listing.
Copies of warranties.
Wiring diagrams.
Recommended "turn-around" cycles.
Inspection procedures.
Shop drawings and product data.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

CLOSEOUT PROCEDURES:

General Operating and Maintenance Instructions: Arrange for each installer of operating equipment and other work that requires regular or continuing maintenance, to meet at the site with the Owners personnel to provide necessary basic instruction in the proper operation and maintenance of the entire Work. Where installers are not experienced in the required procedures, include instruction by the manufacturer's representatives.

As part of this instruction provide a detailed review of the following items(where applicable for each prime contractor):

Maintenance manuals
Record documents
Spare parts and materials
Tools
Lubricants
Fuels
Identification systems
Control sequences
Hazards
Cleaning
Warranties, bonds, maintenance agreements and similar continuing commitments.

As part of this instruction for operating equipment demonstrate the following procedures:

Start-up
Shut-down
Emergency operations
Noise and vibration adjustments
Safety procedures
Economy and efficiency adjustments
Effective and energy utilization

FINAL CLEANING:

General: Special cleaning requirements for specific units of Work are included in the appropriate sections of Divisions 2 through 16. General Cleaning during the regular progress of the Work is required by the General Conditions and is included under section "Temporary Facilities".

Cleaning: Provide final cleaning of the Work at the time indicated. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of work to the condition expected from a normal, commercial building cleaning and maintenance program. Comply with the manufacturer's instructions for operations.

Complete the following cleaning operations before requesting the Architect's inspection for certification of substantial completion.

Remove labels which are not required as permanent labels.

Clean transparent materials, including mirrors and glass in doors and windows, to a polished condition. Remove putty and other substances which are noticeable as vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials.

Clean exposed exterior and interim hard-surfaced finishes to a dust-free condition, free of dust, stains, films and similar noticeable distracting substances. Restore reflective surfaces to their original reflective condition. Leave concrete floors broom clean. Vacuum carpeted surfaces.

Wipe surfaces of mechanical and electrical equipment clean. Remove excess lubrication and other substances. Clean plumbing fixtures to a sanitary condition. Clean light fixtures and lamps.

Removal of Protection: Except as otherwise indicated or requested by the Construction Manager or Architect, remove temporary protection devices and facilities which were installed during the course of the work to protect previously completed work during the remainder of the construction period.

Compliance: Comply with safety standards and governing regulations for cleaning operations. Do not burn waste materials at the site. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile or other harmful or dangerous materials into drainage systems. Remove waste materials from the site and dispose of in a lawful manner.

END OF SECTION 01700

SECTION 02110 – CLEARING AND GRUBBING

PART 1 - GENERAL

DESCRIPTION:

Clearing and Grubbing shall consist of clearing the surface of the ground of the designated areas of all trees (except those designated to remain) stumps, down timber, logs, snags, brush, undergrowth, hedges, heavy growth of grass or wads, debris, rubbish of any nature, obstructions, asphalt pavement or such material which is unsuitable for use on the site for embankment material. This shall include the grubbing of stumps, roots, matted roots and the disposal from the project of all spoil material resulting from tht clearing and grubbing. Burning of any spoil material will not be allowed on the site.

This work shall also include temporary erosion control measures to control erosion and water pollution during construction.

PROTECTION:

The Work shall include the protection and preservation from injury or defacement of all vegetation and other objects designated or intended to remain, as well as, ground surfaces, drainage, etc.

Streets, roads, adjacent property and other works shall remain protected, as required by local ordinances, throughout the duration of construction.

PART 2 - PRODUCTS

The Contractor shall furnish the necessary equipment to adequately perform this work.

In all areas of construction the top six (6) inches of unused topsoil shall be stripped and stored in one location, as directed by the Owner. The topsoil will be used for the finish grading work as outlined in Section 02200.

PART 3 - EXECUTION

INSPECTION:

The Contractor shall visit the site and familiarize himself with conditions of the site.

LAYOUT

The Contractor shall layout the construction lines, clearing and grubbing lines and all other construction area limits as necessary for the completion of the Project. These lines shall be laid out and approved by the Architect before any clearing is done. Trees, shrubs and plants, and other objects to remain shall be as directed by the Architect.

CLEARING AND GRUBBING:

In areas designated to be cleared and grubbed, all stumps roots, buried logs, brush, grass, and other unsatisfactory materials shall be removed.
Tap roots and other projections over 1-1/2 inches in diameter shall be grubbed out to depth of at least 18 inches in

diameter shall be grubbed out to a depth of at least 18 inches below the finished subgrade or sloped elevation.

TREES TO REMAIN:

Unless marked for removal, living trees more than two feet outside the construction lines of the drives and parking areas are to be undisturbed and are to be protected by the Contractor during construction of this Project. Cut of scarred surfaces of trees of shrubs shall be treated with an approved asphalt base paint prepared especially for tree surgery.

Low hanging branches and unsound or unsightly branches on trees or shrubs designated to remain shall be removed as directed. All trimming shall be done by skilled workmen and in accordance with good tree surgery practices.

TREES TO BE REMOVED:

Trees more than two feet outside the construction lines and marked for removal shall be removed from the site.

BACKFILLING

Within the area where embankments are to be constructed, all depressions resulting from grubbing operations shall be backfilled with suitable excavation material and shall be compacted in accordance with the provisions of Section 02200 to natural ground elevation before embankment construction is started.

Depressions in excavation area, which are below finished subgrade elevation resulting from grubbing operations, shall be backfilled with suitable material and compacted to finished subgrade in accordance with provisions of Section 02200 during the excavation operation.

DISPOSAL AND BURNING

All unusable material shall be properly disposed of off-site. No burning on-site will be permitted. Contractor shall make necessary arrangements and pay for disposal of all material not designated to become property of Owner.

END OF SECTION 02110

SECTION 02140 - DEWATERING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Dewatering consists of performing work necessary to lower and control groundwater levels and hydrostatic pressures to permit excavation and construction to be performed in dry conditions.

Control of surface and sub-surface water, ice and snow are part of dewatering requirements.

Depth of soil below subgrade elevation that is to be dewatered shall be as necessary to construct the project as indicated on the Drawings in dry conditions.

RELATED WORK:

All other Division 2 Sections.
Refer to Geotechnical Data Report dated August 17, 2000, prepared by Professional Service Industries, Inc., bound within this specification.

QUALITY ASSURANCE:

Perform dewatering employing persons that have at least 5 years experience in the field of dewatering.

Maintain adequate supervision and control to ensure that stability of excavated and constructed slopes are not adversely affected by water; erosion is controlled; flooding of excavation or damage to structures does not occur.

The construction site shall be dewatered and kept free of standing water or excessively muddy conditions as needed for proper execution of the construction work. The contractor shall furnish, install, operate and maintain all drains, sumps, pumps, casings, wellpoints, and other equipment needed to perform the dewatering as specified. Dewatering methods that cause a loss of fines from foundation areas shall not be permitted.

Removal of water from the construction site, including the borrow areas shall be accomplished in such a manner that erosion and the transmission of sediment and another pollutants are minimized.

SUBMITTALS:

The Contractor shall submit to the Architect/Engineer, in writing, his plan for dewatering a minimum of ten (10) working days before beginning the construction work for which the dewatering is required. Acceptance of this plan will not relieve the Contractor of responsibility for completing the work as specified.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

DEWATERING:

Provide an adequate system to lower and control groundwater in order to permit excavation, construction of structures, and placement of fill materials under dry conditions. Install sufficient dewatering equipment to pre-drain water bearing strata above and below bottom of structure foundations, drains, sewers, and other excavations.

All excavation of the foundation shall be done in the "dry" condition such that no free seepage is entering the excavation during excavation or backfilling operations.

Reduce hydrostatic head in water-bearing strata below structure foundations, drains, sewers and other excavations to extent that water level and piezometric levels in construction areas are below prevailing excavation surface.

Maintain piezometric water level a minimum of 2 feet below surface of excavation.

Prior to excavation below groundwater level, place system into operation to lower water levels as required and then operate it continuously 24 hours a day, 7 days a week until drains, sewers, and structures have been constructed, including placement of fill materials, and until dewatering is no longer required, as determined by the Engineer.

Dispose of water removed from excavations in a manner to avoid endangering public health, property, and portions of Work under construction or completed. Dispose of water in a manner to avoid inconvenience to others engaged in work about site. Provide sumps, sedimentation tanks, and other flow control devices as required by governing authorities. Disposal of subsurface water shall be in accordance with regulations of the jurisdiction in which the site is located.

Maintain sides and slopes of excavations in safe condition until completion of backfilling.

Provide standby equipment on site, installed and available, for immediate operation as may be required to adequately maintain dewatering on a continuous basis in event any part of system becomes inadequate or fails. In event dewatering requirements are not satisfied due to inadequacy or failure of dewatering system, perform such work as may be required to restore damaged structures and foundation soils at no additional expense.

END OF SECTION 02140

SECTION 02200 - EARTHWORK

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, and the Foundation Inspection report prepared by B & W Engineering Laboratories, Inc. dated July 29, 2005 apply to work of this section.

DESCRIPTION OF WORK:

Section includes earthwork as indicated on drawings, including soil correction, preparation of subgrade, and drainage fill for building slabs and foundations, backfilling, and related work.

Excavation for Mechanical/Electrical Work: Refer to Divisions 15 and 16 sections for excavation and backfill required in conjunction with underground mechanical and electrical utilities, and buried mechanical and electrical appurtenances; not work of this section.

Definition: "Excavation" consists of removal of material encountered to subgrade elevations indicated and subsequent disposal of materials removed.

RELATED WORK:

All other Division 2 Sections.

Refer to Foundation Inspection Report dated July 29, 2005, prepared by B & W Engineering Laboratories, Inc. bound within this specification.

QUALITY ASSURANCE:

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

2. Testing and Inspection Service: Owner will engage soil testing and inspection service who will provide the services of a qualified soils engineer for quality control testing during earthwork operations.

SUBMITTALS:

Test Reports-Excavating: Promptly submit following reports directly to Architect/Engineer from the testing services, with copy to Contractor:

Test reports on borrow material.
Verification of each footing subgrade.
Field density test reports.
One optimum moisture-maximum density curve for each type of soil encountered.

Results of survey activities.
Report of actual unconfined compressive strength and/or results of bearing tests of each strata tested.

JOB CONDITIONS:

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

Additional test borings and other exploratory operations may be made by Contractor at no cost to Owner.

Existing Utilities: Contractor shall locate any existing underground utilities. If utilities are to remain in place, provide adequate means of support and protection during earthwork operations.

Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with owner and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to satisfaction of utility owner.

Do not interrupt existing utilities serving facilities occupied and used by Owner or others, during occupied hours, except when permitted in writing by Architect/Engineer and then only after acceptable temporary utility services have been provided.

Provide minimum of 48-hour notice to Architect/Engineer, and receive written notice to proceed before interrupting any utility.

Use of Explosives: The use of explosives is not permitted.

Protection of Persons and Property: Barricade open excavations occurring as part of this work and post with approved warning lights. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout and other hazards created by earthwork operations.

PART 2 - PRODUCTS

SOIL MATERIALS:

Provide and reuse satisfactory soil materials complying with ASTM D2487 soil classification groups GW, GP, SW and SP.

Unsatisfactory soil materials are defined as those complying with ASTM D2487 soil classification groups ML, MH, CH, OL, OH, PT, GC, SC, and CL.

Subbase Material: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, crushed slag, natural or crushed sand.

Drainage Fill: Washed, evenly graded mixture of crushed stone, or crushed or uncrushed gravel, with 100% passing a 1/2" sieve, 15% passing a No. 20 sieve, and not more than 2% passing a No. 100 sieve.

Sediment Drainage Fabric: Non-biodegradable, sunlight stabilized, woven polypropylene fabric, type which will retain sediment and reduce water runoff velocity. Provide Mirafi 100X or Propex 1325 by Amoco or approved equal.

Backfill and Fill Materials: Satisfactory soil materials free of clay, rock or gravel larger than 2" in any dimension, debris, waste, frozen materials, vegetable and other deleterious matter. Provide evenly graded, clean granular soil materials with not more than 10% passing No. 200 sieve.

PART 3 - EXECUTION

EXCAVATION:

Excavation for structures: Conform to the Soils Engineer's report and to elevations and dimensions shown within a tolerance of +/- 0.10', and extending a sufficient distance from footings and foundations to permit placing and removal of concrete formwork, installation of services, other construction, and for observation.

Excavation for engineered fill shall be laterally oversized for the planned outside edge of the foundation a distance forward to fill required beneath the foundation at that location to receive a 1:1 oversize.

In excavating for footings and foundations, take care not to disturb bottom of excavation. Excavate by hand to final grade just before concrete reinforcement is placed. Trim bottoms to required lines and grades to leave solid base to receive other work.

Under footings, foundation bases, retaining walls and all sewer piping and accessories, fill unauthorized excavation by extending indicated bottom elevation of footing or base to excavation bottom, without altering required top elevation. Lean concrete fill may be used to bring elevations to proper position, when acceptable to Architect/Engineer.

The building shall be supported on engineered fill. Prior to commencing placement of engineered fill, excavate from the building area all existing soils as described in the soils report to elevation 805.00'.

Excavation for engineered fill shall be laterally oversized starting from the face of the building or canopy and extending outward a minimum distance of 8 feet.

Excavation for Pavements: Cut surface under pavements to comply with cross-sections, elevations and grades as shown.

Elsewhere, backfill and compact unauthorized excavations as specified for authorized excavations of same classification, unless otherwise directed by Project Geotechnical Engineer.

If unsuitable bearing materials are encountered at required subgrade elevations, carry excavations deeper and replace excavated material as directed by Project Geotechnical Engineer.

Stability of Excavations: Slope sides of excavations to comply with local codes and ordinances having jurisdiction. Shore and brace where sloping is not possible because of space restrictions or stability of material excavated.

Maintain sides and slopes of excavations in safe condition until completion of backfilling.

Dewatering: Prevent surface water and subsurface or ground water from flowing into excavations and from flooding project site and surrounding area.

Dewatering: Refer to Section 02140 and Foundation Inspection report.

Do not allow water to accumulate in excavations. Remove water to prevent softening of foundation bottoms, undercutting footings, and soil changes detrimental to stability of subgrades and foundations. Provide and maintain

pumps, well points, sumps, suction and discharge lines, and other dewatering system components necessary to convey water away from excavations.

Grade bottoms of trenches as indicated, notching under pipe bells to provide solid bearing for entire body of pipe.

Unless otherwise shown, backfill trenches with concrete where trench excavations pass within 18" of column or wall footings and which are carried below bottom of such footings, or which pass under wall footings. Place concrete to level of bottom of adjacent footing.

Concrete is specified in Division 3.

Do not backfill trenches until tests and inspections have been made and backfilling authorized by Project Geotechnical Engineer. Use care in backfilling to avoid damage or displacement of pipe systems.

For piping or conduit less than 2'-6" below surface of roadways, provide 4" thick concrete base slab support. After installation and testing of piping or conduit, provide minimum 4" thick encasement (sides and top) of concrete prior to backfilling or placement of roadway or parking lot driving lane subbase.

Cold Weather Protection: Protect excavation bottoms against freezing when atmospheric temperature is less than 35° F (1° C).

COMPACTION:

General: Control soil compaction during construction providing minimum percentage of density specified in the Soils Report and for each area classification indicated below.

Percentage of Maximum Density Requirements: Compact soil to not less than the following percentages of maximum density of soils which exhibit a well-defined moisture density relationship (cohesive soils) determined in accordance with ASTM D 1557; and not less than the following percentages of relative density, determined in accordance with ASTM D 2049, for soils which will not exhibit a well-defined moisture-density relationship (cohesionless soils).

Structures, Building Slabs and Steps, Pavements: Compact the bottom of the excavation, and all fill, with a Vibratory Compactor in 6" to 12" lifts, in the presence of the soils engineer. Compact to at least 98% of Modified Proctor density (ASTM D 698-78) as outlined in the soils report (page 9).

Landscaped or Unpaved Areas: Compact top 6" of subgrade and each layer of backfill or fill material at 85% maximum density for cohesive materials and 90% relative density for cohesionless soils.

Piping, manholes, catch basins: Compact top 6" of subgrade at 95% maximum density.

Walkways: Compact top 6" of subgrade and each layer of backfill or fill material at 90% maximum density for cohesive material or 95% maximum density for cohesionless material.

Moisture Control: Where subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply water to surface of subgrade, or layer of soil material. Apply water in manner to prevent free water appearing on surface during or subsequent to compaction operations. Fill that is placed wet shall consist of less than 5% passing #200 sieve, and no more than 40% passing #40 sieve. Refer to soil report.

Remove and replace, or scarify and air dry, soil material that is too wet to permit compaction to specified density.

Soil material that has been removed because it is too wet to permit compaction may be stockpiled or spread and allowed to dry. Assist drying by discing, harrowing or pulverizing until moisture content is reduced to a satisfactory value.

BACKFILL AND FILL:

General: Place acceptable soil material in layers to required subgrade elevations, for each area classification listed below.

In excavations and landscaped areas, use satisfactory excavated or borrow material. Do not use frozen materials. Prevent bottoms of excavations from freezing during backfill operations.

Under walks, steps and pavements, use subbase material, or satisfactory excavated or borrow material, or combination of both.

Under interior building slabs, use granular material with sufficient binder that has been approved by the Geotechnical Engineer.

Under piping and conduit, use subbase material where subbase is indicated under piping or conduit; shape to fit bottom 90° of cylinder.

Ground Surface Preparation: Remove vegetation, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placement of fills. Remove topsoil of horticultural value from areas to be covered by new construction, paving, or that will be excavated or regraded. Plow, strip, or break-up sloped surfaces steeper than 1 vertical to 4 horizontal so that fill material will bond with existing surface.

When existing ground surface has a density less than that specified under "Compaction" for particular area classification, break up ground surface, pulverize, moisture-condition to optimum moisture content, and compact to required depth and percentage of maximum density.

Placement and Compaction: Place backfill and fill materials in layers not more than 12" in loose depth for material compacted by heavy compaction equipment, and not more than 8" in loose depth for material compacted by hand-operated tampers. Place structural fill material as recommended in the soil report: page 10.

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

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

GRADING:

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

Grading Outside Building Lines: Grade areas adjacent to building lines to drain away from structures and to prevent ponding.

Finish surfaces free from irregular surface changes, and as follows:

Landscape or Unpaved Areas: Finish areas to receive topsoil to within not more than 0.10' above or below required subgrade elevations.

Walks: Shape surface of areas under walks to line, grade and cross-section, with finish surface not more than 0.10' above or below required subgrade elevation.

Pavements: Shape surface of areas under pavement to line, grade and cross-section, with finish surface not more than 1/2" above or below required subgrade elevation.

Grading Surface of Fill Under Building Slabs: Grade smooth and even, free of voids, compacted as specified, and to required elevation. Provide final grades within a tolerance of 1/2" when tested with a 10' straightedge.

Compaction: After grading, compact subgrade surfaces to the depth and indicated percentage of maximum or relative density for each area classification.

PAVEMENT SUBBASE COURSE:

General: Subbase course consists of placing subbase material, in layers of specified thickness, over subgrade surface to support a pavement base course.

See other Division 2 sections for paving specifications.

Grade Control: During construction, maintain lines and grades including crown and cross-slope of subbase course.

Shoulders: Place shoulders along edges of subbase course to prevent lateral movement. Construct shoulders of acceptable soil materials, placed in such quantity to compact to thickness of each subbase course layer. Compact and roll at least a 12" width of shoulder simultaneously with compacting and rolling of each layer of subbase course.

Placing: Place subbase course material on prepared subgrade in layers of uniform thickness, conforming to indicated cross- section and thickness. Maintain optimum moisture content for compacting subbase material during placement operations.

When a compacted subbase course is shown to be 6" thick or less, place material in a single layer. When shown to be more than 6" thick, place material in equal layers, except no single layer more than 6" or less than 3" in thickness when compacted.

BUILDING SLAB DRAINAGE COURSE:

General: Drainage course consists of placement of drainage fill material, in layers of indicated thickness, over subgrade surface to support concrete building slabs.

Sediment Barriers: Install at all locations where flows from construction areas including entire perimeter of construction area where ground slopes outward at all drainage structure inlets.

FIELD QUALITY CONTROL:

Quality Control Testing During Construction: Allow testing service to inspect and approve subgrades and fill layers before further construction work is performed. Owner shall pay for initial testing.

Perform field density tests in accordance with ASTM D 1556 (sand cone method) or ASTM D 2167 (rubber balloon method), as applicable.

Engineered fill for building structure: After completing subcut excavation and before proceeding with fill placement, Geotechnical Engineer shall approve bottom of excavation, making tests as required. Placement of engineered fill shall be tested at 2'-0" intervals for each 250 sq. ft.

Footing Subgrade: For each strata of soil on which footings will be placed, conduct at least one test to verify required design bearing capacities. Subsequent verification and approval of each footing subgrade may be based on a visual comparison of each subgrade with related tested strata, when acceptable to Architect/Engineer.

Paved Areas and Building Slab Subgrade: Make at least one field density test of subgrade for every 2000 sq. ft. of paved area or building slab, but in no case less than 3 tests. In each compacted fill layer, make one field density test for every 2000 sq. ft. of overlaying building slab or paved area, but in no case less than 3 tests.

Foundation Wall Backfill: Take at least 1 field density test for each 250 yards of backfill, at locations and elevations determined by Geotechnical Engineer.

If in opinion of Architect/Engineer, based on testing service reports and inspection, subgrade or fills which have been placed are below specified density, provide additional compaction and testing at no additional expense, until satisfactory. Contractor shall immediately correct any fill material not complying with the specification.

MAINTENANCE:

Protection of Graded Areas: Protect newly graded areas from traffic and erosion. Keep free of trash and debris. Repair and re-establish grades in settled, eroded, and rutted areas to within specified tolerances.

Reconditioning Compacted Areas: Where completed compacted areas are disturbed by subsequent construction operations or adverse weather, scarify surface, re-shape, and compact to required density and moisture content prior to further construction.

Settling: Where settling is measurable or observable at excavated areas during general project warranty period, remove surface (pavement, lawn or other finish), add backfill material, compact, and replace surface treatment. Restore appearance, quality, and condition of surface or finish to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

END OF SECTION 02200

SECTION 02281 – TERMITE CONTROL

PART 1 - GENERAL

DESCRIPTION:

Provide termite control by means of chemical barriers at all underslab areas and at external and internal foundations of building structures.

SUBMITTALS:

Submit copies of technical data on the materials and applications to be employed in accordance with Section 01340.

GUARANTEE:

The Contractor shall furnish a five-year written guarantee stating that any additional treatment of areas where termites may appear and the correction of any damages caused by termite appearance shall be borne by him, at no cost to the Owner.

In addition, provide the Owner an annually renewable Termite Inspection Control Contract (to be accepted at the Owner's option), effective five years from date of original soil treatment, to asure necessary retreatment and liability for termite damage.

PART 2 - PRODUCTS

MATERIALS:

Dursban in water emulsion. Other chemicals acceptable as approved by the local, state and federal governing authorities.

Mix in accordance with manufacturer's printed instructions.

PART 3 - EXECUTION

APPLICATION:

Agitate solution thoroughly and periodically to maintain uniform strength and apply as follows:

1. Two gallons per five (5) lineal feet along inside perimeter of foundation walls to one (1) foot below grade, and over backfill at the sane rate.
2. One gallon per ten (10) lineal feet along inside ground floor area if application is over earth fill. Apply at a rate of 1-1/2 gallons per 10 square feet if application is over gravel fill.
3. Two gallons per ten (10) lineal feet applied along outside perimeter of foundation walls to one (1) foot below grade, and end over backfill at the same rate.

If, after the soil treatment and prior to the placement of the concrete slabs bearing on the soil, measurable rain in excess of .2 of an inch falls on the treated soil, the process shall be repeated as outlined above. The Contractor is advised to consult the local weather bureau prior to application.

END OF SECTION 01045

SECTION 02513 - ASPHALT CONCRETE PAVING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of asphalt concrete paving work will be shown on drawings.

Prepared aggregate subbase is specified in earthwork sections.

SUBMITTALS:

Material Certificates: Provide copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.

QUALITY ASSURANCE:

Codes and Standards: Comply with State highway or Transportation Department (DOT) standard specifications, latest edition, and with local governing regulations if more stringent than herein specified.

The Owner reserves the right to make corings of the bituminous paving to establish the depth of the paving layers. Depths indicated are minimum; if Owner's corings indicates undersizing, Owner may order additional corings at Contractor's expense to confirm findings. Fill all boring holes with bituminous material and conpact to match surrounding surface.

SITE CONDITIONS:

Weather Limitations: Apply prime and tack coats when ambient temperature is above 50 deg.F (10 deg.C), and when temperature has not been below 35 deg.F (1 deg.C) for 12 hours immediately prior to application. Do not apply when base is wet or contains an excess of moisture.

Construct asphalt concrete surface course when atmospheric temperature is above 40 deg.F (4 deg.C), and when base is dry. Base course may be placed when air temperature is above 30 deg. F (-1 deg.C) and rising.

Grade Control: Establish and maintain required lines and elevations.

PART 2 - PRODUCTS

MATERIALS:

General: Use locally available materials and gradations which exhibit a satisfactory record of previous installations.

Base Course Aggregate: Sound, angular crushed stone, crushed gravel, or crushed slag, sand, stone or slag screenings.

Surface Course Aggregate: Crushed stone, crushed gravel, crushed slag, and sharp-edged natural sand.

Asphalt Cement: AASHTO M 226 (ASTM D 3381) for viscosity-graded material and AASHTO M 20 (ASTM D 946) for penetration-graded material.

Tack Coat: Emulsified asphalt, AASHTO M 140 (ASTM D 997) or M 208 (D 2397); SS-1, SS-1h, CSS-1 or CSS-1h, diluted with one part water to one part emulsified asphalt.

Lane Marking Paint: Chlorinated rubber-alkyd type, AASHTO M 248 (FS TT-P-115), Type III.

Wheel Stops: Precast of 3,500 psi air-entrained concrete, approximately 6" high, 9" wide, and 7'0" long, with chamfered corners and drainage slots on underside.

ASPHALT-AGGREGATE MIXTURE:

Provide plant-mixed, hot-laid asphalt-aggregate mixture complying with State Department of Transportation Standard Specifications for base course and wear course, and as recommended by local paving authorities to suit project conditions.

PART 3 - EXECUTION

SURFACE PREPARATION:

Remove loose material from compacted subbase surface immediately before beginning paving operations.

Notify Contractor in writing of unsatisfactory conditions. Do not begin paving work until deficient subbase areas have been corrected and are ready to receive paving.

Fine Grading: Grade in strict accordance with DOT Specification for indicated type of construction. Subgrade shall be final graded, trimmed and finished within the limits and as required by elevations shown on Drawings. Do not move or loosen materials beyond limits of paving. Material for spot subgrade reinforcment shall comply with DOT specifications.

Granular base shall be minimum 6" thick 100% crushed DOT Specified material.

Tack Coat: Apply to contact surfaces of previously constructed asphalt paving in accordance with referenced standards.

Allow to dry until at proper condition to receive paving.

Exercise care in applying bituminous materials to avoid smearing of adjoining concrete surfaces. Remove and clean

damaged surfaces.

Bituminous base course shall be minimum 1-1/2" thick Dot Spec 100L with minimum 4.7% oil content by the job mix formula.

Bituminous wear course shall be minimum 1-1/2" thick Dot Spec 1100T with a minimum 5.7% oil content by the job mix formula.

PLACING MIX:

General: Place asphalt concrete mixture on prepared surface, spread and strike-off. Spread mixture at minimum temperature of 225 deg.F (107 deg.C). Place inaccessible and small areas by hand. Place each course to required grade, cross-section, and compacted thickness.

Paver Placing: Place in strips not less than 10' wide, unless otherwise acceptable to Architect. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete base course for a section before placing surface course.

Joints: Make joints between old and new pavements or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of asphalt concrete course. Clean contact surfaces and apply tack coat.

ROLLING:

General: Begin rolling when mixture will bear roller weight without excessive displacement.

Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.

Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling, if required, with hot material.

Second Rolling: Follow breakdown rolling as soon as possible, while mixture is hot. Continue second rolling until mixture has been thoroughly compacted.

Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained maximum density.

Patching: Remove and replace paving areas mixed with foreign materials and defective areas. Cut-out such areas and fill with fresh, hot asphalt concrete. Compact by rolling to maximum surface density and smoothness.

Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

TRAFFIC AND LANE MARKINGS:

Cleaning: Sweep and clean surface to eliminate loose material and dust.

Striping: Use chlorinated-rubber base traffic lane-marking paint, factory-mixed, quick-drying, and non-bleeding.

Color: White.

Do not apply traffic and lane marking paint until layout and placement has been verified with Architect.

Apply paint with mechanical equipment to produce uniform straight edges. Apply in 2 coats at manufacturer's recommended rates.

FIELD QUALITY CONTROL:

General: Test in-place asphalt concrete courses for compliance with requirements for thickness and surface smoothness. Repair or remove and replace unacceptable paving as directed by Architect.

Thickness: In-place compacted thickness will not be acceptable if exceeding following allowable variation from required thickness:

Base Course: 1/2", plus or minus.

Surface Course: 1/4", plus or minus.

Surface Smoothness: Test finished surface of each asphalt concrete course for smoothness, using 10' straightedge applied parallel with, and at right angles to centerline of paved area. Surfaces will not be acceptable if exceeding the following tolerances for smoothness.

Base Course Surface: 1/4".

Wearing Course Surface: 3/16".

Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template, 1/4".

Check surface areas at intervals as directed by Architect.

END OF SECTION 02513

SECTION 02514 - PORTLAND CEMENT CONCRETE PAVING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work specified in this section.

DESCRIPTION OF WORK:

Extent of portland cement concrete paving will be shown on drawings, including curbs, gutters, and sidewalks.

Prepared subbase is specified in "Earthwork" section.

Concrete and related materials are specified in Division 3.

QUALITY ASSURANCE:

Codes and Standards: Comply with State Department of Transportation (DOT) Standard Specifications. Comply with local governing regulations if more stringent than herein specified.

SUBMITTALS:

Furnish samples, manufacturer's product data, test reports, and materials certifications as required in referenced sections for concrete and joint fillers and sealers.

JOB CONDITIONS:

Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

Utilize flagmen, barricades, warning signs and warning lights as required.

Examine areas of subbase and report deficiencies to Owner in writing before commencing work.

PART 2 - PRODUCTS

MATERIALS:

Forms: Steel, wood, or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.

Use flexible spring steel forms or laminated boards to form radius bends as required.

Coat forms with a non-staining form release agent that will not discolor or deface surface of concrete.

Welded Wire Mesh: Welded plain cold-drawn steel wire fabric, ASTM A 185.

Furnish in flat sheets, not rolls, unless otherwise acceptable to Architect.

Reinforcing Bars: Deformed steel bars, ASTM A 615, Grade 40.

Joint Dowel Bars: Plain steel bars, ASTM A 615, Grade 40. Cut bars true to length with ends square and free of burrs.

Metal Expansion Caps: Furnish for one end of each dowel bar in expansion joints. Design caps with one end closed and a minimum length of 3" to allow bar movement of not less than 1", unless otherwise indicated.

Concrete Materials: Comply with requirements of applicable Division-3 sections for concrete materials, admixtures, bonding materials, curing materials, and others as required.

Expansion Joint Materials: Comply with requirements of applicable Division-7 sections for preformed expansion joint fillers and sealers.

Liquid-Membrane Forming Curing Compound: Complying with ASTM C 309, Type 2, Class A unless other type acceptable to Architect. Moisture loss not more than 0.55 gr./sq. cm. when applied at 200 sq. ft./gal.

Products: Subject to compliance with requirements, provide one of the following:

"Masterseal"; Master Builders.
"Ecocure"; Euclid Chemical Co.
"Kure-N-Seal"; Sonneborn-Contech.
"L&M Cure"; L & M Construction Chemicals.

CONCRETE MIX, DESIGN AND TESTING:

Comply with requirements of applicable Division 3 sections for concrete mix design, sampling and testing, and quality control, and as herein specified.

Design mix to produce standard-weight concrete consisting of portland cement, aggregate, air-entraining admixture and water to produce the following properties:

Compressive Strength: 4000 psi, minimum at 28 days, unless otherwise indicated.

Slump Range: 3".

Air Content: 5% to 8%.

PART 3 - EXECUTION

SURFACE PREPARATION:

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

Proof-roll prepared subbase surface to check for unstable areas and need for additional compaction. Thoroughly wet subgrade and then compact with two passes of a 500 pound roller. Material yielding more than 1/2" shall be removed to a depth of 4", replaced with suitable material, and compacted. Do not begin paving work until such conditions have been corrected and are ready to receive paving.

FORM CONSTRUCTION:

Set forms to required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.

Check completed formwork for grade and alignment to following tolerances:

Top of forms not more than 1/8" in 10'.

Vertical face on longitudinal axis, not more than 1/4" in 10'.

Clean forms after each use, and coat with form release agent as often as required to ensure separation from concrete without damage.

REINFORCEMENT:

Locate, place and support reinforcement as specified in Division- 3 sections, unless otherwise indicated.

CONCRETE PLACEMENT:

General: Comply with requirements of Division-3 sections for mixing and placing concrete, and as herein specified.

Do not place concrete until subbase and forms have been checked for line and grade. Moisten subbase if required to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

Place concrete using methods which prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square- faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocation of reinforcing, dowels, and joint devices.

Use bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surface.

Deposit and spread concrete in a continuous operation between transverse joints, as far as possible. If interrupted for more than 1/2-hour, place a construction joint.

When adjacent concrete work is placed in separate pours, do not operate equipment on concrete until pavement has attained sufficient strength to carry loads without injury.

Curbs and Gutters: Automatic machine may be used for curb and gutter placement at Contractor's option. If machine placement is to be used, submit revised mix design and laboratory test results which meet or exceed

minimums specified. Machine placement must produce curbs and gutters to required cross-section, lines, grades, finish, and jointing as specified for formed concrete. If results are not acceptable, remove and replace with formed concrete as specified.

JOINTS:

General: Construct expansion, weakened-plane (contraction), and construction joints true-to-line with face perpendicular to surface of concrete. Construct transverse joints at right angles to the centerline, unless otherwise indicated.

When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.

Weakened-Plane (Contraction) Joints : Provide weakened-plane (contraction) joints, sectioning concrete into areas as shown on drawings. Construct weakened-plane joints for a depth equal to at least 1/4 concrete thickness, as follows (at contractor's option):

Tooled Joints: Form weakened-plane joints in fresh concrete by grooving top portion with a recommended cutting tool and finishing edges with a jointer.

Inserts: Use embedded strips of metal or sealed wood to form weakened-plane joints. Set strips into plastic concrete and carefully remove strips after concrete has hardened.

Construction Joints: Place construction joints at end of placements and at locations where placement operations are stopped for a period of more than 1/2-hour, except where such pours terminate at expansion joints.

Construct joints as shown or, if not shown, use standard metal keyway-section forms.

Where load transfer-slip dowel devices are used, install so that one end of each dowel bar is free to move.

Expansion Joints: Provide premolded joint filler for expansion joints abutting concrete curbs, catch basins, manholes, inlets, structures, walks and other fixed objects, unless otherwise indicated.

Locate expansion joints at 20' o.c. unless otherwise indicated.

Extend joint fillers full-width and depth of joint, and not less than 1/2" or more than 1" below finished surface where joint sealer is indicated. If no joint sealer, place top of joint filler flush with finished concrete surface.

Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together.

Protect top edge of joint filler during concrete placement with a metal cap or other temporary material. Remove protection after concrete has been placed on both sides of joint.

Fillers and Sealants: Comply with the requirements of applicable Division-7 sections for preparation of joints, materials, installation, and performance.

CONCRETE FINISHING:

After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only

where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.

After floating, test surface for trueness with a 10' straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.

Work edges of slabs, gutters, back top edge of curb, and formed joints with an edging tool, and round to 1/2" radius, unless otherwise indicated. Eliminate tool marks on concrete surface.

After completion of floating and troweling when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:

Broom finish, by drawing a fine-hair broom across concrete surface, perpendicular to line of traffic. Repeat operation if required to provide a fine line texture acceptable to Architect.

On inclined slab surfaces, provide a coarse, non-slip finish by scoring surface with a stiff-bristled broom, perpendicular to line of traffic.

Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects, as directed by Architect.

CURING:

Protect and cure finished concrete paving, complying with applicable requirements of Division-3 sections. Use membrane- forming curing and sealing compound or approved moist-curing methods.

REPAIRS AND PROTECTIONS:

Repair or replace broken or defective concrete, as directed by Architect.

Drill test cores where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

Sweep concrete pavement and wash free of stains, discolorations, dirt and other foreign material just prior to final inspection.

END OF SECTION 02514

SECTION 03310 - CONCRETE WORK

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work specified in this section.

DESCRIPTION OF WORK:

Section includes all concrete, formwork, and reinforcing as shown on drawings, and specified herein, including the following abbreviated list of items:

Footings.
Interior foundation walls, columns, and beams.
Exterior concrete walls, foundations, etc.
Floor slabs.
Miscellaneous other items.

Refer to all other Division 3 sections that relate to this section.

RELATED WORK:

Section 02200, Earthwork.
Section 02514, Portland Cement Concrete Paving.
Section 04200, Unit Masonry.
Section 07900, Joint Sealers, for expansion joints and sealants.

QUALITY ASSURANCE:

1. Codes and Standards: Comply with the latest edition of the following codes and standards except where more stringent requirements are shown or specified:

ACI 301 "Specifications for Structural Concrete for Buildings".

ACI 318 "Building Code Requirements for Reinforced Concrete."

Concrete Reinforcing Steel Institute, "Manual of Standard Practice".

2. Concrete Testing Service: Owner shall engage and pay for a testing laboratory (as selected by Architect) to perform material evaluation tests and to provide concrete design mixes.

3. Contractor shall pay for all necessary, additional testing, as determined by the Architect, in the event that preliminary testing shows failure of the Contractor to meet specifications. This shall be paid for solely be the Contractor and not charged to the Owner.

4. Mandatory Preconstruction Meeting: Prior to, or concurrent with, the submittal of design mixes, the Contractor shall arrange a meeting with Owner, Architect, readymix supplier representative, admixture representative, concrete sub-

contractor and all other associated contractors and suppliers. Discussion shall include proper use of admixtures, proper placement of concrete, curing methods, concerns of weather conditions, timing and all other concerns. Contractor shall be responsible for taking minutes of the meeting and distribute them to all parties present.

SUBMITTALS:

1. Product Data: Submit data for all proprietary materials, including all admixtures, ten days prior to any work being performed.

2. Shop Drawings; Reinforcement: Submit original shop drawings prepared by registered Professional Engineer in the State of Minnesota for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315 "Manual of Standard Practice for Detailing Reinforced Concrete Structures" showing bar schedules, stirrup spacing, diagrams of bent bars, and arrangement of concrete reinforcement. Include special reinforcement required for openings through concrete structures.

3. Laboratory Test Reports: Submit laboratory test reports for concrete materials and mix design test as specified.

4. Certification: Provide certification from admixture supplier that chloride content complies with specified requirements.

PART 2 - PRODUCTS

FORM MATERIALS:

Forms for Exposed Finish (Architectural) Concrete: Provide products when assembled produce smooth, continuous surfaces including plywood, metal, metal-framed plywood, masonite or other acceptable panel-type materials. Provide materials of the proper thickness for stability, and the proper finish for a smooth, imprinted surface. Use sealant at form joints as necessary to obtain a continuous surface. Final surfaces shall be clean, flush and without blemishes prior to any surface treatment. Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Rust staining steel forms are not acceptable.

Forms for Unexposed Finish (Structural) Concrete: Form concrete surfaces which will be unexposed in finished structure with plywood, lumber, metal or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

Form Coatings: Provide commercial formulation form-coating compounds that will not bond with, stain nor adversely affect concrete surfaces, and will not impair subsequent treatments of concrete surfaces.

Products: Subject to compliance with requirements, provide one of the following:

"Eucoslip" by Euclid Chemical Company.
"Debond" form coating, by L&M Construction Chemicals.
"Nox Crete Form Release" by Nox Crete.

Form Ties: Factory-fabricated, adjustable-length, removable or snapoff metal form ties, designed to prevent form deflecting and to prevent spalling concrete upon removal. Provide units which will leave no metal closer than 1-1/2" to surface, and holes not larger than 1" diameter in concrete surface.

REINFORCING MATERIALS:

Reinforcing Bars: ASTM A 615 or ASTM A 706, Grade 60, deformed. Sizes as shown on the structural drawings.

Steel Wire: ASTM A 82, plain, cold-drawn, steel.

Welded Wire Fabric: ASTM A 185, welded steel wire fabric.

Supports for Reinforcement: Provide plastic tipped bolsters, chairs, spacers and other supports as necessary for spacing, supporting and fastening reinforcing bars and welded wire fabric in place. Use wire bar supports complying with CRSI specifications.

For Exterior slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

For Exposed-to-view concrete surfaces, where legs of supports are in contact with forms, provide supports with legs which are plastic protected (CRSI, Class I) or stainless steel protected (CRSI, Class 2).

CONCRETE MATERIALS:

General: Total water soluble chloride ion content in the total mix for all materials used, including water, shall not exceed 0.15% by weight of cement for reinforced concrete.

Portland Cement: ASTM C 150, Type I. Only one brand of cement shall be used.

Fly-Ash: ASTM C 618, Type C., limited to 25% of cement content by weight, and used only at foundations and interior columns.

Normal Weight Aggregates: ASTM C 33. Do not use fine or coarse aggregates containing spalling-causing deleterious substances.

Water: Drinkable.

Air-Entraining Admixture: ASTM C 260, certified by manufacturer to be compatible with other required admixtures.

Products: Provide one of the following:

"Air Mix"; Euclid Chemical.
"Sika Aer"; Sika Corp.
"Micro Air" or "MB-VR"; Master Builders.
"Darex AEA" or "Daravair"; W.R. Grace.

Water-Reducing Admixture: ASTM C 494, Type A., no chloride ions.

Products: Subject to compliance with requirements, provide one of the following:

"Eucon WR-75"; Euclid Chemical Co.
"Pozzolith 322N"; Master Builders.
"WRDA w/Hycol"; W.R. Grace Co.
"Plastocrete 161;" Sika Chemical Corp.

Water-Reducing, Retarding Admixture: ASTM C 494, Type D.

Products: Subject to compliance with requirements, provide one of the following:

"Eucon Retarder 75"; Euclid Chemical Co.
"Pozzolith 100XR or 300-R"; Master Builders.
"Daratard 17"; W.R. Grace.

High Range Water-reducing Admixture (Superplasticizer): ASTM C 494, type F or type G.

Products: Subject to compliance with requirements, provide one of the following:

"Eucon Super 37 or 537"; Euclid Chemical Corp.
"Rheobuild 716 or 1000"; Master Builders.
"Sikament 300"; Sika Chemical Corp.

Non-corrosive, Non-Chloride Accelerator Admixture: ASTM C 494 Type C or Type E.

Products: Subject to compliance with requirements, provide one of the following:

"Accelguard 80"; Euclid Chemical Company.
"Daraset"; W.R. Grace.
"pozzutech 20"; Master Builders.

RELATED MATERIALS:

Granular Base: Evenly graded mixture of fine and coarse aggregates to provide, when compacted, a smooth and even surface below slabs on grade.

Non-shrink grout: ASTM-C-1107, 28 day strength: 6000 psi.

Products: Subject to compliance with requirements, provide one of the following:

"Euco-NS"; Euclide Chemical.
"Masterflow 713"; Master Builders.
"Five Star Grout"; U.S. Grout Corp.
"Ferrogrout"; by L&M Construction Chemicals, Inc.
"Duragrout"; by L&M Construction Chemicals, Inc.

Vapor Retarder/Moisture-Retaining Membrane: Polyethylene film, 8 mils thick, complying with ASTM C 171.

Clear Curing and Sealing Compound: Liquid type membrane-forming curing compound complying with ASTM C 309, Type 2, Class A. Moisture loss not more than 0.55 kg./m. sq. in 72 hours when applied at 200 sq. ft./gal.

Products: Subject to compliance with requirements, provide one of the following:

"Masterseal"; Master Builders.
"Ecocure"; Euclid Chemical Co.
"Clear Seal 150"; A.C. Horn, Inc.
"S/C 309"; Sonneborn-Rexnord.
"Dress and Seal #18"; by L&M Construction Chemicals, Inc.

Bonding Compound: Acrylic polymer modified type, non-rewetable

bonding compound.

Products: subject to compliance with requirements, provide one of the following:

"Hornweld"; A.C. Horn, Inc.
"Daraweld"; W.R. Grace.
"Sonocrete"; Sonneborn-Rexnord
"SBR Latex"; Euclid Chemical Co.

Epoxy Adhesive: ASTM C 881, two component material suitable for use on dry or damp surfaces. Provide material "Type", "Grade", and "Class" to suit project requirements.

Products: Subject to compliance with requirements, provide one of the following:

"Euco Epoxy 463 or 620"; Euclid Chemical Co.
"Sikadur Hi-Mod"; Sika Chemical Co.
"Epoxtite"; A.C. Horn, Inc.
"Thiopoxy"; W.R. Grace.
"Concresive 1001"; Adhesive Engineering Co.

PROPORTIONING AND DESIGN OF MIXES:

Column & Structural Slab Beam Concrete Design mix: Provide concrete with design strength of 5000 psi @ 28 days. Water/(cement) ratio shall be maximum 0.45. Maximum aggregate size shall not exceed 3/4"

Footings, Walls & Slabs on grade Concrete Design mix: 4000 psi 28-day compressive strength; W/C ratio of 0.45 maximum. This includes non-traffic bearing and non-structural concrete. Maximum aggregate size shall not exceed 3/4" for walls and slabs on grade or 1-1/2" for footings.

Use air-entraining admixture at exterior exposed concrete in accordance with manufacturers instructions: air entrainment shall amount to 6% +/- 1.5, depending on aggregate size.

Slump Limits: Proportion and design mixes as follows:

3", +/-1" for all flatwork and exposed architectural concrete without superplasticizer
6" +/-1-1/2", with superplasticizer included in mix

CONCRETE MIXING:

Ready-Mix Materials: Comply with ASTM C 94.

Reject all concrete brought in by ready-mix truck that exceeds maximum allowable slumps and water-cement ratios, and the following time limits:

60 minutes after inclusion of superplasticizer.
60 minutes for all concrete in temperatures exceeding 80 degrees.
90 minutes for all other concrete.

ADMIXTURES:

Provide superplasticizer at all flatwork, pumped concrete, architectural concrete and as necessary to achieve the specified strengths, water-cement ratios or other items.

Provide air entrainment At all exterior concrete, exposed to freezing and thawing at a rate of 6% +/-1%. At interior floor slabs, provide maximum air content of 3%.

Use water-reducing, retarding or accelerating admixtures, in concrete as required for placement and workability depending on climatic or situational conditions. In general use a non- corrosive, non-chloride accelerator in slabs placed bellow 50 degrees F.

Use admixtures for water-reducing and set-control in strict compliance with manufacturer's directions.

PART 3 - EXECUTION

INSTALLATION, FORMS:

Formwork: Design, erect, support, brace and maintain formwork to support vertical and lateral, static and dynamic loads that might be applied until such loads can be supported by concrete structure. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation and position. Maintain formwork construction tolerances complying with ACI 347.

Construct Forms to sizes, shapes, lines and dimensions shown, and to obtain accurate alignment, location, grades, level and plumb work in finished structures. Provide for openings, offsets, sinkages, keyways, recesses, moldings, rustications, reglets, chamfers, blocking, screeds, bulkheads, anchorages and inserts, and other features required in work. Use selected materials to obtain required finishes. Solidly butt joints and provide backup at joints to prevent leakage of cement past.

Fabricate forms for easy removal without hammering or prying against concrete surfaces. Provide crush plates or wrecking plates where stripping may damage cast concrete surfaces. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only. Kerf wood inserts for forming keyways, reglets, recesses, and the like, to prevent swelling and for easy removal.

Provide temporary openings where interior area of formwork is inaccessible for cleanout, for inspection before concrete placement, and for placement of concrete. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar. Locate temporary openings on forms at inconspicuous locations.

Chamfer exposed corners (3/4" x 3/4") and edges as indicated, using wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

Provisions for Other Trades: Provide openings in concrete formwork to accommodate work of other trades. Determine size and location of openings, recesses and chases from trades providing such items Accurately place and securely support items built into forms. Coordinate with all other trades.

Cleaning and Tightening: Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt or other debris just before concrete is placed. Retightening forms and bracing after concrete placement is required to eliminate mortar leaks and maintain proper alignment.

PLACING REINFORCEMENT:

Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars", for details

and methods of reinforcement placement and supports, and as herein specified.

Clean reinforcement of materials which reduce or destroy bond with concrete.

Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers, and hangers, as required.

Place reinforcement to obtain at least minimum coverages for concrete protection. Arrange, space and securely tie bars and bar supports to hold reinforcement in position during concrete placement operations. Set wire ties so ends are directed into concrete, not toward exposed concrete surfaces.

Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Install fabric on chairs or other approved product to elevate fabric during pour. Offset end laps in adjacent widths to prevent continuous laps in either direction. Lift fabric up with hook to ensure that material does not lie on grade during placement.

JOINTS:

Construction Joints: Locate and install construction joints where shown on the drawing, and if not shown, locate so as not to impair strength and appearance of the structure, as acceptable to Architect.

Provide keyways at least 1-1/2" deep in construction joints in walls, slabs and between walls and footings; accepted bulkheads designed for this purpose may be used for slabs.

Place construction joints perpendicular to main reinforcement. Continue reinforcement across construction joints, except as otherwise indicated.

Isolation Joints in Slabs-on-Ground: Construct isolation joints in slabs-on-ground at points of contact between slabs-on-ground and vertical surfaces, such as column pedestals, foundation walls, grade beams and elsewhere as indicated.

Contraction (Control) Joints in Slabs-on-Ground: Construct contraction joints in slabs-on-ground to form panels or patterns as shown, with a maximum joint spacing of 36 times slab thickness at any area. Use Soft-Cut saw shortly after pour (without dislodging aggregate), and carefully saw cut, 1/8" wide to a depth of 1/3 of the slab depth. Cut joints between 6 and 12 hours after placement or as soon as possible after slab finishing, without dislodging aggregate.

PREPARATIONS:

At slab-on-ground, completely saturate the ground with water just prior to placement. During hot, dry periods provide several hoses and workers to ensure that base is damp.

At formed concrete, clean re-used forms of concrete matrix residue, repair and patch as required to return forms to acceptable surface condition throughout the project to maintain consistently good standards. Coat contact surfaces of forms with specified form-coating compound before reinforcement is placed. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Discard forms that do not conform to specified standards.

INSTALLATION OF EMBEDDED ITEMS:

General: Set and build into woik anchorage devices and other embedded items, using setting drawings, required for other work that is attached to, or supported by, cast-in-place concrete. Completely fill separations at setting plates and other materials with specified non-shrink grout.

CONCRETE PLACEMENT:

Preplacement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other trades to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms and base materials immediately before placing concrete where form coatings are not used.

Apply temporary protective covering to lower 2 feet of finished walls adjacent to poured floor slabs and similar conditions, and guard against spattering during placement.

General: Comply with ACI 304 "Recommended Practice for Measuring, Mixing, Transporting, and Placing Concrete", and as herein specified.

Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete which has hardened sufficiently to cause the formation of seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as herein specified. Deposit concrete as nearly as practicable to its final location to avoid segregation.

Placing Concrete in Forms: Deposit concrete in forms in horizontal layers not deeper than 24" and in a manner to avoid inclined construction joints. Where placement consists of several layers, place each layer while preceding layer is still plastic to avoid cold joints.

Consolidate placed concrete per ACI recommended practices.

Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6" into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

Placing Concrete Slabs: Just prior to placement, dampen all areas of the base material. Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

Bring slab surfaces to correct level with straightedge and strikeoff. Use bull floats or darbies to smooth surface, free of humps or hollows. Do not disturb slab surfaces prior to beginning finishing operations.

Maintain reinforcing in proper position during concrete placement operations.

PLACING CONCRETE IN TEMPERATURE EXTREMES:

Hot Weather Placement: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

Fog spray forms, reinforcing steel and subgrade just before concrete is placed. During and after placement, provide fog spray over, but not directly on concrete.

Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

Cool ingredients before mixing to maintain concrete temperature at time of placement below 90° F (32° C). Mixing water may be chilled, or chopped ice may be used to control temperature provided water equivalent of ice is calculated to total amount of mixing water. Use of liquid nitrogen to cool concrete is Contractor's option.

Cold Weather Placement: Comply with ACI 306. When air temperature is expected to fall below 40°, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50° F (10° C), and not more than 80° F (27° C) at point of placement. Provide protection as required when overnight temperatures are expected to drop below 34° F. Cover slabs and exposed concrete as required through below freezing temperatures at all times. If temperatures drop below 26° F, reschedule placement until weather permits.

Do not use frozen materials or materials containing ice or show. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

Do not use Calcium Chloride, salt and other materials containing antifreeze agents or chemical accelerators, unless otherwise accepted in mix designs.

Concrete shall be in mixer no more than the maximum time specified. Trucks shall be ordered to return to the plant, with the load rejected if concrete exceeds this condition.

CONCRETE FINISH:

Rough Form Finish: For formed concrete surfaces not exposed to view in the finish work or by other construction, unless otherwise indicated. This is the concrete surface having texture imparted be form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4" in height rubbed down or chipped off.

Smooth Form Finish: For formed concrete surfaces exposed to view, or that are to be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, such as waterproofing, painting or other similar system. This is as-cast concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams. Repair and patch defective areas with fins or other projections completely removed and smoothed.

Levelness and flatness: Flatwork shall conform to the following after finishing. The work and any testing methods shall be based on ASTM E 115 (as developed by Edward W. Face Company of Norfolk, VA).

F_F = 20 (flatness)*
F_L = 20 (levelness)*

*Exception shall be made for pitched drainage areas.

MONOLITHIC SLAB FINISHES:

Float Finish: Apply float finish to monolithic slab surfaces to receive trowel finish and other finishes as hereinafter

specified, and slab surfaces which are to be covered with membrane or elastic waterproofing, membrane or elastic roofing, self-draining "river rock" pool deck topping, and as otherwise indicated..

After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units. Check and level surface plane so that depressions between high spots do not exceed $F_F 18$ - $F_L 15$. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, ceramic or quarry tile, paint or sealer system.

After floating, begin first trowel finish operation using a power- driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with a level surface plane so that depressions between high spots do not exceed tolerances listed below. Grind smooth defects which would telegraph through applied floor covering system only if acceptable to Architect.

Fine Broom Finish: At thin set tile location lightly scarify surface after troweling. Provide a sample for Architect to review.

Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps and ramps, and elsewhere as indicated.
Immediately after trowel finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

Smooth Floated Finish: Provide smooth surface at all interior floor slabs that remain uncovered, and provide sample for Architect to review.

CONCRETE CURING AND PROTECTION:

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

Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days.

Initially, apply dissipating sealer at all exposed concrete.

Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301 procedures. Avoid rapid drying at end of final curing period.

Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as herein specified.

Curing formed surfaces: Cure formed concrete surfaces, including undersides of beams, supported slabs and other similar surfaces by moist curing with forms in place for full curing period or until forms are removed. If forms are removed, continue curing by methods specified above, as applicable. Apply curing compound to columns when forms are removed.

Provide dissipating curing compound to interior slabs that are to receive resilient flooring, carpet, tile or paint coating, and to exterior slabs, walks, and curbs, per manufacturer's recommendations.

After the recommended period of time, after the initial dissipating sealer is gone, provide curing and sealing compound with 30% solids at all floor slabs that remain uncovered including vehicle storage areas, maintenance areas and work areas with no other floor covering.

Install curing and sealing compounds immediately after final finishing.

Provide blankets on slabs in below freezing temperatures. Use polyethylene moisture cover over interior slab on grade if required to limit curling, to control evaporation, and to maintain flatness and levelness requirements.

Curing and Sealing compound (30% solids type): Apply a specified curing and sealing compound to surfaces that remain exposed including vehicle storage, vehicle maintenance, shops and storage areas.

REMOVAL OF FORMS:

Formwork not supporting weight of concrete, such as sides of beams, walls, columns, and similar parts of the work, may be removed after cumulatively curing at not less than 50° F (10° C) for 36 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained (minimum strength of 750 psi)

Formwork supporting weight of concrete, such as beam soffits, joints, slabs and other structural elements, may not be removed in less than 7 days and until concrete has attained 75% of its design minimum compressive strength at 28 days. Determine potential compressive strength of in-place concrete by testing field-cured specimens representative of concrete location or members..

MISCELLANEOUS CONCRETE ITEMS:

Filling-In: Fill-in holes and openings left in concrete structures for passage of work by other trades, unless otherwise shown or directed, after work of other trades is in place. Mix, place and cure concrete as herein specified, to blend with in-place construction. Provide other miscellaneous concrete filling shown or required to complete work.

Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated. Refer to Structural Steel section.

Reinforced Masonry: Provide concrete fill for reinforced masonry lintels, core fills and bond beams where indicated on drawings and as scheduled. Maintain accurate location of reinforcing steel during concrete placement.

CONCRETE SURFACE REPAIRS:

Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect. It shall be up to the Architect if inferior areas of the work shall be replaced rather than repaired: verify with the Architect before proceeding. When areas are to be replaced they shall be done so within the area up to the nearest control or expansion joint.

Repair Areas: Cut out honeycomb, rock pockets, voids over 1/4" in any dimension, and holes left by tie rods and bolts, down to solid concrete but, in no case to a depth of less than 1". Make edges of cuts perpendicular to the concrete surface. Thoroughly clean, dampen with water and brush-coat the area to be patched with specified bonding agent. Place patching mortar after bonding compound has dried.

For exposed-to-view surfaces, blend white portland cement and standard portland cement so that, when dry, patching

mortar will match color surrounding. Provide test areas at inconspicuous location to verify mixture and color match before proceeding with patching. Compact mortar in place and strike-off slightly higher than surrounding surface.

Repair of Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, as such, include color and texture irregularities, cracks, spalls, air bubbles, honeycomb, rock pockets; fins and other projections on surface; and stains and other discolorations that cannot be removed by cleaning. Flush out form tie holes, fill with dry pack mortar, or precast cement cone plugs secured in place with bonding agent.

Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

Repair of Unformed Surfaces: Test unformed surfaces, such as monolithic slabs, for smoothness and verify surface plane to tolerances specified for each surface and finish. Correct low and high areas as herein specified. Test unformed surfaces sloped to drain for trueness of slope, in addition to smoothness, using a template having required slope.

Repair finished unformed surfaces that contain defects which affect durability of concrete. Surface defects, as such include crazing, cracks in excess of 0.01" wide or which penetrate to reinforcement or completely through non-reinforced sections regardless of width, spalling, pop-outs, honeycomb, rock pockets, and other objectionable conditions.

Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.

Correct low areas in unformed surfaces during, or immediately after completion of surface finishing operations by cutting out low areas and replacing with fresh concrete. Finish repaired areas to blend into adjacent concrete. Patching compounds may be used when acceptable to Architect.

Repair defective areas, except random cracks and single holes not exceeding 1" diameter, by cutting out and replacing with fresh concrete. Remove defective areas to sound concrete with clean, square cuts and expose reinforcing steel with at least 3/4" clearance all around. Dampen concrete surfaces in contact with patching concrete and apply bonding compound. Mix patching concrete of same materials to provide concrete of same type or class as original concrete. Place, compact and finish to blend with adjacent finished concrete. Cure in the same manner as adjacent concrete.

Repair isolated random cracks and single holes not over 1" in diameter by dry-pack method. Groove top of cracks and cut-out holes to sound concrete and clean of dust, dirt and loose particles. Dampen cleaned concrete surfaces and apply bonding compound. Mix dry-pack, consisting of one part portland cement to 2- 1/2 parts fine aggregate passing a No. 16 mesh sieve, using only enough water as required for handling and placing. Place dry-pack after bonding compound has dried. Compact dry-pack mixture in place and finish to match adjacent concrete. Keep patched area continuously moist for not less than 72 hours.

Perform structural repairs with prior approval of Architect for method and procedure, using specified epoxy adhesive mortar.

Repair methods not specified above may be used, subject to acceptance of Architect.

FIELD QUALITY CONTROL:

The Owner shall employ a testing laboratory, and work in conjunction with the Contractor, to perform tests and to submit test reports. Sampling and testing for quality control during placement of concrete shall include the following:

Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

Slump: ASTM C 143; one test at point of discharge for each truck.

Air Content: ASTM C 173, volumetric method for lightweight or normal weight concrete; ASTM C 231 pressure method for normal weight concrete; one for each truck of each type of air entrained concrete.

Concrete Temperature: Test hourly when air temperature is 40° F (4° C) and below, and when 80°C (27°C) and above; and each time a set of compression test specimens made.

Compression Test Specimen: ASTM C 31; one set of 4 standard cylinders for each compressive strength test, unless otherwise directed. Mold and store cylinders for laboratory cured test specimens except when field-cure test specimens are required.

Compressive Strength Tests: ASTM C 39; one set for each day's pour exceeding 5 cu. yds. plus additional sets for each 50 cu. yds. over and above the first 25 cu. yds. of each concrete class placed in any one day; one specimen tested at 7 days, one specimen tested at 28 days, and one specimen retained in reserve for later testing if required.

When frequency of testing will provide less than 5 strength tests for a given class of concrete, conduct testing from at least 5 randomly selected batches or from each batch if fewer than 5 are used.

When strength of field-cured cylinders is less than 85% of companion laboratory-cured cylinders, evaluate current operations and provide corrective procedures for protecting and curing the in-place concrete.

Strength level of concrete will be considered satisfactory if averages of sets of three consecutive strength test results equal or exceed specified compressive strength, and no individual strength test result falls below specified compressive by more than 500 psi.

Test results will be reported in writing to Architect and Contractor no later than 24 hours after tests. Reports of compressive strength tests shall contain the project identification name and number, date of concrete placement, name of concrete testing service, concrete type and class, location of concrete batch in structure, design compressive strength at 28 days, concrete mix proportions and materials; compressive breaking strength and type of break for both 7-day tests and 28-day tests.

Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

Additional Tests: The testing service will make additional tests of in-place concrete when test results indicate specified concrete strengths and other characteristics have not been attained in the structure, as directed by Architect. Testing service may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42, or by other methods as directed. Contractor shall pay for such tests conducted, and any other additional testing as may be required, when unacceptable concrete is verified.

END OF SECTION 03310

SECTION 04200 - UNIT MASONRY

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Section includes all masonry system components, as shown on drawings for both new and renovated buildings, and as specified herein, including:

- Face Brick
- Concrete Unit Masonry
- Mortar
- Reinforcement
- Flashing
- Masonry ties and accessories
- Protection
- Temporary Heat
- Core Fill Insulation

RELATED WORK:

Section 03310. Concrete.
Section 07900. Joint Sealers.
Section 09900. Painting.

QUALITY ASSURANCE:

1. Fire Performance Characteristics: Comply with ASTM E 119.

2. Single Source Responsibility for Masonry Units and Mortar: Provide all masonry product, with the possible exception of brick, from a single supplier. Provide uniform texture and color for all masonry units, and a consistent, uniform blend of mortar from one manufacturer for each product.

3. Installation Contractor requirements: Installer shall have a minimum of five successful years of installing brick, block and decorative block installations similar to this project. At the request of the Architect, prior to start of work or acceptance of bid, Contractor shall submit a list of ten similar projects with name of client, location and masonry contract amount.

4. Autoclave units: Provide only autoclave concrete masonry units for Burnished Block Units and Concrete Unit Masonry.

5. Fire Rating: Provide concrete masonry units which have been tested and are UL listed for the following fire ratings: 1 hour, 2 hour, 3 hour, and 4 hour, as shown on the drawings.

SUBMITTALS:

1. Product Data: Manufacturer's product data for all masonry products, including but not limited to reinforcing, masonry anchors, flashing, mortar and masonry products.

2. Tests Reports: Provide tests for products specified, from a certified testing laboratory, in accordance with UBC chapter 24.

3. Tests: Provide prism, efflorescence and corefill testing as required by Architect/Engineer, initially performed and paid for by the Owner. Materials must meet or exceed standards. These tests shall initially include:

Prism test: 7 day and 28 day, (brick).
Flexural bond strength test, ASTM C 518, (brick and block).
Efflorescence Test: ASTM C 67: no efflorescence acceptable.
Freeze Thaw requirements: ASTM C 216

Brick stain manufacturer shall submit freeze/thaw cycle tests on representative brick samples which indicate durability of stain material and % stain strength.

4. Shop Drawings: Provide reinforcement and detail shop drawings as necessary.

5. Samples: Provide the following to the Architect's office:

1) Full range of color mortar samples.

2) Pallet of brick faces showing range of color and texture (minimum of 12 brick).

6. Field mock-up/sample: Provide the following at the site:

1) Sample of brick wall with selected mortar (48" high by 60" wide), also showing specified mortar installation.

7. Warranty: Provide a written twenty year warranty signed by the manufacturer and the installer, or contractor, which warrants the materials used and the workmanship for brick staining against discoloration, lift-off, and fading. Warranty shall obligate to installer manufacturer and installer to replace brick staining if material fails in the judgement of the Architect and the Owner.

DELIVERY, STORAGE, AND HANDLING:

Deliver masonry materials to project in undamaged condition.

Store and handle masonry units to prevent their deterioration or damage due to moisture, temperature changes, contaminants, corrosion or other causes.

Store cementitious materials off the ground, under cover and in dry location.

Store aggregates where grading and other required characteristics can be maintained.

Store masonry accessories including metal items to prevent deterioration by corrosion and accumulation of dirt.

PROJECT CONDITIONS:

Protection of Work: During erection, cover top of walls with heavy waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.

Staining: Prevent grout or mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.

Protect base of walls, sills and projections from rain-splashed mud and mortar splatter.

Cold Weather Protection:

Do not lay masonry units which are wet or frozen.

Remove any ice or snow formed on masonry bed by carefully applying heat until top surface is dry to the touch.

Remove masonry damaged by freezing conditions.

Perform the following construction procedures while the work is progressing. Temperature ranges indicated below apply to air temperatures existing at time of installation except for grout. For grout, temperature ranges apply to anticipated minimum night temperatures. In heating mortar and grout materials, maintain mixing temperature selected within 10°F (6°C).

40°F (4°C) to 32°F (0°C):

Mortar: Heat mixing water to produce mortar temperature between 40°F (4°C) and 120°F (49°C).

Grout: Follow normal masonry procedures.

32°F (0°C) to 25°F (-4°C):

Mortar: Heat mixing water and sand to produce mortar temperatures between 40°F (4°C) and 120°F (49°C); maintain temperature of mortar on boards above freezing.

Grout: Heat grout materials to 90°F (32°C) to produce inplace grout temperature of 70°F (21°C) at end of work day.

25°F (-4°C) to 20°F (-7°C):

Mortar: Heat mixing water and sand to produce mortar temperatures between 40°F (4°C) and 120°F (49°C); maintain temperature of mortar on boards above freezing.

Grout: Heat grout materials to 90°F (32°C) to produce inplace grout temperature of 70°F (21°C) at end of work day.

Heat both sides of walls under construction using salamanders or other heat sources.

Use windbreaks or enclosures when wind is in excess of 15 mph.

20°F (-7°C) and below:

Mortar: Heat mixing water and sand to produce mortar temperatures between 40°F (4°C) and 120°F (49°C).

Grout: Heat grout materials to 90°F (32°C) to produce inplace grout temperature of 70°F (21°C) at end of work day.

Masonry Units: Heat masonry units so that they are above 20°F (-7°C) at time of laying.

Provide enclosure and auxiliary heat to maintain an air temperature of at least 40°F (4°C) for 24 hours after laying units.

Do not heat water for mortar and grout to above 160°F (71°C).

Protect completed masonry and masonry not being worked on in the following manner. Temperature ranges indicated apply to mean daily air temperatures except for grouted masonry. For grouted masonry temperature ranges apply to anticipated minimum night temperatures.

40°F (4°C) to 32°F (0°C):

Protect masonry from rain or snow for at least 24 hours by covering with weather-resistive membrane.

32°F (0°C) to 25°F (-4°C):

Completely cover masonry with weather-resistive membrane for at least 24 hours.

25°F (-4°C) to 20°F (-7°C):

Completely cover masonry with weather-resistive insulating blankets or similar protection for at least 24 hours, 48 hours for grouted masonry.

20°F (-7°C) and below:

Except as otherwise indicated, maintain masonry temperature above 32°F (0°C) for 24 hours using enclosures and supplementary heat, electric heating blankets, infrared lamps or other methods proven to be satisfactory. For grouted masonry maintain heated enclosure to 40°F (4°C) for 48 hours.

PART 2 - PRODUCTS

MATERIALS:

Standard Concrete Block: Provide type N-1, ASTM C 90 autoclave units in shapes and sizes as required including corners, bond beams, lintels, etc. Units shall be nominal 16" long by 8" high in thicknesses as shown including 4", 6", 8' and 12" width.

Manufacturer shall be Shiely Masonry Products Co., Anchor Block Co., or approved equal.

Install all regular masonry units in "stack bond" and "running bond" lay-up as shown on the drawings.

Architect reserves the right to reject any or all units that exhibit excessive chips or fractures. Units shall be delivered to the job site with a shop sealer having been applied at the factory.

Face Brick: Provide solid, uncored units at sills, caps, and other areas as required. Brick shall be ASTM C 216, in grade SW, type FBS face brick with uniform texture and dimensional qualities, including all special shapes as shown on the drawings. Provide from the following manufacturers:

Modular brick, nominally 2 1/4" high x 4" wide x 8" long for use in running bond. Brick shall be ASTM C 216, in grade SW, type FBS face brick with uniform texture and dimensional qualities, including all special shapes as shown on the drawings. Sawcut brick as required. Provide from the following manufacturers:

"Burgundy Run" #137, as manufactured by Acme Brick, Denton,TX

"4-441D" sand face, as manufactured by Bickerstaff Clay Products Co.

"Burgundy Grain", as manufactured by Lakewood Brick and Tile Co.

"Harvard #65 Modular"; as manufactured by Ochs Brick and Tile Co.

For bidding purposes, match manufacturer's and brick supplier's sample panels contained in the offices of the Architect. For construction, match color, texture and range approved by the Architect and the Owner on jobsite mock-ups specified in this section and in Section 01010.

MORTAR AND GROUT MATERIALS:

Portland Cement: ASTM C 150, Type I.

Hydrated Lime: ASTM C 207, Type S.

Aggregates for Mortar: ASTM C 144, except for joints less than 1/4" use aggregate graded with 100% passing the No. 16 sieve.

Provide factory blended colored mortar materials in colors as selected by the Architect.

1) Face Brick; Cement-lime mortar shall be factory mixed type with a consistent coloration throughout, equal to Prism Pigments.

2) Concrete Unit Masonry (Running Bond); Natural Mortar Color. Use Northwestern Cement.

Aggregate for Grout: ASTM C 404.

Water: Clean,and potable.

JOINT REINFORCEMENT, TIES AND ANCHORING DEVICES:

Hot-Dip Galvanized Steel Wire: ASTM A 82 for uncoated wire and with ASTM A 153, Class B-2 (1.5 oz. per sq. ft. of wire surface) for zinc coating applied after prefabrication into units.

Zinc-Coated (Galvanized) Steel Sheet: Carbon steel with zinc coating complying with ASTM A 525, Coating Designation G90.

Joint Reinforcement: Provide welded-wire ladder type units prefabricated with deformed continuous (0.1483" d.) side rods and plain cross rods (0.1483" d.) into straight lengths of not less than 10', with prefabricated corner and tee units. Space perpendiculars not to be more than 16" o.c.

Provide ladder type unit systems with integral eyes for the insertion of flexible anchors, tying concrete block units to brick masonry. Provide preformed wire anchors that allow flexibility horizontally and vertically. Wire size shall be 0.1483". Anchors shall be sized so that they extend to within 1" of brick face. Provide one anchor every 16" in either direction.

Brick Veneer anchor systems: Provide two piece assemblies allowing vertical and horizontal movement while resisting lateral forces against the backer plate of the wall tie. Comply with ASTM C 954 for fasteners, using #10 screws x length required along with hex washer head and neoprene washer, cadmium plated.

Provide "DW-10-X" system by Hohmann & Barnard, Inc. or approved equal.

Anchor Bolts: Provide steel bolts with hex nuts and flat washers complying with ASTM A 307, Grade A, hot-dip galvanized to comply with ASTM C 153, Class C, in sizes and configurations indicated.

Approved Reinforcement Manufacturers:

AA Wire Products Co.
Dur-O-Wall, Inc.
Heckmann Building Products, Inc.
Hohmann & Barnard, Inc.
Masonry Reinforcing Corp. of America.
National Wire Products Corp.

CONCEALED FLASHING MATERIALS:

Flexible Flashing: Flexible flashing of EPDM sheet or uncured neoprene to remain flexible and waterproof.

Approved Flashing Manufacturers:

"BFG"; B.F. Goodrich Co.
"Nervastral"; Rubber and Plastics Compound Co.
"Nuflex"; Sandell Manufacturing.
"Wascoseal"; York Manufacturing.

Adhesives for flashing: As recommended by the manufacturer.

MISCELLANEOUS MASONRY ACCESSORIES:

Reinforcing Bars: Deformed steel, ASTM A 615, Grade 60 for bars No. 3 to No. 18.

Non-Metallic Expansion Joint Strips: Premolded, flexible cellular neoprene rubber filler strips complying with ASTM D 1056, Grade RE41E1, capable of compression up to 35%, of width and thickness indicated.

Premolded Control Joint Strips: Material as indicated below, designed to fit standard sash block and to maintain

lateral stability in masonry wall; size and configuration as indicated.

Styrene-butadiene rubber compound complying with ASTM D 2000, Designation 2AA-805.

Bond Breaker Strips: Asphalt-saturated organic roofing felt complying with ASTM D 226, Type I (No. 15 asphalt felt).

Weep holes: Cotton cords, initially extended 1" beyond face brick, and 18" up cavity wall. Use tape or other means to secure cord during construction. Cut off cord at wall face after completion of the work.

INSULATION:

Loose granular perlite insulation: ASTM C 549, type II or type IV, expanded perlite with r-value of 3.0 (+/-0.1) for 4.1 to 7.4 lb. density.

MASONRY CLEANERS:

Job-Mixed Detergent Solution: Use weakest formulation of solution of trisodium phosphate, laundry detergent and water to successfully do the job. Prefaced and burnished block manufacturer shall approve of solution and methods used. Provide products from ProSoCo, SureClean or other approved manufacturer.

Note: Use extreme care in cleaning walls to develop a solution that does not stain mortar or cause streaking.

MORTAR AND GROUT MIXES:

General: Do not add admixtures including coloring pigments, air- entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds or any other admixtures, unless approved by the Architect in writing. Do not use calcium chloride in mortar or grout.

In general, mortar mix shall inherently contain between 5% and 8% air.

Mixing: Combine and thoroughly mix cementitious, water and aggregates in a mechanical batch mixer; comply with referenced ASTM standards for mixing time and water content. Use mixing boxes or another precise method of mixing ingredients.

Mortar for Unit Masonry: Comply with ASTM C 270, Proportion Specification, for types of mortar required, unless otherwise indicated. Provide the strength and type of mortar appropriate for the conditions. Provide the weakest type of mortar without effecting bond strength or necessary compressive strength of the masonry walls. The strength of the mortar shall in no cases exceed 80% of the compressive strength of the masonry units.

Limit cementitious materials in mortar to portland cement and lime. Masonry cement products or mixtures shall not be used on this project.

Typically, use Type S mortar for the project except where indicated. Provide Type M mortar below grade.

Grout for Unit Masonry: Comply with ASTM C 476.

Latex Additive: Provide latex additive, at strength recommended by the additive supplier, for all exposed walls where burnished block or prefaced block units are to be installed including Corridors, Restrooms, Public Toilets, Lobbies, etc.

PART 3 - EXECUTION

INSTALLATION, GENERAL:

Do not prewet or use wet concrete masonry units. If using power saws to cut units, allow sufficient time to dry out.

Cleaning Reinforcing: Before placing, remove loose rust, ice and other coatings from reinforcing.

Thickness: Build cavity and composite walls, floors and other masonry construction to the full thickness shown.

Build chases and recesses as shown or required. Do not exceed four courses without providing required mortar and vertical reinforcement.

Install masonry anchors and reinforcing/ladder systems per the manufacturer's instructions. Two piece masonry veneer anchors shall be installed over building paper or waterproofing, at 16" o.c. vertically and horizontally, making sure that there is allowable movement in all directions. At soldier coursing, install flexible anchors at 12" o.c. vertically and horizontally. At rock face masonry, install flexible anchors at 12" o.c. vertically, and 16" o.c. horizontally.

Coordinate the installation of masonry work with all other trades to ensure that conduits, pipes and other built-in items are included, and the work proceeds smoothly.

Cut masonry units using motor-driven saws to provide clean, sharp, unchipped edges. If water saws are used, wait until masonry units have sufficiently dried out prior to erection.

Install flexible flashing at areas shown on the drawings and at all areas as required including lintels, sills, copings, terminations and similar conditions. At terminations, corners, splices or overlaps, adhere flashing to one another and provide an 8" minimum overlap to prevent water from migrating into the cavity.

At the end of each work day, and during inclement securely ather, cover all cavities to prohibit rain water from entering the masonry construction: this is at all interior and exterior walls.

CONSTRUCTION TOLERANCES:

Variation from Plumb: For vertical lines and surfaces of columns, walls and arrises do not exceed 1/8" in 10', or 3/16" in a story height not to exceed 20', nor 1/4" in 40' or more. For external corners, expansion joints, control joints and other conspicuous lines, do not exceed 1/8" in any story or 20' maximum, nor 1/4" in 40' or more. For vertical alignment of head joints do not exceed plus or minus in 10', 1/4" maximum.

Variation from Level: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves, and other conspicuous lines, do not exceed 1/8" in any bay or 20 maximum, nor 1/4" in 40' or more. For top surface of bearing walls do not exceed 1/8" between adjacent floor elements in 10' or 1/16" within width of a single unit.

Variation of Linear Building Line: For position shown in plan and related portion of columns, walls and partitions, do not exceed 1/4" in any bay or 20' maximum, nor 1/2" in 40' or more.

Variation in Cross-Sectional Dimensions: For columns and thickness of walls, from dimensions shown, do not exceed plus or minus 1/4".

Variation in Mortar Joint Thickness: Do not exceed bed joint thickness indicated by more than plus or minus 1/8, with

a maximum thickness limited to 1/2". Do not exceed head joint thickness indicated by more than plus or minus 1/8".

LAYING MASONRY WALLS:

Layout walls in advance for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate opening, movement-type joints, returns and offsets. Avoid the use of less- than-half-size units at corners, jambs and whenever possible at other locations.

Stopping and Resuming Work: Rake back 1/2-unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units and mortar prior to laying fresh mortar.

Fill all exterior cavities of block units with pour-in insulation. Fill units at regular intervals. Do not exceed more than 8 courses of block, without filling cavities.

MORTAR BEDDING, TOOLING AND JOINTING:

Lay solid brick size masonry units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.

Lay hollow concrete masonry units with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters, and where adjacent to cells or cavities to be reinforced or filled with concrete or grout/ For starting course on footings where cells are not grouted, spread out full mortar bed including areas under cells.

TOOLING AND JOINTS:

Cut joints flush for masonry walls which are to be concealed or to be covered by other materials, and at cavity walls to receive waterproofing, unless otherwise indicated.

Tool exposed joints at all exterior and interior masonry joints use a slightly concave jointer, larger than joint thickness, unless otherwise indicated, for a slightly concave joint. "Exposed" means any joint exposed to view whether room is considered to finished or unfinished.

Collar Joints: After each course is laid, fill in vertical longitudinal joint between wythes solidly and with mortar for the following masonry work:

Mortar that is exposed to view shall be retempered only once. In all cases, mortar color shall remain consistent or shall be subject to removal and repointing at no additional cost to the Owner.

At steel angles, bent plates, provide compressible filler between top of masonry and bottom of steel relieving angle or plate. Above steel angle or bent plate, extend flexible flashing down continuous to the underside of brick, and include rope weeps at 16" o.c. to allow moisture in cavity to weep out of masonry wall. Ropes may be taped or tacked in place until the work extends beyond the ropes.

Ensure that flexible flashing is always overlapped a minimum of 6" and bonded to prohibit the migration of water and moisture. At head and corner details, take extra care to ensure that there are no gaps or penetrations between flashings. Extend flexible flashing beyond the edge of the brick at masonry lintels. Trim flexible flashing after sealant has been applied at lintels and relieving angles.

CAVITY WALLS:

Maintain a clean cavity throughout the work. Strike joints at inside walls within cavity flush. Provide weep ropes, 16" on center, installed between horizontal joints just above flexible flashings. Tape or tie weep ropes to the cavity wall, and maintain a relatively free cavity while laying brick. Extend rope 1" beyond brick face initially, and cut rope weeps, after walls have been laid.

Lay up brick in a logical sequence and as specified. Anchors shall extend from ladder reinforcing eyes into mud, and out to within 1" of the face of brick. Install anchors so that there is maximum potential for future movement. Brick shall be placed so that units are aligned, with vertical joints on center. Provide special striking and tooling of joints as specified.

CAVITY WALL INSULATION

Pour granular insulation into block cavities at areas specified or shown on the drawings. Fall limit shall not exceed 8' in height per pour. Pour to underside of roof structure above wall locations.

Install rigid insulation at locations as shown on the drawings. Rigid Insulation shall be 2" extruded insulations, Type TG as manufactured by Dow Chemical Company, or approved equal. Also refer to Section 07200.

HORIZONTAL JOINT REINFORCEMENT:

General: Provide continuous horizontal joint reinforcement as indicated and required.

Cut or interrupt joint reinforcement at control and expansion joints, unless otherwise indicated.

Reinforce walls with continuous horizontal joint reinforcing unless specifically noted to be omitted. Overlap joint reinforcement a minimum of 7".

Provide continuity at corners and wall intersections by use of prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures and other special conditions.

For parapets, space reinforcement at 8" o.c. vertically, unless otherwise indicated.

For concrete masonry, normal running bond, space reinforcement at 24" o.c. vertically, unless otherwise indicated or required.

For concrete masonry, stack bond, space reinforcement at 16" o.c. vertically, unless otherwise indicated.

For soldier coursing, space reinforcement at 12" o.c. vertically, unless otherwise indicated.

Reinforce masonry openings greater than 1'-0" wide, with horizontal joint reinforcement placed in 2 horizontal joints approximately 8" apart, immediately above the lintel and immediately below the sill. Extend reinforcement a minimum of 2'- 0" beyond jambs of the opening except at control joints.

In addition to wall reinforcement, provide additional reinforcement at openings as required to comply with the above.

Coordinate Placement of vertical placement shown on the drawings.

CONTROL AND EXPANSION JOINTS:

General: Provide vertical and horizontal expansion, control and isolation joints in masonry where shown. Build-in related items as the masonry work progresses.

Build flanges of metal expansion strips into masonry. Lap each joint 4" in direction of water flow. Seal joints below grade and at junctures with horizontal expansion joints, if any.

Build-in non-metallic joint filler where indicated.

Build in horizontal pressure relieving joints where indicated; construct joints by either leaving an air space or inserting non- metallic compressible joint filler of width required to permit installation of sealant and backer rod.

Vertical control joints shall extend a minimum of 8" below grade.

LINTELS:

Install steel lintels where indicated. In general, provide steel lintels at masonry openings including but not limited to the following locations: doors, framed openings, windows, exterior or interior louvers, transfer grilles, framed blockouts and recesses, ductwork penetrations, piping penetrations, cabinet unit heaters, fire hose cabinets, chimney breeching penetrations, bundled piping and conduit.

Provide masonry lintels where shown and wherever openings of more than 1'-0" for brick size units and 2'-0" for block size units are shown without structural steel or other supporting lintels. Provide precast or formed-in-place masonry lintels. Cure precast lintels before handling and installation. Temporarily support formed-in-place lintels.

For hollow concrete masonry unit walls, use specially formed U- shaped lintel units with 2-#5 reinforcement bars placed as shown filled with coarse grout.

Provide minimum bearing of 8" at each jamb, unless otherwise indicated.

FIELD QUALITY CONTROL:

Owner shall employ a testing laboratory experienced in performing types of masonry field quality control tests and inspection services for masonry tests indicated, and to perform additional tests as required.

Testing Company shall report test results in writing and in form specified under each test method, to Architect and Contractor.

REPAIR, POINTING, AND CLEANING:

General: As soon as masonry walls are completed remove excess mortar extending out from joints, and wipe off smears ar surfaces to minimize the extend and intensity of final cleaning. All work should be lightly cleaned with simple equipment at the end of each day,

Remove and replace masonry units which are loose, chipped, broken, stained or otherwise damaged, or if units do

not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed and glazed to eliminate evidence of replacement.

Pointing: During the tooling of joints, enlarge any voids or holes, except weep holes, and completely fill with mortar. Point- up all joints including corners, openings and adjacent work to provide a neat, uniform appearance, prepared for application of sealants.

Final Cleaning: After mortar is set and cured, clean masonry under proper climatic conditions as follows:

Perform test samples using solutions or specified products that shall remove all excess mortar and smears without damaging the masonry, nor discoloring the mortar.

Saturate walls as required prior to cleaning. Follow procedures for cleaning brick as described in " Technical Note #20, Revised", by the BIA. Clean concrete masonry according to NCMA "Tek" bulletins.

Protect all surfaces from other trades and construction related activities until ready for use by the Owner and/or completion of all of the Work.

END OF SECTION 04200

SECTION 05120 - STRUCTURAL STEEL

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

SUMMARY:

Structural steel is that work defined in American Institute of Steel Construction (AISC) "Code of Standard Practice" and as otherwise shown on drawings, including:

Miscellaneous Shapes and Sections.
Bolts, anchors and accessories.
Grout.
Shear Connectors.

RELATED WORK:

Section 05400, Light Gauge Metal Framing
Section 05500, Metal Fabrications.

SUBMITTALS:

1. Product Data: Manufacturer's specifications and installation instructions for all specified products, include laboratory test reports.

2. Shop Drawings: Complete details of each member and connection, schedules and errection plans. Submit structural calculations prepared and certified by a licensed professional engineer registered in the State of Minnesota.

QUALITY ASSURANCE:

1. Codes and Standards: Comply with current provisions of following, except as otherwise indicated below:

1) AISC "Code of Standard Practice for Steel Buildings and Bridges".

Paragraph 4.2.1 of the above code is hereby modified by deletion of the following sentence: "This approval constitutes the owner's acceptance of all responsibility for the design adequacy of any connections designed by the fabricator as a part of his preparation of these shop drawings".

2) AISC "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings", including the "Commentary" and Supplements thereto as issued.

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

4) ASTM A 6 "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use".

2. Qualifications for Welding Work: AWS certified welders.

3. Design of Members and Connections: Details shown are typical; similar details apply to similar conditions, unless otherwise indicated. Verify dimensions at site whenever possible without causing delay in the work and promptly notify Architect of inconsistancies.

DELIVERY, STORAGE AND HANDLING:

Deliver materials to site at such intervals to insure uninterrupted progress of work.

Deliver anchor bolts and anchorage devices, which are to be embedded in cast-in-place concrete or masonry, in ample time to not to delay work.

Store materials for easy access and inspection.

PART 2 - PRODUCTS

MATERIALS:

Metal Surfaces, General: Use materials which are smooth and free of surface blemishes.

Structural Steel Shapes, Plates and Bars: ASTM A 36.

Cold-Formed Steel Tubing: ASTM A 500, Grade B, Fy=46 KSI.

Steel Pipe: ASTM A 53, Type E, Grade B; Fy=35 KSI.

Steel Castings: ASTM A 27, Grade 65-35, medium-strength carbon steel.

Headed Stud-Type Shear Connectors: ASTM A 108, Grade 1015 or 1020, cold finished carbon steel; with dimensions complying with AISC Specifications. Furnish 3/4" diameter studs unless otherwise noted.

Anchor Bolts: ASTM A 367, nonheaded type with 3" hook unless otherwise indicated.

Unfinished Threaded Fasteners: ASTM A 307, Grade A, regular low- carbon steel bolts and nuts, with hex heads. and hardened washers.

Electrodes for Welding: Comply with AWS Code, E70XX.

Non-Metallic Shrinkage-Resistant Grout: Refer to Section 03310, Concrete for material and acceptable manufacturers.

Special Primer: For rolled sections, trusses, miscellaneous plates and sections, joists, and catwalk framing in the Arena space (members which do not recieve fireproofing), provide one coat high performance primer, equal in quality and finish to Tnemec Series 10-1009 Primer, or approved equal. Coating shall be 3.0 mil minimum.

FABRICATION:

Shop Fabrication and Assembly: Shop fabricate to greatest extent possible. Properly mark and match-mark materials for field assembly expeditious field handling and assembly.

Connections: Weld or bolt shop connections, as indicated.

Welded Construction: In accordance with AWS Code.

Shear Connectors: Per manufacturer recommendations. Use automatic end welding of headed stud shear connectors.

PART 3 - EXECUTION

ERECTION:

Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections as required. Remove only after permanent members are in place and final connections are made.

Temporary Planking: Provide temporary planking and working platforms as necessary to effectively complete work.

Setting Bases and Bearing Plates: Clean and prepare concrete and masonry bearing surfaces, and bottom surface of base and bearing plates. Set loose and attached base plates and bearing plates for structural members on wedges or other adjusting devices.

Tighten anchor bolts after supported members have been positioned and plumbed. Do not remove wedges or shims, but if protruding, cut off flush with edge of base or bearing plate prior to packing with grout.

Do not load structural frame until all bolted and welded connections have been completed. Steel Foreman shall personally inspect all connections prior to installation of joists and deck.

Pack grout solidly so that no voids remain, and in accordance with manufacturers' instructions.

Field Assembly: Set structural frames accurately to lines and elevations indicated. Align and adjust various members forming a part of a complete frame or structure before permanently fastening. Clean bearing surfaces and other surfaces which will be in permanent contact before assembly. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

Establish required leveling and plumbing measurements on mean operating temperature of structure. Make allowances for difference between temperature at time of erection and mean temperature at which structure will be when completed and in service.
Splice members only where indicated and accepted on shop drawings.

Erection Bolts: On exposed welded construction, remove erection bolts, fill holes with plug welds and grind smooth at exposed surfaces.

Errect work in accordance with AISC Specifications.

Apply touch-up primer to connections and areas which are missing primer coat in the field after components are

erected and fully connected.

FIELD QUALITY CONTROL:

Owner has option of engaging an independent testing and inspection company to inspect work, perform tests and prepare test reports, including those items listed below.

Correct deficiencies in structural steel, whether discovered by regular inspection, special inspections, or punch list review. Additional tests shall be performed as necessary, and paid for by the Contractor, until full compliance is achieved. A change order with the appropriate deduct shall be issued.

Bolted Connections: Inspect or test in accordance with AISC specifications.

Welded Connections: Include visual inspection of welds, ultrasonic testing of all penetration welds, and shear connection testing in accordance with AWS D1.1.

END OF SECTION 05I20

SECTION 05400 - COLD-FORMED METAL FRAMING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

SUMMARY:

Extent of cold-formed metal framing is shown on drawings.

Types of cold-formed metal framing units include the following:

"C"-shaped load-bearing steel studs.

20 guage and lighter studs are specified in Section 09250 - Gypsum Drywall.

SUBMITTALS:

Product Data: Submit manufacturer's product information and installation instructions for each item of cold-formed metal framing and accessories.

Shop Drawings: Submit shop drawings for special components and installations not fully dimensioned or detailed in manufacturer's product data.

Include placing drawings for framing members showing size and gage designations, number, type, location and spacing. Indicate supplemental strapping, bracing, splices, bridging, accessories, and details required for proper installation.

QUALITY ASSURANCE:

Component Design: Compute structural properties of studs and joists in accordance with American Iron and Steel Institute (AISI) "Specification for Design of Cold-Formed Steel Structural Members."

Welding: Use qualified welders and comply with American Welding Society (AWS) D1.3, "Structural Welding Code - Sheet Steel."

Fire-Rated Assemblies: Where framing units are components of assemblies indicated for a fire-resistance rating, including those required for compliance with governing regulations, provide units which have been approved by governing authorities having jurisdiction.

DELIVERY, STORAGE AND HANDLING:

Protect metal framing units from rusting and damage. Deliver to project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type and grade. Store off ground in a dry ventilated space or protect with

breathable waterproof tarpaulins.

PART 2 - PRODUCTS

MANUFACTURERS:

Manufacturers: Subject to compliance with requirements, provide products of one of the following:

Alabama Metal Industries Corp.
Bostwick Steel Framing Co.
Dale Industries Inc.
Milcor Division, Inryco Inc.
Marino Industries Corp.
U.S. Gypsum Co.

METAL FRAMING:

System Components: With each type of metal framing required, provide manufacturer's standard steel runners (tracks), blocking, lintels, clip angles, shoes, reinforcements, fasteners, and accessories as recommended by manufacturer for applications indicated, as needed to provide a complete metal framing system.

Materials and Finishes:

For 16-gage and heavier units, fabricate metal framing components of structural quality steel sheet with a minimum yield point of 40,000 psi; ASTM A 446, A 570, or A 611.

For 18-gage and lighter units, fabricate metal framing components of commercial quality steel sheet with a minimum yield point of 33,000 psi; ASTM A 446, A 570, or A 611.

Provide galvanized finish to metal framing components in exterior walls and roof framing complying with ASTM A 525 for minimum G 60 coating. Provide galvanized finish for all metal studs in exterior wall assemblies and other locations exposed to weather.

Provide prime coated finish to all metal framing componenets in interior walls with one coat of shop-applied red-oxide, zinc-chromate, or other similar rust-inhibitive primer for all locations not specified or shown as galvanized.

Finish of installation accessories to match that of main framing components, unless otherwise indicated.

"C"-Shape Studs: Manufacturer's standard load-bearing steel studs of size, shape, and gage indicated, with 1.625" flange and flange return lip.

Electrodes for Welding: Comply with AWS Code.

Galvanizing Repair Paint: High zinc dust content paint for repair of galvanized surfaces damaged by welding, complying with M.I. Spec. MIL-P-21035.

FABRICATION:

General: Framing components may be prefabricated into panels prior to erection. Fabricate panels plumb, square, true to line and braced against racking with joints welded. Perform lifting of prefabricated panels in a manner to

prevent damage or distortion.

Fabricate panels in jig templates to hold members in proper alignment and position and to assure consistent component placement.

Fastenings: Attach similar components by welding. Attach dissimilar components by welding, bolting, or screw fasteners, as standard with manufacturer.

Wire tying of framing components is not permitted.

Fabrication Tolerances: Fabricate panels to a maximum allowable tolerance variation from plumb, level, and true to line of 1/8" in 10'-0".

PART 3 - EXECUTION

INSPECTION AND PREPARATION:

Pre-Installation Conference: Prior to start of installation of metal framing systems, meet at project site with installers of other work including door and window frames and mechanical and electrical work. Review areas of potential interference and conflicts, and coordinate layout and support provisions for interfacing work.

INSTALLATION:

Manufacturer's Instructions: Install metal framing systems in accordance with manufacturer's printed or written instructions and recommendations, unless otherwise indicated.

Runner Tracks: Install continuous tracks sized to match studs. Align tracks accurately to layout at base and tops of studs. Secure tracks as recommended by stud manufacturer for type of construction involved, except do not exceed 24" o.c. spacing for nail or power-driven fasteners, or 16" o.c. for other types of attachment. Provide fasteners at corners and ends of tracks.

Set studs plumb, except as needed for diagonal bracing or required for non-plumb walls or warped surfaces and similar requirements.

Where stud system abuts structural columns or walls, including masonry walls, anchor ends of stiffeners to supporting structure.

Install supplementary framing, blocking and bracing in metal framing system wherever walls or partitions are indicated to support fixtures, equipment, services, casework, heavy trim and furnishings, and similar work requiring attachment to the wall or partition. Where type of supplementary support is not otherwise indicated, comply with stud manufacturer's recommendations and industry standards in each case, considering weight or loading resulting from item supported.

Installation of Wall Stud System: Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges.

Frame wall openings larger than 2'-0" square with double stud at each jamb of frame except where more than 2 are either shown or indicated in manufacturer's instructions. Install runner tracks and jack studs above and below wall openings. Anchor tracks to jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of wall. Secure stud system wall opening frame in manner indicated.

Frame both sides of expansion and control joints, with separate studs; do not bridge the joint with components of stud system.

Install horizontal stiffeners in stud system, spaced (vertical distance) at not more than 4'-0" o.c. Weld at each intersection.

Erection Tolerances: Bolt or weld wall panels (at both horizontal and vertical junctures) to produce flush, even, true to line joints. Step in face and jog in alignment between panels not to exceed 1/16".

Field Painting: Touch-up shop-applied protective coatings damaged during handling and installation. Use compatible primer for prime coated surfaces; use galvanizing repair paint for galvanized surfaces.

END OF SECTION 05400

SECTION 05500 - METAL FABRICATIONS

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.

SUMMARY

This section contains miscellaneous metal fabrications, including the following:

Brick angles, lintels, bracing and support.
Supports for electrical and mechanical equipment.
Supports for equipment.
Supports for elevator guiderail and hoisting beam.
Misc. framing, supports and water/sewer pipe guards.
Metal stairs.
Ornamental railings.
Steel imbeds for interior stairs.

Provide high performance primer as specified in Section 05120, and finish coat as specified in Section 09900, for these components.

RELATED WORK:

Section 03310, Concrete.
Section 05120, Structural Steel.
Section 08410, Operable Windows.
Section 15000, Mechanical.
Section 16000, Electrical.

DEFINITIONS

Definitions in ASTM E 985 for railing-related terms apply to this section.

SUBMITTALS

Submit the following to the Architect:

1. Product data for all products.

2. Shop drawings including plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts specified for installation under other sections.

3. Other Samples as may be requested by Architect.

4. Welder certificates including signature of Contractor.

5. Calculations: Where materials or fabrications are indicated to comply with certain requirements for design loadings and at all metal stairs, include structural computations, material properties, and other information needed for structural analysis.

QUALITY ASSURANCE

Qualify welding processes and welding operators in accordance with AWS D1.1.

Engineer Qualifications: Professional engineer licensed in State of Minnesota experienced with similar materials and design as this Project.

PROJECT CONDITIONS

Field Measurements: Verify field dimensions and conditions. Coordinate fabrication schedule with construction progress to avoid delay of Work.

PART 2 - PRODUCTS

Ferrous Metal Surfaces, General: Exposed materials shall be free of pitting, seam marks, roller marks, rolled trade names, roughness, and other variations.

Steel Plates, Shapes, and Bars: ASTM A 36.

Steel Tubing: Product type (manufacturing method) and as follows:

Cold-Formed Steel Tubing: ASTM A 500, grade A.

Uncoated Structural Steel Sheet: Product type (manufacturing method), quality, and grade, as follows:

Cold-Rolled Structural Steel Sheet: ASTM A 611, grade A.

Uncoated Steel Sheet: Commercial quality, product type (method of manufacture) as follows:

Cold-Rolled Steel Sheet: ASTM A 366.

Steel Pipe: ASTM A 53; finish, type, and weight class as follows:

Galvanized finish for exterior installations.

Type S, Grade A, standard weight (schedule 40), unless otherwise indicated, or another grade or weight or both required by structural loads.

Gray Iron Castings: ASTM A 48, Class 30.

Malleable Iron Castings: ASTM A 47, grade 32510.

Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.

Aluminum Bar Gratings: ASTM B 221, alloy 6061-T6 or 6063-T6 for bearing bars; alloy 6061-T1 for cross bars.

Structural Aluminum Shapes: ASTM B 221, alloy 6061-T6 or 6063-T6.

Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A 47, or cast steel, ASTM A 27. Provide bolts, washers, and shims as required, hot-dip galvanized per ASTM A 153.

Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for the metal alloy to be welded.

GROUT AND ANCHORING CEMENT

Nonshrink Metallic Grout: Premixed, factory-packaged, ferrous aggregate grout complying with CE CRD-C 621, specifically recommended by manufacturer for heavy duty loading applications of type specified in this section, from one the following:

"Hi Mod Grout"; Euclid Chemical Co.
"Embeco 885 and 636"; Master Builders.
"Ferrolith G Redi-Mix and G-NC"; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.

FASTENERS

General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.

Bolts and Nuts: Regular hexagon head type, ASTM A 307, Grade A.

Lag Bolts: Square head type, FS FF-B-561.

Machine Screws: Cadmium plated steel, FS FF-S-92.

Wood Screws: Flat head carbon steel, FS FF-S-111.

Plain Washers: Round, carbon steel, FS FF-W-92.

Masonry Anchorage Devices: Expansion Shields, FS FF-S-325.

Drilled-In Expansion Anchors: Expansion anchors complying with FS FF-S-325, Group VIII (anchors, expansion, [nondrilling]), Type I (internally threaded tubular expansion anchor); and machine bolts complying with FS FF-B-575, Grade 5.

Toggle Bolts: Tumble-wing type, FS FF-B-588, type, class, and style as required.

Lock Washers: Helical spring type carbon steel, FS FF-W-84.

PAINT

Shop Primer for Ferrous Metal: Mfgr's standard, fast-curing, lead-free, modified alkyd primer coplying with FS TT-P-

645.

Galvanizing Repair Paint: Where applicable by County codes, provide high zinc dust content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC- Paint-20.

Bituminous Paint: Cold-applied asphalt mastic complying with SSPC-Paint 12 except containing no asbestos fibers.

CONCRETE FILL AND REINFORCING MATERIALS

Concrete Materials and Properties: Refer to "Concrete" section and provide 2,500 psi(min. 28 day test), 440 lb. cement per cu. ft. minimum, and W/C ratio of 0.58 maximum, unless higher strengths indicated.

Nonslip Aggregate Finish: Factory-graded and packaged fused aluminum oxide grits or crushed emery.

FABRICATION, GENERAL

Form metal fabrications, working to dimensions indicated or accepted on shop drawings, using proven details of fabrication and support.

Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

Allow for thermal movement consistent with Temperature extremes in Woodbury, Minnesota.

Shear and punch metals cleanly and accurately. Remove burrs.

Ease exposed edges to a radius of approximately 1/32 inch, unless otherwise indicated. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

Weld corners and seams per AWS recommendations.

Form exposed connections with hairline joints, flush and smooth, using concealed fasteners wherever possible. Use exposed fasteners of type indicated or, if not indicated, Phillips flat- head (countersunk) screws or bolts. Locate joints where least conspicuous.

Shop Assembly: Preassemble to greatest extent possible. Disassemble units as necessary for shipping.

Cut, reinforce, drill and tap miscellaneous metal work as indicated to receive finish hardware, screws, and similar items.

Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

Provide all metal and steel products as shown on the drawings and as required for completion of all the work, that are not included in other sections within this specification. The following subcategories are listed as a general guide for fabricating common components on this project.

MISCELLANEOUS METALS

Furnish and fabricate bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as

required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures.

Provide loose bearing and leveling plates for steel items bearing on masonry or concrete construction with drill plates to receive anchor bolts and for grouting as required. Galvanize after fabrication.

Provide steel framing and supports for applications indicated or which are not a part of structural steel framework, as required to complete work.

Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent other construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.

Fabricate relieving angles, bent plates, and lintels from steel of sizes indicated.

For cavity walls, provide vertical channel brackets to support shelf/relieving angles from back-up masonry and concrete. Align expansion joints in angles with indicated expansion joints in cavity wall exterior wythe.

Galvanize shelf angles to be installed on exterior concrete framing.

Furnish wedge-type concrete inserts, complete with fasteners, for attachment of shelf angles to cast-in-place concrete.

Provide supports for various equipment where shown on the drawings. At all visible locations weld and fully grind surfaces to be smooth and blemish free.

Provide other supports and anchors for mechanical equipment, electrical equipment and other items where shown.

Provide steel railings and handrails as indicated on the drawings.

Form simple and compound curves by bending pipe in jigs to produce uniform curvature for each repetitive configuration required; maintain cylindrical cross-section of pipe throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of pipe.

Provide clean steel strand "aircraft" cable at the horizontal "rails" for guardrails and rails in the Arena, and as shown on the drawings. Cables shall be taught and tight, and shall not exhibit any elongation when applied with a concentrated load as specified herein for handrails under "System Performances."

Provide wall returns at ends of wall-mounted handrails, unless otherwise indicated.

Close exposed ends of pipe with welding 3/16" thick plate.

Toe Boards: Provide toe boards at railings around openings and at the edge of open-sided floors and platforms. Fabricate to dimensions and details indicated, or if not indicated, use 4 inches high x 1/8 inch steel plate welded to, and centered between, each railing post.

Brackets, Flanges, Fittings, and Anchors: Provide wall brackets, end closures, flanges, miscellaneous fittings, and anchors for interconnections of pipe and attachment of railings and handrails to other work. Furnish inserts and other anchorage devices for connecting railings and handrails to concrete or masonry work.

For exterior steel railings and handrails formed from steel pipe with galvanized finish, galvanize fittings, brackets, fasteners, sleeves, and other ferrous components.

Provide anchors for embedding units in concrete, either integral or applied to units, as standard with the manufacturer.

Apply black asphaltic coating to concealed bottoms, sides, and edges of cast-iron units set into concrete.

PIPE BOLLARDS:

Manufacture lengths of pipe bollards to extend 3'-8" below grade. Provide 4" round o.d. pipe unless larger sizes are shown on the drawings. Insert pipes into concrete footings, and fill with concrete fill. Tops of pipe should be slightly rounded with fill at top.

LOOSE STEEL LINTELS:

Provide loose steel lintels for openings and recesses shown in masonry walls and partitions. Weld adjoining memebers together to form a single unit where indicated. Provide not less than 8" bearing at each side of opening, unless otherwise indicated. In general, provide steel lintels at masonry openings including but not limited to the following locations: doors, framed openings, windows, exterior or interior louvers, transfer grilles, framed blockouts and recesses, ductwork penetrations, piping penetrations, cabinet unit heaters, fire hose cabinets, chimney breeching penetrations, bundled piping and conduit.

Galvanize loose steel lintels to be installed in exterior walls.

EXPANSION JOINTS:

Provide fire rated, UL listed, metal expansion joint covers at the intersection of floor and wall building components and finishes as required.

Provide the following models of fire rated expansion joints as manufactured by Conspec Systems, Inc., (C.S. Group) or other manufacturer approved by the Architect. Provide elastomer expansion joint filler and extruded aluminum frame at exposed surfaces, with manufacturer's fire barrier system, FB-88, in joint width below cover plate.

Floor to Floor	1 hr. rated, "Metaflex" 1H RDA Series
Floor to Wall	1 hr. rated, "Metaflex" 1H RDA Series
Wall to Wall	1 hr. rated, "Metaflex" 1H KF Series

FINISHES

Galvanizing: For those items indicated for galvanizing, apply zinc-coating by the hot-dip process compliance with the following requirements:

ASTM A 153 for galvanizing iron and steel hardware.

ASTM A 123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch thick and heavier.

Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA1 "Paint Application Specification No. 1" for shop painting.

After installation, welding and grinding, touch-up all areas where the primer has been removed. Remove all signs of rust and damage.

PART 3 - EXECUTION

PREPARATION

Coordinate and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including concrete inserts, sleeves, anchor bolts, and miscellaneous items having integral anchors that are to be embedded in concrete or masonry construction. Coordinate delivery of such items to project site.

Set sleeves in concrete with tops flush with finish surface elevations; protect sleeves from water and concrete entry.

INSTALLATION, GENERAL

Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.

Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.

Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.

Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.

Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made.

Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals with a heavy coat of bituminous paint or zinc chromate primer.

SETTING LOOSE PLATES

Clean concrete and masonry bearing surfaces of any bond-reducing materials, and roughen to improve bond to surfaces. Clean bottom surface of bearing plates.

Set loose leveling and bearing plates on wedges, or other adjustable devices. After the bearing members have been positioned and plumbed, tighten the anchor bolts. Do not remove wedges or shims, but if protruding, cut off flush with the edge of the bearing plate before packing with grout.

Use metallic nonshrink grout in concealed locations where not exposed to moisture; use nonmetallic nonshrink grout in exposed locations, unless otherwise indicated.

Do not place grout when overnight temperatures are expected to drop below freezing, if left unprotected.

Pack grout solidly between bearing surfaces and plates to ensure that no voids remain.

Expansion Joints: Provide expansion joints at locations indicated, or if not indicated, at intervals not to exceed 40 feet. Provide slip joint with internal sleeve extending 2 inches beyond joint on either side; fasten internal sleeve securely to one side; locate joint within 6 inches of post.

ADJUSTING AND CLEANING

Touch-Up Painting: Cleaning and touch-up painting of field welds, bolted connections, and abraded areas of the shop paint on miscellaneous metal is specified in Division 9 Section "Painting" of these specifications.

For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A 780.

END OF SECTION 05500

COMFORT SUITES

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

SUMMARY:

Section includes miscellaneous wood framing, door and window bucks, furring, rooftop equipment bases and support curbs, wood nailers, blocking, non-exposed plywood panels and other miscellaneous work.

Fire treated lumber shall be used everywhere on this project.

Pressure treated wood, is not to be included on this project.

RELATED WORK:

All Division 6, 7 and 8 Sections.

DEFINITIONS:

Rough carpentry includes carpentry work not specified as part of other sections and which is generally not exposed, except as otherwise indicated.

PRODUCT HANDLING:

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

PROJECT CONDITIONS:

Coordination: Fit carpentry work to other work; scribe and cope as required for accurate fit. Locate furring, nailers, blocking, grounds and similar supports to allow attachment of other work.

PART 2 - PRODUCTS

LUMBER, GENERAL:

Lumber Standards: Manufacture lumber to comply with PS 20 "American Softwood Lumber Standard" and with

applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

Provide wood for support or attachment of other work including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, stripping and similar members.

Moisture content: S-Dry, KD 19 with 19 percent maximum.

Grade: Standard Grade light framing size lumber of any species or board size lumber as required. No. 2 Common or Construction Common grade boards per WCLIB or WWPA rules or No. 2 boards per SPIB rules. All materials shall be certified as fire treated material.

MATERIALS:

Framing and blocking: Southern yellow pine No. 2.; Douglas Hem Fir.

Framing and furring: SPF, for non-structural, non-bearing items. Sizes as required.

Panels: APA rated sheathing, exposure 1, to suit conditions. 4' by 8' sheets; 1/2", 5/8" and 3/4" thickness as shown on the drawings.

Fasteners and Anchorages: Provide size, type, material and finish as indicated and as recommended by applicable standards, complying with applicable Federal Specifications for nails, staples, screws, bolts, nuts, washers and anchoring devices. Provide pre- fabricated metal hangers and framing anchors of the size and type indicated or recommended by the manufacturer for each use including recommended nails. All connection material shall be galvanized.

Where rough carpentry work is exposed to weather, in ground contact, or in area of high relative humidity, provide fasteners and anchorages with a hot-dip zinc coating (ASTM A 153).

FIRE RETARDANT MATERIALS:

Provide all materials with UL label of interior type A at areas that have no contact with any exterior roof or wall condition and exterior treatment elsewhere. Plywood shall be AWPA C27 and dimension lumber shall be AWPA C20. Do not use any materials that have been damaged or made inferior through the treatment process.

PART 3 - EXECUTION

INSTALLATION, GENERAL:

Discard units of material with defects which might impair quality of work, and units which are too small to use in fabricating work with minimum joints or optimum joint arrangement.

Set carpentry work to required levels and lines, with members plumb and true to line and cut and fitted.

Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards.

Countersink nail heads on exposed carpentry work and fill holes.

Use common wire nails, except as otherwise indicated. Use finishing nails for finish work. Select fasteners of size that will not penetrate members where opposite side will be exposed to view or will receive finish materials. Make tight connections between members. Install fasteners without splitting of wood; predrill as required.

WOOD NAILERS, PANELS, BLOCKING AND SLEEPERS:

Provide wherever shown and where required for screeding or attachment of other work. Form to shapes as shown and cut as required for true line and level of work to be attached. Coordinate location with other work involved.

Attach to substrates as required to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated. Build into masonry during installation of masonry work. Where possible, anchor to formwork before concrete placement.

Install plumb and level with closure strips at edges and openings. Shim with wood as required for tolerance of finished work.

Correct and replace any wall or surfaces that are not acceptable to installers and suppliers of finish walls.

Provide 3/4" retardant plywood at parapets and metal roofing as shown on the drawings.

END OF SECTION 06100

SECTION 006175 – WOOD JOISTS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

RELATED WORK:

Section 6100, Rough Carpentry
Glu-Laminated Members as shown on the drawings.

SYSTEM DESCRIPTION:

A. Design requirements: Indicated on Drawings.

SUBMITTALS:

A. Shop drawings, design data:
   1. Provide drawings showing layout and detail necessary for determining fit and placement in the building.
   2. Provide design calculations bearing seal and signature of professional engineer licensed to practice in the state where Project is located.
   3. Fabricating joists or trusses before shop drawings have been reviewed by Architect is prohibited.

QUALITY ASSURANCE:

A. Regulatory requirements:
   1. Provide joists designed to withstand loadings due to dead load. live load. and wind load requirements of local code.
   2. Comply with working stress and connector load requirements of NFPA and TPI standards listed above.

DELIVERY, STORAGE, AND HANDLING:

A. Packing and shipping: Band joists in "sets" for delivery to Project site.

B. Acceptance at site:
   1. Unload to storage area using slings and lifting devices at indicated lift points.
   2. Joists offloaded from trucks or trailers by "dumping" or "rolling" will be immediately rejected, marked, and removed from Project site.

C. Storage and protection:
   1. Stockpile joists under cover and off ground, in vertical orientation. Provide bearing supports and bracing to prevent damage to joists during storage.
   2. Comply with TPI HET-80, *Handling and Erecting Wood Trusses.*

PART 2 - PRODUCTS

MATERIALS:

Flange members, web members, and adhesives shall conform to the provisions of ICC ES ESR-1153.

FABRICATION:

A. Shop assembly:
   1. Fabricate joists in accord with reviewed shop drawings, design computations, and TPI Quality Control Manual QCM-77.
   2. Joist composition:
      a. Types and sizes indicated on drawings and reviewed shop drawings.
   3. Fabricate joists in permanent facility devoted principally to truss fabrication.

B. Tolerances:
   1. Depth: ±1/16".
   2. Flange Width: ±1/16".

PART 3 - EXECUTION

INSTALLATION:

Joists are to be installed in accordance with the plans and shop drawings. Temporary construction loads that cause stresses beyond design limits are not permitted. Safety bracing is to be provided by the installer to keep the joists straight and plumb as required and to ensure adequate lateral support for the individual joist members and the entire system until the sheathing material is applied.

SUMMARY:

END OF SECTION 06175

COMFORT SUITES

SECTION 06200 - FINISH CARPENTRY

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Definition: Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections.

Types of finish carpentry work in this section include:

Interior running and standing trim including but not limited to:

Lobby and corridor baseboard, cove moulding and trim.
Breakfast Area cove and base moulding.
Fireplace Trim Surround.

Rough carpentry is specified in another Division-6 section.

Architectural woodwork is specified in another Division-6 section.

Builders Hardware and wood doors are specified in Division-8 sections.

QUALITY ASSURANCE:

Factory-mark each piece of lumber and plywood with type, grade, mill and grading agency identification; except omit marking from surfaces to receive transparent finish, and submit mill certificate that material has been inspected and graded in accordance with requirements if it cannot be marked on a concealed surface.

Fire-Retardant Marking: Mark each unit of fire-retardant treated lumber and plywood with classification marking of Underwriters Laboratories, Inc., or other testing and inspecting agency acceptable to authorities having jurisdiction. Place marking on surfaces which will not be exposed after installation.

SUBMITTALS:

Samples: Submit the following samples for each species and cut or pattern of finish carpentry.

Interior standing and running trim: 2'-0" long x full board of molding width, unfinished.

PRODUCT DELIVERY, STORAGE AND HANDLING:

Protect finish carpentry materials during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

Do not deliver finish carpentry materials, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, finish carpentry materials must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

JOB CONDITIONS:

Conditioning: Installer shall advise Contractor of temperature and humidity requirements for finish carpentry installation areas. Do not install finish carpentry until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

Maintain temperature and humidity in installation area as required to maintain moisture content of installed finish carpentry within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. The fabricator of woodwork shall determine optimum moisture content and required temperature and humidity conditions.

PART 2 - PRODUCTS

WOOD PRODUCT QUALITY STANDARDS:

Softwood Lumber Standards: Comply with PS 20 and with applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

Woodworking Standard: Where indicated for a specific product comply with specified provision of the following:

Architectural Woodwork Institute (AWI) "Quality Standards."

Glued-up Lumber Standard: Comply with PS 56.

MATERIALS:

General:

Nominal sizes are indicated, except as shown by detailed dimensions. Provide dressed or worked and dressed lumber, as applicable, manufactured to the actual sizes as required by PS 20 or to actual sizes and pattern as shown, unless otherwise indicated.

Moisture Content of Softwood Lumber: Provide kiln-dried (KD) lumber having a moisture content from time of manufacture until time of installation not greater than values required by the applicable grading rules of the respective grading and inspecting agency for the species and product indicated.

Interior Finish Carpentry:

Standing and Running Trim for Transparent Finish: Honduran Mahogany solids manufactured to sizes and patterns (profile) shown from selected First Grade lumber (NHLA); complying with following grade requirements of referenced woodworking standard, for quality of materials and manufacture:

Grade: Custom.

WM/Series Wood Molding Patterns: For stock molding patterns graded under Wood Molding and Millwork Producers Industry WM 4, provide the following grade based on finish indicated and fabricated from any Western softwood species graded and inspected by WWPA.

Moldings for Transparent Finish: N-Grade.

Miscellaneous Materials:

Fasteners and Anchorages: Provide nails, screws and other anchoring devices of the type, size, material and finish required for application indicated to provide secure attachment, concealed where possible, and complying with applicable Federal Specifications.

Where finish carpentry is exposed on exterior or in areas of high relative humidity, provide fasteners and anchorages with a hot-dipped zinc coating (ASTM A 153).

PART 3 - EXECUTION

PREPARATION:

Condition wood materials to average prevailing humidity conditions in installation areas prior to installing.

INSTALLATION:

Discard units of material which are unsound, warped, bowed, twisted, improperly treated, not adequately seasoned or too small to fabricate work with minimum of joints or optimum jointing arrangements, or which are of defective manufacturer with respect to surfaces, sizes or patterns.

Install the work plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level countertops; and with 1/16" maximum offset in flush adjoining 1/8" maximum offsets in revealed adjoining surfaces.

Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

Standing and Running Trim: Install with minimum number of joints possible, using full-length pieces (from maximum length of lumber available) to the greatest extent possible. Stagger joints in adjacent and related members. Cope at returns, miter at corners, to produce tight fitting joints with full surface contact throughout length of joint. Use scarf joints for end-to-end joints. Apply flat grain lumber with bark side exposed to weather or moisture conditions.

Anchor finish carpentry work to anchorage devices or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nail for exposed nailings, countersunk and filled flush with finished surface, and matching final finish where transparent is indicated.

ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

Repair damaged and defective finish carpentry work wherever possible to eliminate defects functionally and

visually; where not possible to repair properly, replace woodwork. Adjust joinery for uniform appearance.

Clean finish carpentry work on exposed and semi-exposed surfaces.

Refer to Division- 9 sections for final finishing of installed finish carpentry work.

Protection: Installer of finish carpentry work shall advise Contractor of final protection and maintained conditions necessary to ensure that work will be without damage or deterioration at time of acceptance.

END OF SECTION 06200

SECTION 06400 - ARCHITECTURAL WOODWORK

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of each type of architectural woodwork is indicated on drawings and in schedules.

Types of architectural woodwork include the following:

Interior trim, and rails.

Architectural casework including:

Check-in counter including granite top.
Serving counter and cabinets in Breakfast room.
Television cabinet in Breakfast room.
Casework associated with installation of Fireplace surround.
Bathroom vanity including granite top, apron and splashes.
Granite low wall shelf in Guestrooms.
Granite wet bar countertop and cabinet and with cut out for drop-in sink.
Closet shelving and rods.
Storage shelving.
Lobby/Breakfast Area column enclosures
Employee Break Area cabinet.
Work Area cabinet.

Finish carpentry is specified in another Division 6 section.

QUALITY ASSURANCE:

AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI), except as otherwise indicated.

SUBMITTALS:

Product Data: Submit manufacturer's product data for each product and process specified as work of this section and incorporated into items of architectural woodwork during fabrication, finishing, and installation.

Quality Certification: Submit woodwork Manufacturer's (Fabricator's) certification, stating that fabricated woodwork complies with quality grades and other requirements indicated.

Shop Drawings: Submit shop drawings showing location of each item, dimensioned plans and elevations, large

scale details, attachment devices and other components.

Samples: Submit the following samples:

Plastic laminate, 8" x 10" for each type, color, pattern and surface finish.

Exposed cabinet hardware, one unit of each type and finish.

Granite or marble, 8" x 10" for each type.

DELIVERY, STORAGE AND HANDLING:

Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

Do not deliver woodwork, until painting, wet work, grinding and similar operations which could damage, soil or deteriorate woodwork have been completed in installation areas. If, due to unforeseen circumstances, woodwork must be stored in other than installation areas, store only in areas meeting requirements specified for installation areas.

PROJECT CONDITIONS:

Conditioning: Woodwork Manufacturer and Installer shall advise Contractor of temperature and humidity requirements for woodwork installation and storage areas. Do not install woodwork until required temperature and relative humidity have been stabilized and will be maintained in installation areas.

Maintain temperature and humidity in installation area as required to maintain moisture content of installed woodwork within a 1.0 percent tolerance of optimum moisture content, from date of installation through remainder of construction period. Require Woodwork Manufacturer to establish optimum moisture content and required temperature and humidity condition.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide high pressure decorative laminates of one of the following:

Formica Corp.
Lamin-Art.
Nevamar Corp.
Ralph Wilson Plastics Co.
Micarta

FABRICATION, GENERAL:

Wood Moisture Content: Comply with requirements of referenced quality standard for moisture content of lumber at time of fabrication and for relative humidity conditions in the installation areas.

Fabricate woodwork to dimensions, profiles, and details indicated with openings and mortises precut, where possible, to receive hardware and other items and work.

Ease edges to a 1/16" radius, for corners of cabinets and edges of solid wood (lumber) members less than 1" in nominal thickness, 1/8" radius for edges of rails and similar members over 1" in nominal thickness.

Complete fabrication, assembly, finishing, hardware application, and other work before shipment to project site to maximum extent possible. Disassemble components only as necessary for shipment and installation. Where necessary for fitting at site, provide ample allowance for scribing, trimming, and fitting.

Pre-Cut Openings: Fabricate architectural woodwork with pre-cut openings, where possible, to receive hardware, appliances, plumbing fixtures, electrical work and similar items. Locate openings accurately and use templates or roughing-in diagrams for proper size and shape. Smooth edges of cutoffs and, where located in countertops and similar exposures seal edges of cutouts with a water-resistant coating.

Measurements: Before proceeding with fabrication of woodwork required to be fitted to other construction, obtain field measurements and verify dimensions and shop drawing details as required for accurate fit.

Where sequence of measuring substrates before fabrication would delay the project, proceed with fabrication (without field measurements) and provide ample borders and edges to allow for subsequent scribing and trimming of woodwork for accurate fit.

TRIM AND RAILS:

Quality Standard: Comply with AWI Section 300.

Rout or groove backs of flat trim members, kerf backs of other wide flat members, except for members with ends exposed in finished work.

Assemble casings in plant except where limitations of access to place of installation require field assembly.

Interior Trim for Stain Finish:

Species: Honduran mahogany
Grade: Custom

BATHROOM VANITY TOPS:

Provide 2 cm thick granite vanity tops, including apron and splashes where applicable in sizes and configurations indicated. Color shall be as selected by Owner.

LAMINATE TOPS:

Quality Standard: Comply with AWI Section 400 and its Division 400C.

Type of Top: High Pressure Decorative Laminate.

Grade: Custom.

Laminate Cladding for Horizontal Surface: High pressure decorative laminate complying with NEMA LD 3 and as follows:

Colors, Patterns, and Finishes: As indicated or, if not otherwise indicated, as selected from laminate manufacturer's standard products in the following categories:

Solid colors.

Grade: GP-50 (0.050" nominal thickness).

Edge Treatment: Same as laminate cladding on horizontal surface.

CHECK-IN COUNTER:

General: Fabricate check-in counter to the dimensions and details indicated. Use materials indicated and as herein specified.

CLOSET SHELVING AND RODS:

Quality Standard: Comply with AWI Section 600.

Shelving for Opaque Finish: Comply with the following requirements:

Grade: Custom.

Shelving Material: Medium density fiberboard.

Clothes Rods and Supports:

Install premanufactured open- wire type hanger rod and shelf unit at all Guestroom closets. Provide steel pipe or tubing cut to lengths required, 1-1/2", 0.14" wall thickness, with standard wrought steel flanges (one with open top) at all other locations.

FASTENERS AND ANCHORS:

Screws: Select material, type, size and finish required for each use. Comply with FS FF-S-111 for applicable requirements.

For metal framing supports, provide screws as recommended by metal framing manufacturer.

Nails: Select material, type, size and finish required for each use. Comply with FS FF-N-105 for applicable requirements.

Provide stainless steel or aluminum nails for exposed exterior woodwork which is to receive transparent finish (if any). Provide any type of non-corrosive nail for other exterior woodwork.

Anchors: Select material, type, size and finish required by each substrate for secure anchorage. Provide non-ferrous metal or hot- dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion-resistance. Provide toothed steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts and anchors, as required, to be set into concrete or masonry work for subsequent woodwork anchorage.

Shelf Brackets: Provide shelf brackets for wall shelves as shown on drawings.

PART 3 - EXECUTION

PREPARATION:

Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.

Pre-Installation Meeting: Meet at project site prior to delivery of architectural woodwork and review coordination and environmental controls required for proper installation and ambient conditioning in areas to receive work. Include in meeting the Contractor; Architect and other Owner Representatives (if any); Installers of architectural woodwork, wet work such as plastering, other finishes, painting, mechanical work and electrical work; and firms or persons responsible for continued operation (whether temporary or permanent) of HVAC system as required to maintain temperature and humidity conditions. Proceed with woodwork installation only when everyone concerned agrees that required ambient conditions can be maintained.

Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

INSTALLATION:

Install woodwork plumb, level, true and straight with no distortions. Shim as required using concealed shims. Install to a tolerance of 1/8" in 8'-0" for plumb and level (including tops); and with no variations in flushness of adjoining surfaces.

Scribe and cut work to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

Anchor woodwork to anchors or blocking built-in or directly attached to substrates. Secure to grounds, stripping and blocking with countersunk, concealed fasteners and blind nailing as required for a complete installation. Except where prefinished matching fasteners heads are required, use fine finishing nails for exposing nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.

Casework: Install without distortion so that doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete the installation of hardware and accessory items as indicated. Maintain veneer sequence matching (if any) of cabinets with transparent finish.

Tops: Anchor securely to base units and other support systems as indicated.

ADJUSTMENT, CLEANING, FINISHING AND PROTECTION:

Repair damaged and defective woodwork where possible to eliminate defects functionally and visually; where not possible to repair replace woodwork. Adjust joinery for uniform appearance.

Clean, lubricate and adjust hardware.

Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

Refer to the Division 9 sections for final finishing of installed Architectural Woodwork.

Provide final protection and maintain conditions, in a manner acceptable to Fabricator and Installer, which ensures architectural woodwork being without damage or deterioration at time of substantial completion.

END OF SECTION 06400

SECTION 07200 - INSULATION

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of insulation work is shown on drawings and indicated by provisions of this section.

Applications of insulation specified in this section include the following:

Blanket-type building thermal/sound attenuation insulation.
Loose-fill building insulation.

Foam plastic board insulation is specified in Division 7

QUALITY ASSURANCE:

Thermal Resistivity: Where thermal resistivity properties of insulation materials are designated by r-values they represent the rate of heat flow through a homogenous material exactly 1" thick, measured by test method included in referenced material standard or otherwise indicated. They are expressed by the temperature difference in degrees F between the two exposed faces required to cause one BTU to flow through one square foot per hour at mean temperatures indicated.

Fire Performance Characteristics: Provide insulation materials which are identical to those whose fire performance characteristics, as listed for each material or assembly of which insulation is a part, have been determined by testing, per methods indicated below, by UL or other testing and inspecting agency acceptable to authorities having jurisdiction.

Surface Burning Characteristics: ASTM E 84.
Fire Resistance Ratings: ASTM E 119.
Combustion Characteristics: ASTM E 136.

Maximum Allowable Asbestos Content of Inorganic Insulations: Provide insulations composed of mineral fibers or mineral ores which contain less than 0.25% by weight of asbestos of any type or mixture of types occurring naturally as impurities as determined by polarized light microscopy test per Appendix A of 40 CFR 763.

SUBMITTALS:

Product Data: Submit manufacturer's product literature and installation instructions for each type of insulation and vapor retarder material required.

Certified Test Reports: With product data, submit copies of certified test reports showing compliance with specified performance values, including r-values (aged values for plastic insulations), densities, compression strengths, fire performance characteristics, perm ratings, water absorption ratings and similar properties.

DELIVERY, STORAGE, AND HANDLING:

General Protection: Protect insulations from physical damage and from becoming wet, soiled, or covered with ice or snow. Comply with manufacturer's recommendations for handling, storage and protection during installation.

Protection for Plastic Insulation:

Do not expose to sunlight, except to extent necessary for period of installation and concealment.

Protect against ignition at all times. Do not deliver plastic insulating materials to project site ahead of installation time.

Complete installation and concealment of plastic materials as rapidly as possible in each area of work.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, provide products of one of the following:

Manufacturers of Extruded Polystyrene Board Insulation:

Amoco Foam Products Co.
Dow Chemical U.S.A.
Minnesota Diversified Products, Inc.
UC Industries.

Manufacturers of Glass Fiber Insulation:

CertainTeed Corp.
Knauf Fiber Glass GbmH.
Manville Corp.
Owens-Corning Fiberglass Corp.

Manufacturers of Semi-Refractory Fiber Insulation:

Manville Corp.
United States Gypsum Co.

INSULATING MATERIALS:

General: Provide insulating materials which comply with requirements indicated for materials, compliance with referenced standards, and other characteristics.

Preformed Units: Sizes to fit applications indicated, selected from manufacturer's standard thicknesses, widths and lengths.

Extruded Polystyrene Board Insulation: Rigid, cellular thermal insulation with closed-cells and integral high density skin, formed by the expansion of polystyrene base resin in an extrusion process to comply with ASTM C 578 for Type indicated; with 5-year aged r-values of 5.4 and 5 at 40 and 75 deg. F (4.4 and 23.9 deg.C), respectively; and as follows:

Type IV, 1.6 lb./cu. ft. min. density, unless otherwise indicated.

Surface Burning Characteristics: Maximum flame spread and smoke developed values of 5 and 165, respectively.

Unfaced Mineral Fiber Blanket/Batt Insulation: Thermal/sound attenuation insulation produced by combining mineral fibers of type described below with thermosetting resins to comply with ASTM C 665 for Type I (blankets without membrane facing); and as follows:

Mineral Fiber Type: Fibers manufactured from glass.

Combustion Characteristics: Passes ASTM E 136 test.

Surface Burning Characteristics: Maximum flame spread and smoke developed values of 25 and 50, respectively.

Loose Glass Fiber Insulation: Glass fibers processed to comply with ASTM C 764 for Type (method of application) indicated below; passing ASTM E 136 for combustion characteristics; maximum flame spread and smoke developed values of 5 and 5, respectively, and as follows:

Type 1 for pneumatic application.

AUXILIARY INSULATING MATERIALS:

Polyethylene Vapor Retarder: 6-mil polyethylene film, with laboratory-tested vapor transmission rating of 0.2 perms, natural color.

Metal Foil/Paper Vapor Retarder: 0.3-mil reflective aluminum foil laminated with scrim reinforcing to plastic-coated Kraft paper; laboratory-tested vapor transmission rating of 0.03 perms.

Adhesive for Bonding Insulation: Type recommended by insulation manufacturer, and complying with requirements for fire performance characteristics.

Eave Ventilation Troughs: Preformed rigid fiberboard or plastic sheet designed and sized to fit between roof framing members and to provide cross ventilation between insulated attic spaces and vented eaves.

PART 3 - EXECUTION

INSPECTION AND PREPARATION:

Require Installer to examine substrates and conditions under which insulation work is to be performed. A satisfactory substrate is one that complies with requirements of the section in which substrate and related work is specified. Obtain Installer's written report listing conditions detrimental to performance of work in this section. Do not proceed with installation of insulation until unsatisfactory conditions have been corrected.

Clean substrates of substances harmful to insulations or vapor retarders, including removal of projections which might puncture vapor retarders.

INSTALLATION, GENERAL:

Comply with manufacturer's instructions for particular conditions of installation in each case. If printed instructions are not available or do not apply to project conditions, consult manufacturer's technical representative for specific recommendations before proceeding with work.

Extend insulation full thickness as shown over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement.

Apply a single layer of insulation of required thickness, unless otherwise shown or required to make up total thickness.

INSTALLATION OF PERIMETER INSULATION:

On vertical surfaces, set units in adhesive applied in accordance with manufacturer's instructions. Use type of adhesive recommended by manufacturer of insulation.

INSTALLATION OF GENERAL BUILDING INSULATION:

Apply insulation units to substrate by method indicated, complying with manufacturer's recommendations. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

Place loose glass insulation into spaces and onto surfaces as shown, either by pouring or by machine-blowing. Level horizontal applications to uniform thickness as indicated, lightly settled to uniform density, but not excessively compacted.

Stuff loose glass fiber insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately 40% of normal maximum volume (to a density of approximately 2.5 lbs. per cu. ft.)

INSTALLATION OF VAPOR RETARDERS:

General: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those which have been stuffed with loose fiber-type insulation.

Seal vertical joints in vapor retarders over framing by lapping not less than 2 wall studs. Fasten vapor retarders to framing at top, end and bottom edges, at perimeter of wall openings and at lap joints; space fasteners 16" o.c.

Seal joints caused by pipes, conduits, electrical boxes and similar items penetrating vapor retarders with cloth or aluminized tape of type recommended by vapor retarder manufacturer to create an air-tight seal between penetrating objects and vapor retarder.

Repair any tears or punctures in vapor retarders immediately before concealment by other work. Cover with tape or another layer of vapor retarder.

PROTECTION:

General: Protect installed insulation and vapor retarders from harmful weather exposures and from possible physical abuses, where possible by nondelayed installation of concealing work or, where that is not possible, by temporary covering or enclosure.

END OF SECTION 07200

SECTION 07240 - EXTERIOR INSULATION FINISH SYSTEM

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Section includes exterior insulation and finish system for certain walls and soffit locations, including insulation, standard mesh, base and finish coats, including a spray applied quartz aggregate finish, and other items as shown on the drawings and as specified herein. Included are standard, continuous walls, soffits, and special shapes.

RELATED WORK:

Section 04200, Masonry.
Section 07600, Flashing.
Section 07900, Sealants.

QUALITY ASSURANCE:

1. Manufacturer shall have a minimum of five years of satisfactory experience at manufacturing and marketing exterior insulation and finish system.

2. Installer shall have a minimum of five years successful experience installing exterior insulation and finish systems and shall be approved by and licensed by manufacturer of system materials.

3. Single Source Responsibility: Provide all components of exterior insulation and finish system as manufactured by single supplier.

4. Pre-construction meeting: Contractor shall organize and schedule pre-construction meeting on exterior insulation finish system work to include EIFS contractor, flashing subcontractor, Owner, Architect and any other related trades, prior to the start of the work. Contractor shall take meeting minutes and distribute them to all attending parties.

SUBMITTALS:

1. Shop Drawings: Submit complete shop drawings indicating wall layout, all details, profiles, connections, expansion joints, finish system, and installation sequence.

2. Samples: Submit two 12" x 12" samples for selection of color for texture of finish selected.

3. Mock-up: Prepare up to four job site mock-up panels, minimum 4' x 8' size in locations as directed by Architect. Protect approved mock-ups for judging quality standard for remainder of work. Mock-ups may be initial panels of actual wall system and may remain in the Project if approved by Architect.

DELIVERY, STORAGE, AND HANDLING:

Deliver system materials to job site in original containers with labels intact.

Store materials in cool, dry location out of sunlight, protected from sunlight and from temperatures below 40°F.

Handle all materials according to label directions and manufacturer's printed recommendations. Handle system components supplied by other according to those manufacturer's directions.

JOB CONDITIONS:

Inspection: Inspect site conditions before beginning work. Report any unsatisfactory conditions to the contractor and Architect in writing prior to starting work. Thoroughly examine the existing hard coat finish system in place. Advise Architect in writing if any problems or difficulties are expected, based on the following specification.

Environmental Conditions: Do not begin installation unless ambient temperature is at least 40°F. and rising, and is expected to remain so for at least 24 hours. Do not apply system materials to frozen or frost covered substrates.

WARRANTY:

Provide written warranty, signed by the manufacturer and the installer, warranting the performance of the Exterior Insulation Finish System for a period of three years from substantial completion. Warranty shall cover materials and workmanship, as well as specified performance criteria including thermal performance.

PART 2 - PRODUCTS

MANUFACTURERS:

Subject to compliance with requirements provide systems from the following manufacturer. Other manufacturers shall be considered if the proper submittal form is submitted to the Architect within the time allowed; a list of projects of similar type are submitted, and sample panels are submitted to the Architect.

Dryvit; Dryvit System, Inc.
R-Wall, Sto Industries, Inc.
Senerthik or Senerflex; Senergy, Inc.
Approved Equal

MATERIALS:

Adhesive: Acrylic-based product with the following minimum bond strengths over listed substrates when tested in accordance with ASTM D 897:

Concrete Block: 160 psi.
Gypsum Sheathing: 39 psi.

Insulation Board: Expanded or extruded plastic, mineral, or figerglass rigid insulation board produced by a manufacturer approved by system manufacturer, complying with FS HH-I- 524C, Type 1; density 1.0 pcf., maximum flame

spread and smoke developed of 25 and 450 respectively when tested in accordance with ASTM E 84, k-value of .25 at 75°F., and complying with other requirements of system manufacturer. Provide all custom shapes and sizes shown on the drawings, extruded or premade in the factory.

NO INSULATION CONTAINING STYRENE OR PRODUCED WITH CHLORO-FLORO-CARBONS ARE PERMITTED

Provide 2" thick boards minimum where insulation is required or shown.

Provide built-up sections of expanded polystyrene to conform to the profiles and special shapes as shown on the drawings.

Reinforcing Mesh: Treated, balanced, open weave, glass fiber type supplied by or approved by system manufacturer.

Metal Lath: Provide self-furring, expanded metal lath as approved by the manufacturer of the EIFS.

Finish: Acrylic based binder, factory mixed coating having integral color and texture.

Surface texture shall be "Quartzputz", as selected by Architect from the manufacturer's standard colors. Material shall be ceramically colored quartz aggregate finish. Provide the following colors, referencing Elevation Drawings, for keynotes which indicate the locations for each EIFS color application:

EIFS Color #1 - Color as Selected by Architect.
EIFS Color #2 - Color as Selected by Architect.

Cement: Portland cement, Type I or III, meeting ASTM C 150.

Water: Clear and potable.

Sealant: Specified in Section 07900, and complying with manufacturer's recommendations.

SYSTEM PERFORMANCE:

Finish system shall have been tested for moisture resistance, rain resistance, absorption-freeze, accelerated weathering, mildew resistance, salt spray resistance, chemical resistance, abrasion resistance.

System shall have been tested for impact resistance and structural load capacity in accordance with ASTM E 72 and E 330.

System shall have been tested for the following fire tests:

Modified ASTM E 108
ULC S 101
Factory Mutual Corner Test
Multi-story Fire Test with 15' x 10' x 10' room and 1500 lb. wood crib.
Multi-story Fire Test with 15' x 15' x 12' room and 1285 lb., wood crib.

PART 3 - EXECUTION:

INSPECTION:

Inspect substrate prior to application of insulation and finish system for compliance with Contract Documents and system manufacturer's requirements. Notify the Contractor and Architect in writing of any unsatisfactory conditions prior to beginning work.

Do not begin applying insulation boards until infill concrete bearing walls and mortar has fully cured. At existing concrete that adhesive/primus will bond to existing surfaces, apply primer or remove existing materials until bond is achieved.

INSTALLATION:

At existing surfaces, remove any obstructions that interfere with new system. Provide metal lath where required to achieve a workable and durable surface. Ensure that surface is plumb, true and smooth: ready for adhesion of insulation.

Apply exterior insulation and finish system in strict compliance with approved shop drawings and manufacturer's printed recommendations and instructions.

Locate "V" shaped control and totally separated expansion joints at locations occurring in the insulation substrate, as shown on the drawings and as recommended by system manufacturer. Provide drips joints where material is extended down to soffits and horizontal surfaces.

Apply insulation boards to back-up surface material as recommended by the manufacturer. Carefully plane and sand insulation boards so that joints at panels and variations of substrates do not telegraph through the final finish coat.

Accurately and precisely cut reveals and recesses into insulation boards to create pattern and design shown on the drawings.

Carefully plane and sand down surfaces especially at all butted intersections so that final surface appears to be one monolithic surface.

Cover insulation with reinforcing fabric mesh. Install panzer mesh where shown on the drawings or as specified.

Completely cover mesh with base coat at all locations, paying close attention to corners, joints and curves. Do not continue to apply additional coats until all fabric is covered. Apply subsequent coats in a similar manner, ensuring adequate coverage.

Cut standard control joints using a "V" shaped bit in locations indicated on Drawings. Limit panel areas to no greater than 100 square feet between control joints, or as recommended by the installer.

Provide separated joints for sealant and rod stock where expansion joints are shown on the drawing. At expansion joints, do not allow aggregate surfacing material to extend into joint.

Allow base coat to cure one full day prior to finish coats.

AGGREGATE COATING SYSTEM:

Apply composite aggregate and finish coating to walls at locations shown on the drawings, (identical to finishes, colors, and textures of approved job-site mock-ups).

Apply colored primer a minimum of four hours prior to the application of aggregate surface.

When mixing finish coat system, use power equipment as recommended by the manufacturer to obtain a uniformly mixed coating just prior to application.

Apply aggregate finish system by trained mechanics, in a uniform manner, in two coats. The first coat shall be horizontal, and the second coat vertically applied. Allow drying time between coats as recommended by the manufacturer.

Complete each coat and calibrate the work to the closest control joint at the end of each work day, using the vertical and horizontal control joints as a stopping points in the work. Do not discontinue coats, or stop work, in the middle of a panel at the end of each work day. Panels which are not fully covered within each work day will be rejected by the Architect.

CLEANING AND PROTECTION

At end of work, clean area, remove all materials, equipment and trash from site.

Instruct Contractor in procedures for protecting completed finish panels. Erect temporary protection as necessary to protect bases of walls, projections, ledges and fascia from soiling and damage from splashed mud or dirt, or staining from run-off of construction procedures.

END OF SECTION 07240

SECTION 07530 - SINGLE PLY MEMBRANE ROOFING SYSTEM

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Section includes fully adhered and ballasted single ply membrane roofing systems including all labor, materials, equipment and accessories necessary to complete all the work identified on the drawings. System shall include loose stone ballast, E.P.D.M. sheet membrane, roof insulation, tapered units, protection board, elastic sheet base flashing, non-slip walkway pads, roofing construction joints, molded pipe flashing, adhesives, sealants, mastic, cement and fasteners required for a complete installation.

RELATED WORK:

Section 05500, Metal Fabrications.
Section 06100, Rough Carpentry.
Section 07200, Insulation.
Section 07600, Standing Seam Metal Roofing.
Section 07900, Joint Sealers.

QUALITY ASSURANCE:

1. Manufacturer: Obtain primary flexible sheet roofing from a single manufacturer. Provide secondary materials as required by manufacturer of primary materials.

2. Installer: A firm with not less than 5 years of successful experience in installation of roofing systems similar to those required for this project and which is acceptable to or licensed by manufacturer of primary roofing materials. Contractor shall provide evidence that he has performed work on at least 3 projects similar in size and scope to this project.

3. Certification: Installer shall be a certified contractor of one of the approved manufacturers. Letter or certification shall be required prior to roof conference.

4. Pre-Roofing Conference: Prior to installation of roofing and associated work, meet at project site, or other mutually agreed location, with installer, roofing manufacturer, installers of related work, and other entities concerned with roofing performance, including Owner's agent, Architect, and Owner. Contractor shall record discussions and agreements, and furnish copy to each participant. Provide at least 72 hours advance notice to participants prior to convening pre-roofing conference. The roof conference shall take place after or during deck installation, and must be held prior to any roof work being performed.

5. Insurance Certification: Assist Owner in preparation and submittal of roof installation acceptance certification necessary in connection with fire and extended coverage insurance on roofing and associated work.

6. Roof System shall be Class A, equivalent to a an FM 60 rating.

7. Same Subcontractor shall provide all roofing and sheet metal work for all of Sections 07530 and 07600.

SUBMITTALS:

1. Product Data: Submit specifications, installation instructions and general recommendations of manufacturer.

2. Samples: Submit 12" sq. samples of each required insulation, membrane, and flashing. Submit 12" sq. samples of vapor barrier which demonstrates self sealing capabilities.

3. Shop Drawings: Submit complete shop drawings showing roof configuration and sheet layout, details at perimeter, and special conditions. Provide data specs on roof hatch and walkway pads.

4. Insulation System R-value: Provide diagram and calculations showing 20.0 R-value for complete roof assembly of insulation materials at new construction, including back-up documentation of manufacturers published data sheets.

JOB CONDITIONS:

Weather: Proceed with roofing work when existing and forecasted weather conditions permit work to be performed in accordance with manufacturers' recommendations and warranty requirements.

Protect and safeguard all materials and in-place construction at the end of each working day. Protect existing office and warehouse space from inclement weather during construction.

PRODUCT DELIVERY, STORAGE AND HANDLING

Deliver products in original unopened packaging with manufacturer's identification.

Store materials in a neat and safe manner, in a dry area, and in accordance with manufacturer's instructions. Do not exceed allowable live-load of any storage area. All flamable materials shall be labeled and stored as required.

SPECIAL PROJECT WARRANTY:

Roofing systems manufacturer to provide written warranty for a period of ten (10) years for all roofs, commencing on date roofing system is inspected and accepted by manufacturer. Warranty shall cover all labor and materials associated with the repair or replacement of roofing leaks, defects or any other systems failure resulting from defective roofing materials (i.e., flashing, membrane, insulation, vapor barrier, etc.), or installation, and shall not be limited to the original installed cost to the Owner.

PART 2 - PRODUCTS

GENERAL:

Compatibility: Provide products which are required by manufacturers to be fully compatible with indicated substrates, or provide separation materials as required to eliminate contact between incompatible materials.

MANUFACTURERS:

Subject to compliance with requirements, provide products from one of the following systems manufacturers for the new roof work:

Carlisle Syntec Systems.
Firestone Building Products.

MATERIALS:

EPDM type membrane: Ethylene propylene diene monomers formed into uniform, flexible sheets, complying with the following:

Tensile Strength (ASTM D 412): 1400 psi minimum.
Ultimate Elongation (ASTM D 412): 300% minimum.
Brittleness Temperature (ASTM D 746): -49 deg.F (-45 deg.C).
Tear Resistance (ASTM D 624): 125 lbs. per lin. inch min.
Resistance to Ozone Aging (ASTM D 1149): No cracks.
Resistance to Heat Aging (ASTM D 573): 8.3 MPa; tensile mini
mum to be 1200 psi.
Thickness: 45 and 60 mils nominal thickness (Refer to Description of the Work)
Exposed Face Color: Medium or Light Grey.
Reinforcing: Where membrane is adhered to substrate.

MISCELLANEOUS MATERIALS:

Elastic sheet base flashing: 0.060 inches thick uncured EPDM as required by the manufacturer.

Sheet Seaming System: Manufacturer's seam slice tape especially designed, tested and manufactured for use between EPDM membranes, 2-1/2" wide by 1/4" thick, continuous. At special conditions provide standard splice adhesive, including edge sealer to cover exposed spliced edges as required by manufacturer of roofing system.

Cant Strips, Tapered Edge Strips and Flashing Accessories: Types required by manufacturer of membrane material, provided at locations indicated and at locations required by mfr., including adhesive tapes, flashing cements, and sealants.

Primers and cleaners: As required by the membrane manufacturer.

Molded Pipe Flashing: Furnished and used as required by membrane manufacturer. Provided premolded pipe flashing at pipe penetrations as well as round pipe column structural supports for metal panel "false" parapet conditions.

Membrane Tape, Adhesive and Sealant: As required by membrane manufacturer for particular substrate and project conditions, formulated to withstand min, 60 psf uplift force (I-60), and 90 psf uplift force (I-90) at the Arena roof as shown and indicated.

All typical seams to be spliced and bonded through the use of membrane tape. At areas where tape is not possible or recommended, a brush application (not roller) is to be used.

Aggregate Surface Ballast: Washed, rounded, riverbed gravel or other acceptable smooth faced stone ranging in size from 3/4" to 1- 1/2" in diameter, which will withstand weather exposure and uplift without significant deterioration (ASTM C 33). Ballast shall be approved by the manufacturer of the roof system. Provide additional ballast at roof perimeter to withstand uplift forces in accordance with the manufacturer's data sheets and NRCA recommendations.

INSULATING MATERIALS:

General: Provide insulating materials and tapered insulation to comply with requirements indicated and with referenced standards; in sizes to fit applications indicated, selected from manufacturer's standard thicknesses, widths and lengths.

Typically provide layer of 1/2" HD wood fiberboard on two layers of required thickness polystyrene boards, on 5/8" perlite board, on deck.

Note: total system average of insulation materials shall be an average R-value of 38.0.

Insulation Materials: At Contractor's option, provide one of the following:

Expanded Polystyrene Board Insulation: Rigid, cellular thermal insulation of expanded polystyrene resin beads or granules complying with ASTM C 578. Provide Type VIII, 1.15 PCF min. density, with aged R-value of 4.2.

Manufacturer of polystyrene beads: Provide beads for the manufacture of polystyrene from Huntsman, Arco or BASF.

Perlite/Polyisocyanurate Composite Board Roof Insulation: Rigid thermal composite insulation with polyisocyanurate closed cell foam core with rigid perlite board laminated to one side and manufacturer's standard facing laminated to the other side; complying with FS HH-I-1972/3, Class 1.

Polyisocyanurate Board Roof Insulation: Rigid thermal composite insulation with polyisocyanurate closed cell foam core and manufacturer's standard facing laminated to both sides; complying with FS HH-I-1972/2, Class 1.

Provide tapered boards where indicated for sloping to drain; fabricate with taper of 1/4" per ft.

Perlite: Provide rigid boards of expanded perlite fibers and binders, complying with ASTM C 728, and an R-value of 2.78. Maximum thickness shall be 3/4".

Wood Fiberboard: 1/2" thickness, high density wood fiber board as recommended by the primary roofing materials manufacturer.

R-Value: Provide the following aged R-value for complete roof insulation system: minimum R-20.0 average for insulation system materials throughout the roof. Contractor shall provide the Architect with written evidence of conformance to the values required.

MISCELLANEOUS INSULATION MATERIALS:

Adhesive for Bonding Insulation: Type recommended by insulation manufacturer and complying with fire resistance requirements.

Mastic Sealer: Type recommended by insulation manufacturer for bonding edge joints and filling voids.

Walkway Protection Pavers: Provide 24" square slip resistant reinforced EPDM (22 lbs./sq. ft.), units made by, or approved by, the manufacturer of membrane systems at areas shown on the drawings and as specified herein. Units shall be suitable for use without cracking or breaking on fully adhered and ballasted membrane roof surfaces.
Fasteners: As required by the Manufacturer.

PART 3 - EXECUTION

PREPARATION OF SUBSTRATE:

General: Comply with manufacturer's instructions for preparation of substrate to receive roofing system.

Clean substrate of dust, debris, and other substances detrimental to roof system work. Remove sharp projections.

Install cant strips, flashings, and accessory items as shown, and as required by manufacturer where or shown or not. Indicate on the shop drawings as required.

Prime substrate where recommended by manufacturer of materials being installed.

Prevent compounds from entering and clogging drains and conductors, and from spilling or migrating onto surfaces of other work.

Do not install roofing system if deck or installation conditions are not in compliance with manufacturer's recommendations. Installation shall constitute acceptance of roof deck.

Fully adhere base flashing membrane to masonry substrate at roof parapets in accordance with manufacturer's recommendations. If flashing is in contact with fire retardant plywood, roofing manufacturer and installer to certify that membrane flashings and fire retardant plywood are compatible.

INSTALLATION:

General: Comply with manufacturer's detailed instructions, except where more stringent requirements are indicated.

Details as shown on drawings are typical for one manufacturer. If approved manufacturer's details differ, contractor shall install roof system in accordance with manufacturer's instructions.

There shall be no added cost to the owner for compliance with manufacturer's standard details. Provide detail changes to Architect in accordance with "Submittals" process.

General: Extend insulation (including tapered sections) over entire surface to be tapered or insulated, cutting and fitting tightly around obstructions. There shall be a minimum of three layers of insulation, wood fiberboard or perlite at any point of new construction. Stagger all joints, including new boards over existing insulation. Form cant strips, crickets, saddles, and tapered areas with additional material as shown and as required for proper drainage of membrane.

Do not install more insulation each day than can be covered with membrane before end of day and before start of inclement weather. Provide waterproof tarps and polyethylene to seal off new insulation and membrane at the end of each work day.

Set units in adhesive, applied in accordance with requirements of applicable fire and insurance ratings.

Secure roof insulation to substrate as required for each system specified. Where applicable, use mechanical anchors of type and spacing indicated; but in no case provide less than one anchor per 4 square feet of surface area, or less anchorage than required by FM "Loss Prevention Data Sheet 1-28". Install roof insulation in a minimum of two layers with staggered joints.

Loose-Laid and Ballasted roofing Systems: Install membrane by unrolling over prepared substrate, nailing only at perimeter and at roofing penetrations. Lap adjoining sheets as recommended by FSR manufacturer and bond as recommended by manufacturer, covering top edges of each sheet at seams with uniform fillet or sealant if recommended by manufacturer.

Allow membrane to relax 30 minutes before attachment. Ensure that membrane does not stretch or wrinkle

during splicing. Inspect all field splices that there is no separation, air entrapment, or failure in installation.

Fully Adhered Roofing System: Install membrane by unrolling over prepared substrate, allowing membrane to relax. In accordance with manufacturer's instructions, fully adhere membrane to the substrate. Lap adjoining sheets as recommended by FSR manufacturer and bond as recommended by manufacturer, covering top edges of each sheet at seams with uniform fillet of sealant if recommended by manufacturer.

Allow membrane to relax 30 minutes before attachment. Ensure that membrane does not stretch or wrinkle during splicing. Inspect all field splices that there is no separation, air entrapment, or failure in installation.

FLASHING INSTALLATION:

Install all flashings in accordance with manufacturer's standard instructions and details. Use the longest pieces of material possible. Extend flashing a minimum of 8" or as shown on drawings.

Properly bond base flashing to roof membrane allowing the bonding adhesive to dry per manufacturer's instructions. Don not allow any flashing to wrinkle or create a gap. After installation of flashing to vertical surface, fasten with fasteners as approved by manufacturer prior to installation of sheet metal flashing.

The manufacturer's name shall not be exposed or visible on the face of flashing.

Obtain roof drain and cover from mechanical contractor, and install within roof valleys, at the absolute low points. Secure drain and make sure that installation is watertight.

Install walkway units at areas shown on the drawings.

Walkway Protection: Install paver units at locations shown and where required for access to roof-mounted equipment, per the manufacturer's instructions.

Provide roofing construction joints at high point locations of the roof as shown on the drawings, or as recommended by the manufacturer.

END OF SECTION 07530

SECTION 07600 - FLASHING AND SHEET METAL

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Section includes prefinished flashing, counterflashing, and related sheet metal and flashing materials as shown on the drawings and specified herein.

Materials supplied by contractor of this section shall be identical with materials supplied by standing seam metal roof contractor, as specified in Section 07630, although a different color may be selected.

RELATED WORK:

Section 07530, Single Ply Membrane Roofing System.
Section 07630, Standing Seam Metal Roof.
Section 07900, Joint Sealers.

SUBMITTALS:

1. Samples: Manufacturer's color charts and samples of each exposed type of metal sheet for verification.

2. Shop Drawings: Indicate layout, joining, profiles, and anchorages of fabricated work, trim/fascia, scuppers and expansion joint systems.

JOB CONDITIONS:

Coordinate work of this section with interfacing and adjoining work, and perform work under best possible weather conditions.

PART 2 - PRODUCTS

MATERIALS:

Zinc-Coated Steel: Commercial quality with 0.20% copper, ASTM A 525 (ASTM A 527 lock-forming, G90 hot-dip galvanized, 20 gage).

Prefinished Steel: Commercial quality 24 gage hot dipped galvanized steel (G-90), smooth primed and finished one side with Kynar based flouropolymer coating of 1.0 ($\pm$0.1) mil total dry film thickness. Color shall be selected by Architect from a complete list of manufacturer's colors.

Elastic Sheet: 50-65 mil elastic non-reinforced EPDM rubber.

Solder: For use with steel or copper, provide 50 - 50 tin/lead solder (ASTM B 32), with rosin flux.

Fasteners: Same metal as flashing/sheet metal or, other noncorrosive metal as recommended by sheet manufacturer. Match finish of exposed heads with material being fastened.

Bituminous Coating: FS TT-C-494 or SSPC - Paint 12, solvent type bituminous mastic, nominally free of sulfur, compounded for 15- mil dry film thickness per coat.

Mastic Sealant: Polyisobutylene; nonhardening, nonskinning, nondrying, nonmigrating sealant.

Elastomeric Sealant: Generic type recommended by manufacturer of metal and fabricator of components being sealed; comply with FS TT-S-0027, TT-S-00230, or TT-S-001543.

Epoxy Seam Sealer: 2-part noncorrosive metal seam cementing compound, recommended by metal manufacturer for exterior/interior nonmoving joints including riveted joints.

Paper Slip Sheet: 5-lb rosin-sized building paper.

Reglets: Metal or plastic units of the type and profile indicated, compatible with flashing indicated, noncorrosive.

Metal Accessories: Provide sheet metal clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, noncorrosive, size and gage required for performance.

Roofing Cement: ASTM D 2822, asphaltic.

Refer to Section 07900, for sealants.

MANUFACTURERS:

Subject to compliance with requirements, provide materials from one of the following manufacturers:

Prefinished metal:

Pac-Clad: Peterson Metals Corp.
Colorklad; Vincent Brass.
Lok-Seam; MBCI
BHP Steel Building Products USA, Inc.

FABRICATION:

General Metal Fabrication: Shop-fabricate work to greatest extent possible. Comply with details shown, and with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance; with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations for forming material. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels indicated, with exposed edges folded back to form hems.

Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. Seams are to be formed and soldered.

Expansion Provisions: Where lapped or bayonet-type expansion provisions in work cannot be used, or would not be sufficiently water/weatherproof, form expansion joints of intermeshing hooked flanges, not less than 1" deep, filled with mastic sealant (concealed within joints).

At downspouts, gutters and scuppers metal shall be fabricated so that the selected color is exposed at all visible areas. Provide two-piece assemblies at open downspouts and as required.

Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with SMACNA standards.

Separations: Provide for separation of metal from noncompatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.

Elastic Expansion Joint Fabrication:

General: Provide manufacturer's standard units of size and type indicated, complete with prefabricated corner and intersection units and splicing materials; with elastic sheet flashing forming the primary joint membrane, in a supported bellows arrangement to be secured to both sides of expansion joints; with bellows insulated from below with adhesively applied, flexible, closed- cell rubber or plastic not less than 3/8" thick.

PART 3 - EXECUTION

INSTALLATION:

General: Comply with SMACNA "Architectural Sheet Metal Manual".

Underlayment: Install slip sheet of red rosin paper and a course of polyethylene underlayment where required and specified.

Bed flanges of work in a thick coat of bituminous roofing cement where required for waterproof performance.

Install reglets to receive counter-flashing in manner and by methods indicated. Where shown in concrete, furnish reglets to trades of concrete work for installation as work of Division 3 sections. Where shown in masonry, furnish reglets to trades of masonry work, for installation as work of Division-4 sections.

Shop form all sheet metal details including cap flashing, wall flashing, gutters, downspouts, decorative elements and any other items shown on the drawings, or otherwise required for a complete installation. Provide materials to the job site that are square, solid, clean and in relatively new condition. Protect all metal before, during and after installation as necessary.

CLEANING AND PROTECTION:

Clean exposed metal surfaces, removing substances which might cause corrosion of metal or deterioration of finishes.

Protection: Ensure that work is protected from damage or deterioration, other than natural weathering, at time of substantial completion.

END OF SECTION 07600

SECTION 07630 - STANDING SEAM METAL ROOFING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Section includes prefinished, snap-on, standing seam metal roofing system, and membrane underlayment for sloped roof sections, soffits and fascias as indicated on the drawings and specified herein. Soffit panels shall be metal clad plywood sandwich panels structurally capable of spanning between supports spaced as indicated.

RELATED WORK:

Section 06100, "Rough Carpentry", for decking materials.
Section 07530, "Single Ply Membrane Roofing System".
Section 07600, "Flashing and Sheet Metal".

QUALITY ASSURANCE:

1. Industry Standard: Comply with applicable recommendations and details of "Architectural Sheet Metal Manual" by SMACNA. Conform to dimensions and profiles shown.

2. Same Sub-Contractor shall provide all roofing, siding and sheet metal work for all sections 07530 and 07600.

3. Field Measurements: Prior to fabrication take field measurements of structure or substrates to receive panel system. Allow for trimming panel units where final dimensions cannot be established prior to fabrication.

4. Reference Standard: Comply with "Architectural Sheet Metal Manual", published by Sheet Metal and Air Conditioning Contractors National Association.

5. Provide system and fasteners that achieve spacing and uplift resistance specified in UL-60.

6. Pre-construction meeting: Contractor shall organize a pre-construction meeting with the roof contractor, underlayment and sheet metal manufacturer, deck installer, Owner and Architect, along with any other allied construction persons. Cover all details, installations procedures, schedule and any other concerns. Contractor shall record minutes of the meeting and submit to all parties.

SUBMITTALS:

1. Product Data: Manufacturer's specifications, standard details, certified product test results, and installation instructions.

2. Samples: 2 samples 12" square, of each finish selected. Provide section of sandwich panel for acceptance.

3. Shop Drawings: Include layouts of panels, details, supports, anchorages, and trim.

PART 2 - PRODUCTS

MANUFACTURERS:

Subject to compliance with requirements, provide products from one of the following:

PAC-Clad.
Vincent Brass & Aluminum Co.
MBCI
BHP Steel Building Products USA, Inc.

Specification is based on BHP "Select Seam" system with 1-7/8" high seam and 17-1/2" standard panel width. at typical locations, and butyl based elastomeric membrane underlayment, along with sheet metal flashing and trim accessories as required for a complete installation.

MATERIALS:

Aluminum Sheet for Painting/Coating: Provide manufacturer's special 24 gauge galvanized steel sheet (G-90) of alloy, temper and mill finish as recommended by the manufacturer.

Provide manufacturer's standard continuous U-shaped sections, with 17-1/2" center to center width and 1-7/8" height and wide style batten; Soffit transitions, end sections, and other shapes as required and shown on the drawings.

Hold-down Clips: Manufacturer's standard stainless steel.

Underlayment: Butyl based elastomeric membrane, 40 mil thickness ("peel and stick" product): Polyken, Ice-And-Water Shield or approved equal.

Refer to Section 07900, Joint Sealers for backer rods and urethane sealant joint materials.

METAL FINISHES:

Flouropolymer Coating: Full-strength 70% "Kynar 500" coating baked-on for 15 minutes at 450°F (232°C), in a dry film thickness of 1.0 mils, 30% reflective gloss (ASTM D 523), over 0.3 mil epoxy primer.

Durability: Provide coating which has been field tested under normal range of weathering conditions for minimum of 20 years without significant peel, blister, flake, chip, crack or check in finish, and without chalking in excess of 8 (ASTM D 659), and without fading in excess of 5 NBS units.

Architect shall choose one color from complete list of at least 19 standard colors, excluding metallics. This may be a different color than used on the cap flashing and trim found in Section 07600.

MISCELLANEOUS MATERIALS:

Fasteners: Manufacturer's standard noncorrosive types.

Paper Slip Sheet: 5-lb. rosin-sized building paper.

Gaskets: Pigmented silicone sealant type to match panels, where required and exposed, as approved by the manufacturer.

PANEL FABRICATION; PERFORMANCES:

General: Fabricate and finish panels and accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes, and as required to fulfill indicated performance requirements which have been demonstrated by factory testing. Comply with indicated profiles and dimensional requirements, and with structural requirements.

Required Performances: Fabricate roofing systems that have no leakage at 15 lbs. per sq. ft. pressure with spray test.

Fabricate joints with captive gaskets or separator strips, which provide a tight seal and prevent metal-to-metal contact in a manner which will minimize noise from movements within panel system.

Fabricate units under quality controlled factory conditions, forming all units with sharp, crisp, consistent bends. Manufacturer panels so that there is no oil canning evident when viewed in sun or shade. All bends and formed metal sections shall be straight and true to line and form. Architect shall reject panels that do not conform to the following maximum tolerances:

Length and width: 1/8" in 10 feet.
Squareness: 1/4" across panel, in 10 feet, both ways.

PART 3 - EXECUTION

PREPARATION:

Coordinate work with insulation and decking work. Ensure that decking is securely fastened to the metal deck. The rate of fastening is one fastener for every 2 square feet. Deck should lay flat and smooth, with butt edges tight one to another. Do not proceed with the work until sub-surface work is satisfactory.

INSTALLATION:

General: Comply with panel fabricator's and material manufacturers' instructions and recommendations for installation, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place, with provisions for thermal/structural movement.

Install panels with concealed fasteners so that no exposed fasteners are visible upon completion.

Install elastomeric waterproof membrane in conformance with the manufacturer's instructions and as agreed upon a pre-construction meeting. Provide largest lengths possible. Overlap seams a minimum of 6" or greater as required by the manufacturer.

Installation tolerances: Shim and align panel units within installed tolerance of 1/4" in 20'-0" on level/plumb/slope and

location/line as indicated, and within 1/8" offset of adjoining faces and of alignment of matching profiles.

Joint Sealers: Install gaskets, joint fillers and sealants where indicated and where required for weatherproof performance of panel systems. Provide types of gaskets and sealants/fillers indicated or, if not otherwise indicated, types required by panel manufacturer, in compliance with Section 07900.

Where fasteners penetrate through the membrane, use sealant at each location.

CLEANING AND PROTECTION:

Damaged Units: Replace panels and other components of the work which have been damaged or have deteriorated beyond successful repair.

Cleaning: Remove temporary protective coverings and strippable films (if any) as each panel is installed. Upon completion of panel installation, clean finished surfaces as recommended by panel manufacturer, and maintain in a clean condition during construction.

END OF SECTION 07630

SECTION 07900 - JOINT SEALERS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of each form and type of joint sealer is indicated on drawings or in schedules.

Refer to Division-8 sections for glazing requirements; not work of this section.

Refer to Division-15 and 16 sections for joint sealers in mechanical and electrical work; not work of this section.

SYSTEM PERFORMANCES:

Provide joints sealers that have been produced and installed to establish and maintain watertight and airtight continuous seals.

QUALITY ASSURANCE:

Installer Qualifications: Engage an Installer who has successfully completed within the last 3 years at least 3 joint sealer applications similar in type and size to that of this project and who will assign mechanics from these earlier applications to this project, of which one will serve as lead mechanic.

Single Source Responsibility for Joint Sealer Materials: Obtain joint sealer materials from a single manufacturer for each different product required.

Preconstruction Joint Sealer-Substrate Tests: Submit substrate materials representative of actual joint surfaces to be sealed to manufacturer of joint sealer products for laboratory testing of sealants for adhesion to primed and unprimed substrates and for compatibility with secondary seals, if required, as indicated below:

Use test methods standard with manufacturer to determine if priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealers to joint substrates under environmental conditions that will exist during actual installation.

Testing will not be required when joint sealer manufacturer is able to submit joint preparation data required above which is acceptable to Architect and is based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates matching those submitted.

Preconstruction Field Tests: Prior to installation of joint sealants, field-test their adhesion to joint substrates as follows:

Install joint sealants in 5-foot joint lengths using same materials and methods required for completed work. Allow sealants to cure before testing. Test adhesion to joint substrates by manually trying to pull joint sealant out of joint.

Locate test joints where indicated or, if not indicated, as directed by Architect.

Perform field tests for each application indicated below:

Each type of elastomeric sealant and joint substrate application indicated.

Perform tests in Architect's presence.

SUBMITTALS:

Product Data: Submit manufacturer's technical data for each joint sealer product required, including instructions for joint preparation and joint sealer application.

Samples for Initial Selection Purposes: Submit manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.

Samples for Verification Purposes: Submit samples of each type and color of joint sealer required. Install joint sealer samples in 1/2" wide joints formed between two 6" long strips of material matching the appearance of exposed surfaces adjacent to joint sealers in the work.

Test Reports: Submit the following test reports:

Preconstruction joint sealer-substrate test results including recommendations of joint sealer manufacturer for joint preparation and application of joint sealers applicable to project conditions.

Certified test reports for elastomeric sealants evidencing compliance with requirements specified based on comprehensive testing of current product formulations within a 24-month period preceding date of submission of test reports to Architect. Include test results for aged performance including hardness, stain resistance, adhesion and cohesion under cyclic movement, low-temperature flexibility, modulus of elasticity at 100% strain, effects of heat aging, and effects of accelerated weathering.

Provide test reports from an independent testing laboratory acceptable to Architect and experienced in the testing of elastomeric sealants.

Certified test reports for joint sealers of type indicated below evidencing compliance with specified requirements:

Foam-type filler-sealants.

Preconstruction field test results reported by Installer indicating which products and joint preparation methods demonstrated acceptable adhesion to joint substrates.

Certificates: Submit certificates from manufacturers of joint sealers attesting that their products comply with specification requirements and are suitable for the use indicated.

DELIVERY, STORAGE, AND HANDLING:

Deliver materials to project site in original unopened containers or bundles with labels informing about manufacturer, product name and designation, color, expiration period for use, pot life, curing time and mixing instructions for multicomponent materials.

Store and handle materials to prevent their deterioration or damage due to moisture, temperature change,

contaminants, or other causes.

PROJECT CONDITIONS:

Environmental Conditions: Do not proceed with installation of joint sealers under the following conditions:

When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturer or below 40°F (4.4°C).

When joint substrates are wet due to rain, frost, condensation or other causes.

Joint Width Conditions: Do not proceed with installation of joint sealers when joint widths are less than allowed by joint sealer manufacturer for application indicated.

PART 2 - PRODUCTS

MATERIALS, GENERAL:

Compatibility: Provide joint sealers, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.

Colors: Provide color of exposed joint sealer indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

ELASTOMERIC JOINT SEALANTS:

Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class and Uses.

One-Part Acid-Curing Silicone Sealant: Type S; Grade NS; Class 25; Uses NT, G, A and, as applicable to joint substrates indicated, O.

One-Part Mildew-Resistant Silicone Sealant: Type S; Grade NS; Class 25; Uses NT, G, A, and, as applicable to nonporous joint substrates indicated, O; formulated with furgicide for sealing interior joints with nonporous substrates around ceramic tile, showers, sinks and plumbing fixtures.

Multi-Part Nonsag Urethane Sealant: Type M, Grade NS, Class 25, and complying with the following requirements for uses:

Uses NT, M, A and, as applicable to joint substrates indicated, O.

Two-Part Pourable Urethane Sealant: Type M; Grade P; Class 25; Uses T, M, A and, as applicable to joint substrates indicated, O.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

One-Part Acid-Curing Silicone Sealant:

"Chem-Calk 1200"; Bostik Construction Products Div.
"Dow Corning 999"; Dow Corning Corp.
"SCS 1200"; General Electric Co.
"863"; Pecora Corp.
"Rhodorsil 3B"; Rhone-Poulenc Inc.
"Omniglaze"; Sonneborn Building Products Div., Rexnord Chem. Prod. Inc.
"Proglaze"; Tremco, Inc.

One-Part Mildew-Resistant Silicone Sealant:

"Dow-Corning 786"; Dow Corning Corp.
"SCS 1702"; General Electric Co.
"863 #345 White"; Pecora Corp.
"Proglaze White"; Tremco Corp.

Multi-Part Nonsag Urethane Sealant for Uses NT, M, A, and O:

"Isoflex 2000"; The Harry S. Peterson Company.
"Vulkem 227"; Mameco International, Inc.
"Isoflex 881"; The Harry S. Peterson Company.
"Dymeric"; Tremco Inc.
"Dynatrol 11"; by Pecora Corp.

Two-Part, Pourable, Urethane Sealant:

"Chem-Calk 550"; Bostik Construction Products Div.
"Vulkem 245"; Mameco International, Inc.
"Pourthane"; W.R. Meadows, Inc.
"NR-200 Urexpan"; Pecora Corp.
"Isoflex 880 G.B."; The Harry S. Peterson Co.
"Sonolastic Paving Joint Sealant"; Sonneborne Building Products Div., Rexnord Chem. Prod. Inc.
"Dynatred"; Pecora Corp.

SOLVENT-RELEASE-CURING JOINT SEALANTS:

Butyl Sealant: Manufacturer's standard one part, nonsag, solvent- release-curing, polymerized butyl sealant complying with FS TT-S- 001657 for Type I and formulated with minimum of 75% solids to be nonstaining, paintable, and have a tack-free time of 24 hours or less.

Pigmented Small Joint Sealant: Manufacturer's standard, solvent release-curing, pigmented, synthetic rubber sealant formulated for sealing joints 3/16" or smaller in width.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

Butyl Sealant:

"Chem-Calk 600"; Bostik Construction Products Div.
"BC-158"; Pecora Corp.
"PTI 767"; Protective Treatments Inc.
"Tremco Butyl Sealant"; Tremco Inc.

Pigmented Small Joint Sealant:

"PTI 200"; Protective Treatments, Inc.
"Tremco Seam Sealer"; Tremco Inc.

LATEX JOINT SEALANTS:

Acrylic-Emulsion Sealant: Manufacturer's standard, one part, nonsag, acrylic, mildew-resistant, acrylic-emulsion sealant complying with ASTM C 834, formulated to be painted and recommended for exposed applications on interior and on protected exterior exposures involving negligable joint movement.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

"Chem-Calk 600"; Bostik Construction Products Div.
"AC-20"; Pecora Corp.
"Sonolac"; Sonneborne Building Products Div.; Rexnord Chem. Prod., Inc.
"Tremco Acrylic Latex Caulk"; Tremco Inc.

MISCELLANEOUS JOINT SEALANTS:

Acoustical Sealant for Concealed Joints: Manufacturer's standard, nondrying, nonhardening, nonskinning, nonstaining, gunnable, synthetic rubber sealant recommended for sealing interior concealed joints to reduce transmission of airborne sound.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

Acoustical Sealants For Concealed Joints:

"BA-98"; Pecora Corp.
"Tremco Acoustical Sealant"; Tremco Inc.

FIRE-RESISTANT JOINT SEALERS:

General: Provide manufacturer's standard sealant and accessory materials with fire-resistance rating indicated which are identical to those of assemblies whose fire endurance has been determined by testing per ASTM E 814 by Underwriters Laboratory, Inc. or other testing and inspecting agency acceptable to authorities having jurisdiction.

One-Part Fire-Stopping Sealant: One part elastomeric sealant formulated for use as part of a through-penetration fire-stop system for sealing openings around cables, conduit, pipes and similar penetrations through walls and floors.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

One-Part Fire-Stopping Sealant:

"Dow Corning Fire Stop Sealant"; Dow Corning Corp.
"3M Fire Barrier Caulk CP-25"; Electrical Products Div./3M.

"Tremstop"; by Tremco Co.

JOINT FILLERS FOR CONCRETE PAVING:

General: Provide joint fillers of thickness and widths indicated.

Bituminous Fiber Joint Filler: Preformed strips of composition below, complying with ASTM D 1751:

Granulated cork with asphalt binder encased between 2 layers of saturated felt or glass fiber felt of width and thickness indicated.

JOINT SEALANT BACKING:

General: Provide sealant backings of material and type which are non-staining; are compatible with joint substrates, sealants, primers and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

Plastic Foam Joint Fillers: Preformed, compressible, resilient, non-waxing, non-extruding strips of plastic foam of material indicated below, and of size, shape and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

Either flexible, open cell polyurethane foam or non-gassing, closed-cell polyethylene foam, unless otherwise indicated, subject to approval of sealant manufacturer.

Bond-Breaker Tape: Polyethlene tape or other plastic tape as recommended by sealant manufacturer for preventing bond between sealant and joint filler or other materials at back (3rd) surface of joint. Provide self-adhesive tape where applicable.

MISCELLANEOUS MATERIALS:

Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint sealer/substrate and field tests.

Cleaners for Nonporous Surfaces: Provide non-staining, chemical cleaner of type acceptable to manufacturer of sealant and sealant backing materials which are not harmful to substrates and adjacent nonporous materials.

Masking Tape: Provide non-staining, non-absorbent type compatible with joint sealants and to surfaces adjacent to joints.

Accessory materials for Fire-Stopping Sealants: Provide forming, joint-fillers, packing and other accessory materials required for installation of fire-stopping sealants as applicable to installation conditions indicated.

PART 3 - EXECUTION

INSPECTION:

Require installer to inspect joints indicated to receive joint sealers for compliance with requirements for joint configurations, installation tolerances and other conditions affecting joint sealer performance. Obtain Installer's written report listing any conditions detrimental to performance of joint sealer work. Do not allow joint sealer to proceed until unsatisfactory conditions have been corrected.

PREPARATION:

Pre-Installation Meeting: At Contractor's directions, Installer, joint sealer manufacturers' representatives, and other trades whose work affects installation of joint sealers shall meet at project site to review procedures and time schedule proposed for installation of joint sealers which is coordinated with other, related work.

Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following requirements:

Remove all foreign material from joint substrates which could interfere with adhesion of joint sealer, including dust; paints, except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer; oil; grease; waterproofing; water repellants; water; surface dirt and frost.

Clean concrete,masonry, unglazed surfaces of ceramic tile and similar porous joint substrate surfaces, by brushing, grinding, blast cleaning, mechanical abrading, acid washing or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealers. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.

Remove laitance and form release agents from concrete.

Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile and other non-porous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.

Joint Priming: Prime joint substrates where indicated or where recommended by joint sealer manufacturer based on preconstruction joint sealer-substrate tests or prior experience. Apply primer to comply with joint sealer manufacturer's recommendations. Confine primers to areas of joint sealer bond, do not allow spillage or migration onto adjoining surfaces.

Masking Tape: Use masking tape where required to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

INSTALLATION OF JOINT SEALERS:

General: Comply with joint sealer manufacturers' printed installation instructions applicable to products and applications indicated, except where more stringent requirements apply.

Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C 962 for use of joint sealants

as applicable to materials, applications and conditions indicated.

Solvent-Release-Curing Sealant Installation Standard: Comply with requirements of ASTM C 804 for use of solvent-release-curing sealants.

Latex Sealant Installation Standard: Comply with requirements of ASTM C 790 for use of latex sealants.

Acoustical Sealant Application Standard: Comply with recommendations of ASTM C 919 for use of joint sealants in acoustical applications as applicable to materials, applications and conditions indicated.

Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

Install Joint-fillers of type indicated to provide support of sealants during application and at position required to produce the cross-sectional shapes and depths of installed sealants relative to joint widths which allow optimum sealant movement capability.

Do not leave gaps between ends of joint-fillers.

Do not stretch, twist, puncture or tear joint fillers.

Remove absorbent joint-fillers which have become wet prior to sealant application and replace with dry material.

Install bond breaker tape between sealants and joint-fillers, compression seals or back of joints where required to prevent third-side adhesion of sealant to back of joint.

Install compressible seals serving as sealant backings to comply with requirements indicated above for joint fillers.

Installation of Sealants: Install sealants by proven techniques that result in sealants directly contacting and fully wetting joint substrates, completely filling recesses provided for each joint configuration and providing uniform, cross-sectional shapes and depths relative to joint widths which allow optimum sealant movement capability.

Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform beads of configuration indicated, to eliminate air pockets and to ensure contact and adhesion of sealant with sides of joint. Remove excess sealants from surfaces adjacent to joint. Do not use tooling agents which discolor sealants or adjacent surfaces or are not approved by sealant manufacturer.

Concave joint configuration per Figure 6A in ASTM C 962, unless otherwise indicated.

Flush joint configuration per Figure 6B in ASTM C 962, where indicated.

Use masking tape to protect adjacent surfaces of recessed tooled joints.

Installation of Fire-Stopping Sealant: Install sealant, including forming, packing and other accessory materials to fill openings around mechanical and electrical services penetrating floors and walls to provide fire-stops with fire resistance ratings indicated for floor or wall assembly in which penetration occurs.

PROTECTION AND CLEANING:

Protect joint sealers during and after curing period from contact with contaminating substances or from damage resulting from construction operations or other causes so that they are without deterioration or damage at time of substantial completion. If, despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealers immediately and reseal joints with new materials to produce joint sealer installations

with repaired areas indistinguishable from original work.

Clean off excess sealants or sealant smears adjacent to joints as work progresses by methods and with cleaning materials approved by manufacturers of joint sealers and of products in which joints occur.

SCHEDULE OF JOINT SEALERS:

Provide joint sealer types as listed below for substrates indicated. Ignore sealant types and substrates not applicable to the Work of this project.

Sealer Description	Description of location where typically applied.
One part acid-curing Silicone sealant.	Exposed joints within glazed curtainwall framing system, skylight framing system, and aluminum entrance framing system.
One-part mildew resistant Silicone sealant.	Interior joints in vertical surfaces of ceramic tile in toilet rooms, showers, and kitchens.
Multi-part Nonsag Urethane sealant.	Exterior and interior joints in vertical surfaces of concrete and masonry; between concrete, masonry or stone; between metal and concrete, mortar or stone; perimeters of metal frames in exterior walls; overhead or ceiling joints; and on interior of glazed curtain wall.
Two-part pourable Urethane sealant.	Exterior and interior joints in horizontal surfaces of concrete; between metal and concrete, mortar, stone and masonry.
Butyl Sealant.	Use for setting thresholds of exterior doors and entryways.
Pigmented small joint sealant.	Use to seal miscellaneous seams not exceeding 3/16" in width.
Acrylic-Emulsion Sealant.	All interior joints to be painted not listed otherwise; use to seal seams between meeting materials before painting.
Acoustical Sealant for Concealed Joints.	Use to seal all interior concealed joints to reduce transmission of airborne noise; use to seal seams in vapor membranes.
One-part fire stopping	Through penetrations in fire-resistance

Sealant.	rated floor and wall assemblies involving single and multiple pipes, conduits, etc.

END OF SECTION 07900

SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of standard steel doors and frames is indicated and scheduled on drawings.

Finish hardware is specified elsewhere in Division 8.

Glass and glazing is specified elsewhere in Division 8.

Wood doors are specified elsewhere in Division 8.

QUALITY ASSURANCE:

Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.

SUBMITTALS:

Product Data: Submit manufacturer's technical product data substantiating that products comply with requirements.

Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.

Indicate coordination of glazing frames and stops with glass and glazing requirements.

DELIVERY, STORAGE AND HANDLING:

Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Provide additional sealed plastic wrapping for factory finished doors.

Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.

Store doors and frames at building site under cover. Place units on minimum 4" high wood blocking. Avoid use of non-vented plastic or canvas shelters which could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4" spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, provide steel doors and frames of one of the following:

Steel Doors and Frames, (General):

Allied Steel Product, Inc.
Amweld/Div. American Welding & Mfg. Co.
Ceco Corp.
Copco Door Co.
Curries Mfg., Inc.
Dittco Products, Inc.
Fenestra Corp.
Kewanee Corp.
Mesker Industries, Inc.
Pioneer Bldrs. Products Corp./Div. CORE Industries, Inc.
Steelcraft/Div. American Standard Co.
Trussbilt, Inc.
Republic Builders Products Corp./Subs. Republic Steel.

Thermal Rated Steel Door and Frame Assemblies:

Ceco Corp.
Copco Door Co.
Curries Mfg., Inc.
Fenestra Corp.
Mesker Industries, Inc.
Pioneer Bldrs. Products Corp./Div. CORE Industries, Inc.

MATERIALS:

Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.

Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.

Supports and Anchors: Fabricate of not less than 18- gage galvanized sheet steel.

Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanized items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.

Shop Applied Paint:

Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

Finish: Manufacturer's standard baking epoxy or enamel paint.

FABRICATION, GENERAL:

Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory-assembled before shipment, to assure proper assembly at project site. Comply with SDI-100 requirements as follows:

Interior Doors: SDI-100, Grade II, heavy-duty, Model 1, minimum 18-gage faces.

Exterior Doors: SDI-100, Grade III, extra heavy-duty, Model 2, minimum 16-gage faces.

Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel.

Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel (at fabricator's option).

Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

Thermal-Rated (Insulating) Assemblies:

At exterior locations and elsewhere as shown or scheduled, provide doors which have been fabricated as thermal insulating door and frame assemblies and tested in accordance with ASTM C 236.

Unless otherwise indicated, provide thermal-rated assemblies with U factor of 0.24 Btu/(hr. x ft.sq. x $^{\circ}$F).

Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templated provided by hardware supplier. Comply with applicable requirements of ANSI A115 series specifications for door and frame preparation for hardware.

Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.

Locate finish hardware as indicated on final shop drawings or, if not shown, in accordance with "Recommended Locations for Builder's Hardware," published by Door and Hardware Institute.

Shop Painting:

Clean, treat, and paint exposed surfaces of steel door and frame units.

Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.

Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

Apply finish coat to all doors by electrostatically spraying and baking, to produce a paint thickness of 1.25 mils.

Finish wood trim preparation: Prepare steel frames to receive wood trim in accordance with door and frame schedule.

STANDARD STEEL DOORS:

Provide metal doors of types and styles indicated on drawings or schedules.

Door Louvers:

Provide sightproof louvers for interior doors shere indicated, constructed of inverted V-shaped or Y-shaped blades formed of 24- gage cold rolled steel sheet.

STANDARD STEEL FRAMES:

Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 16-gage cold-rolled furniture steel.

Fabricate frames with mitered corners, welded construction for exterior applications and knocked-down for field assembly at interior applications.

Door Silencers: Except on weatherstripped frames, drill stops to receive 3 silencers on strike jambs of single-swing frames and 2 silencers on heads of double-swing frames.

Plaster Guards: Provide 26-gage steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

PART 3 - EXECUTION

INSTALLATION:

General: Install standard steel doors, frames, and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.

Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames", unless otherwise indicated.

Except for frames located at in-place concrete or masonry and at drywall installations, place frames prior to construction at enclosing walls and ceilings. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders leaving surfaces smooth and undamaged.

Door Installation:

Fit hollow metal doors accurately in frames, within clearances specified in SDI-100.

ADJUST AND CLEAN:

Prime Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

Protection Removal: Immediately prior to final inspection, remove protective plastic wrappings from prefinished doors.

Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION 08110

SECTION 08210 - WOOD DOORS

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to of this section.

RELATED SECTIONS:

Section 08110. Steel Doors and Frames.
Section 08710. Finish Hardware.
Section 08800. Glass and Glazing.

DESCRIPTION OF WORK:

Extent and location of each type of wood door is shown on drawings and in schedules.

Types of doors required include the following:

Solid core interior flush doors with mirror faces
Solid core interior flush doors with hardboard faces.
Hollow core interior flush doors with hardboard faces.

Factory-finishing of wood doors and frames is included in this section.

Factory-fitting: Factory-preparation for hardware (premachining) for wood doors is included in this section.

QUALITY ASSURANCE:

Quality Standards: Provide wood flush doors complying with the following standards:

ANSI/NWMA I.S.1: "Industry Standard for Wood Flush Doors", published by National Woodwork Manufacturers Association (NWMA).

AWI Quality Standards: Section 1300 "Architectural Flush Doors" of "Architectural Woodwork Quality Standards" published by Architectural Woodwork Institute (AWI). Designations for grade and door construction under types of doors refers to this standard.

Fire-Rated Wood Doors: Provide wood doors which are identical in materials and construction to units tested in door and frame assemblies per ASTM E 152 and which are labeled and listed for ratings indicated by UL, Warnock Hersey or other testing and inspection agency acceptable to authorities having jurisdiction.

Manufacturer: Obtain doors from a single manufacturer to ensure uniformity in quality of appearance and construction, unless otherwise indicated.

SUBMITTALS:

Product Data: Submit door manufacturer's product data for each type of wood door, including details of core and edge construction, trim for openings and louvers, and finishing specifications for doors to receive factory finish.

Shop Drawings: Submit shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.

Samples: Submit samples for the following:

Factory-finished Doors: Submit samples, 1'0" square, for each type of factory finish required.

PRODUCT DELIVERY, STORAGE, AND HANDLING:

Protect wood doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with requirements of referenced ANSI standard and recommendations of NWMA pamphlet "How to Store, Handle, Finish, Install, and Maintain Wood Doors", as well as with manufacturer's instructions.

Package doors at factory prior to shipping using manufacturer's standard method.

Identify each door with individual opening numbers which correlate with designation system used on shop drawings for door, frames and hardware, using temporary, removable or concealed markings.

SPECIFIED PRODUCT WARRANTY:

Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or which show telegraphing of core construction in face veneers, or do not conform to tolerance limitations of NWMA and AWI.

Warranty shall be in effect during following period of time after date of substantial completion.

Solid Core Flush Interior Doors:

Life of installation.

Hollow Core Flush Interior Doors:

One year.

Contractor shall be responsible for replacement or refinishing of doors where Contractor's work contributed to rejection or to voiding of manufacturer's warranty.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, provide products of one of the following:

Manufacturers of Doors:

American Doors. Inc.
Landquist and Son, Inc.
Graham Manufacturing Corp.
Ipik Door Co., Inc.
Weyerhauser Company.
VT Industries

INTERIOR FLUSH WOOD DOORS:

Solid Core Doors for Semi-transparent Stain Finish: Comply with the following requirements:

Faces: "A" Grade wood veneer selected by Interior Designer or Owner.

Construction: Inner stiles to be 1-3/8" wide (before prefitting), structural composite lumber (SCL) with the outer stile to be the same species as the face veneer. The outer stile shall be applied after beveling and prior to face application. The door manufacturer shall drill 5/32" diameter polot holes for all honges.

Rails to be SCL, minimum 1-3/8" wide before prefitting.

The core shall be particleboard, 28-32 pounds per cubic foot average density. Comply with particleboard standard ANSI A208.1, Grade 1-LD-2.

Fire-Rated Solid Core Doors: Comply with the following requirements:

Faces and AWI Grade: Provide faces and grade to match non-rated doors in same area of building, unless otherwise indicated.

Construction: Manufacturer's standard core construction as required to provide fire-resistance rating indicated.

Edge Construction: Provide manufacturer's standard laminated edge construction for improved screw-holding capability and split resistance as compared to edges composed of a single layer of treated lumber

Pairs: Furnished formed steel edges and astragals for pairs of fire-rated doors, unless otherwise indicated.

Provide 20-minute rated pairs with fire-retardant stiles which are labeled and listed for kinds of applications indicated without formed steel edges and astragals.

INTERIOR FLUSH WOOD DOORS:

Hollow Core Doors for Opaque Finish: Comply with the following requirements:

Faces: Stain or paint grade wood veneer.
Grade: Custom.
Construction: IHC (Institutional hollow core).

FACTORY-FINISHING:

General: Comply with applicable requirements of Section 01500 of referenced AWI standard for types of finish systems indicated.

Pre-finish doors at factory.

Opaque Finish: Comply with requirements indicated for grade, finish system, color and sheen.

Grade: Custom.

Finish: Manufacturer's standard system with performance characteristics comparable to AWI System #7 catalyzed lacquer.

Color: To match approved sample for color selected by Architect from manufacturer's standard colors.

Sheen: Semi-gloss.

PRE-PREPARATION FOR HARDWARE:

Pre-machine wood doors at factory.

Comply with tolerance requirements of AWI for pre-fitting. Machine doors for hardware requiring cutting of doors Comply with final hardware schedules and door frame shop drawings and with hardware templates and other essential information required to ensure proper fit of doors and hardware.

Take accurate field measurements of hardware mortises in metal frames to verify dimensions and alignment before proceeding with machining in factory.

Metal Astragals: Premachine astragals and formed steel edges for hardware where required for pairs of fire-rated doors.

PART 3 - EXECUTION

INSPECTION:

Require Installer to examine door frames, after their installation, and doors, prior to their hanging, for the following purposes:

To verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.

To verify that doors are free of defects that could cause their rejection.

Obtain Installer's written report listing conditions detrimental to compliance with requirements of this section.

Do not allow Installer to proceed with installation until unsatisfactory conditions have been corrected.

INSTALLATION:

Condition doors to average prevailing humidity in installation areas prior to hanging.

Hardware: For installation see Division-8 "Builders Hardware" section of these specifications.

Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and of referenced AWI standard and as indicated.

Install fire-rated doors in corresponding fire-rated frames in accordance with requirements of NFPA No. 80.

Prefit Doors: Fit to frames and machine for hardware to whatever extent not previously worked at factory as required for fit and uniform clearance at each edge.

Shop-finished Doors: Restore finish on edges of shop-finished doors before installation, if fitting or machining is required at the job site.

ADJUST AND CLEAN:

Operation: Rehang or replace doors which do not swing or operate freely, as directed by Architect.

Finished Doors: Refinish or replace doors damaged during installation, as directed by Architect.

Institute protective measures as recommended and accepted by door manufacturer to assure that wood doors will be without damage or deterioration at time of subsequent completion.

END OF SECTION 08210

SECTION 08305 - ACCESS DOORS

PART I - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-l Specification sections, apply to work of this section.

SUMMARY:

Extent, location, and size of each type of access door required shall be submitted by respective supplier(s) for trades requiring access to concealed equipment to Architect for review and final placement.

SUBMITTALS:

Product Data: Submit manufacturer's technical data and installation instructions for each type of access door assembly, including setting drawings, templates, instructions and directions for installation of anchorage devices.

Include complete schedule, including types, general locations, sizes, wall and ceiling construction details, finishes, latching or locking provisions, and other data pertinent to installation.

Verification: Obtain specific locations and sizes for required access doors from trades requiring access to concealed equipment, and indicate on submittal schedule.

QUALITY ASSURANCE:

Fire-Resistance Ratings: Wherever a fire-resistance classification is required, provide access door assembly with panel door, frame, hinge, and latch from manufacturers listed in Underwriters Laboratories, Inc.; "Building Materials Directory" for rating shown.

Provide UL label on each fire-rated access door.

Size Variations: Obtain Architect's acceptance of manufacturer's standard size units which may vary slightly from sizes indicated.

Coordination: Furnish inserts and anchoring devices which must be built into other work for installation of access doors. Coordinate delivery with other work to avoid delay.

PART 2 - PRODUCTS

MANUFACTURERS:

Manufacturers: Subject to compliance with requirements, provide access doors by one of the following:

Babcock-Davis
J.L. Industries
Karp Associates, Inc.

Milcor Div.; Inryco, Inc.
Nystrom, Inc.

MATERIALS AND FABRICATION:

General: Furnish each access door assembly manufactured as an integral unit, complete with all parts and ready for installation.

Steel Access Doors and Frames: Fabricate units of continuous welded steel construction, unless otherwise indicated. Grind welds smooth and flush with adjacent surfaces. Furnish attachment devices and fasteners of type required to secure access panels to types of support shown.

Frames: Fabricate from l6-gage steel.

For gypsum drywall or gypsum plaster, furnish perforated frames with drywall bead.

Flush Panel Doors: Fabricate from not less than l4-gage sheet steel, with concealed spring hinges or concealed continuous piano hinge set to open l75 degrees. Finish with manufacturer's factory-applied prime paint.

For fire-rated and non-rated units, provide manufacturer's standard insulated flush panel/doors, with continuous piano hinge, self-closing mechanism, and automatic latch.

Ceiling Access Hatches: Provide 1 hour rated insulated access hatch to mechanical attic, 4'6" x 2'6". Provide 1 hour rated access hatch to 2nd floor corridor attics, 2'0" x 2'0".

PART 3 - EXECUTION

INSTALLATION:

Comply with manufacturer's instructions for installation of access doors.

Coordinate installation with work of other trades.

Set frames accurately in position and securely attach to supports with face panels plumb or level in relation to adjacent finish surfaces.

ADJUST AND CLEAN:

Adjust hardware and panels after installation for proper operation.

Remove and replace panels or frames which are warped, bowed or otherwise damaged.

END OF SECTION 08305

SECTION 08410 - ALUMINUM ENTRANCES AND STICK FRAMING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

SUMMARY:

Section includes standard aluminum entrances (doors), fixed openings and framing as indicated on drawings and schedules. Glazing, specified in Section 08800, shall be 1" insulated at all exterior walls.

Section also includes extruded aluminum and 1/8" break metal infill sections and extension finished in color to match framing, where shownand required at corners, infill sections and other special conditions.

Hardware is specified in Section 08710, except for weatherstripping and sweeps, which is a part of this section.

Colors and types of sealants shall be as specified in Section 07900.

RELATED WORK:

Section 07900, Joint Sealers.
Section 08710, Hardware.
Section 08800, Glass and Glazing.

QUALITY ASSURANCE:

1. Thermal Movement: Systems shall withstand temperature range of 120 deg. F (67 deg. C), that could cause a metal surface temperature range of 180 deg. F (100 deg. C) within the framing system.

2. Wind Loading: Uniform pressure of 25 psf inward and 25 psf outward when tested in accordance with ASTM E 330. Design system in accordance with UBC exposure "B", and for buildings of the height designed on this project.

3. Fixed Framing Transmission Characteristics: Comply with the following:

Air Infiltration: Not more than 0.06 CFM per sq. ft. of fixed area when tested in accordance with ASTM E 283 (at 1.567 psf).

Water Penetration: No water penetration as defined in the test method when tested in accordance with ASTM E 331, (test pressure of 6.24 psf).

Condensation Resistance: Not less than 54 CRF min. per AAMA 1502.7.

SYSTEMS DESCRIPTION

System shall be as follows:

Equal to Kawneer, "450 Trifab II" with 1" glass, 1-3/4" faceplate and 4-1/2" total system depth, at all horizontal, vertical and perimeter frames. Provide system at Lobby windows, Breakfast Area windows and entire length of viewpanel separating Spa and Fitness Area.

Provide sub-frame as required at entrance doors.

Provide 1/8" break metal sections for base, jamb head and accent trim, where required and shown, where straight/non-formed pieces can be used.

Entrance doors shall be manufacturer's standard medium stile doors.

SUBMITTALS:

1. Product Data: Manufacturer's product specifications, details, and installation recommendations for all components.

2. Shop Drawings: Shop drawings indicating all layouts, details and elevations.

3. Samples: Submit two samples of each selected finish.

QUALITY ASSURANCE:

1. Manufacturer's Qualifications: Provide products produced by a single manufacturer with not less than 5 years successful experience in the fabrication of assemblies of the type and quality required.

2. Installer's Qualifications: 5-years min.successful exper- ience in the installation of systems similar to those required.

3. Manufacturer shall be responsible for design intent and performances specified. If manufacturer is other than Kawneer, it shall be the manufacturer's responsibility to conform to the specified systems.

PROJECT CONDITIONS:

Field Measurements: Field measure before fabrication to ensure proper fitting of work; show measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay in the work. Where necessary, proceed with fabrication without field measurement, and coordinate fabrication tolerances to ensure proper fit.

WARRANTY:

Special Product Warranty: Submit written 3 year warranty, executed by the Contractor, Installer and Manufacturer, agreeing to repair or replace units (including reglazing) which fail in materials or workmanship within the specified warranty period. Failures include, but are not necessarily limited to structural failures including excessive deflection, excessive leakage or air infiltration, faulty operation, and deterioration of metals, metal finishes and other materials beyond normal weathering.

PART 2 - PRODUCTS

MANUFACTURERS:

Subject to compliance with the specified requirements, provide systems from one of the following:

Kawneer Company, Inc.
PPG Industries, Inc.
Vistawall, Inc.
EFCO Corp.
CMI-Cronstroms, Inc.

MATERIALS:

Aluminum Members: ASTM B 221 for extrusions and ASTM B 209 for sheet or plate.

Fasteners: Provide fasteners of aluminum, nonmagnetic stainless steel, or other materials warranted by the manufacturer to be noncorrosive and compatible with aluminum components, hardware, anchors and other components. Provide concealed fasteners wherever possible.

Concealed Flashing: 26 gage minimum dead-soft stainless steel, or 0.026" minimum extruded aluminum of alloy.

Brackets and Reinforcements: Where feasible, provide high- strength aluminum brackets and reinforcements; otherwise provide nonmagnetic stainless steel or hot-dip galvanized steel complying with ASTM A 386.

Concrete/Masonry Inserts: cast-iron, malleable iron, or hot-dip galvanized steel complying with ASTM A 386.

Compression Weather-Stripping: Molded neoprene complying with ASTM D 2000 or molded PVC complying with ASTM D 2287.

Sliding Weather-Stripping: Replaceable weather-stripping of wool, polypropylene, or nylon woven pile, with nylon fabric or aluminum strip backing, complying with AAMA 701.2.

Sweeps shall include factory paint finish on the exposed metal to match doors.

FRAMING SYSTEMS:

Framing System: Provide systems as shown on the drawings, each to be a thermally improved/broken framing system with 1" insulated glass and section sizes as specified, with provisions for glass replacement.

Provide all necessary elements and components of the system including corner covers, plates, vents, sub-frames, clips, dams, and other accessories for a complete system.

ALUMINUM DOORS:

Stile and Rail Aluminum Door: Provide 1-3/4" thick medium stile doors fabricated of tubular and channel frame assemblies, as indicated, with removable stops. Provide welded or mechanical joints in accordance with manufacturer's standards; reinforce as necessary to support required loads using heavy inserted rein
forcing plates and concealed tie-rods or j-bolts. Include snap- on, extruded aluminum stops for glass removal from the inside.

Provide products from Kawneer, Milco, PPG, Tubecraft, Tubelite or Vistawall.

Hardware: Provide manufacturer's standard weatherstripping and sweep strips, with any metal components finished

in color to match framing system. Refer to hardware section in Division-8 for all other requirements for hardware items.

FABRICATION:

Prefabrication: Before shipment to the project site, complete fabrication, assembly, finishing, hardware application, and other work to the greatest extent possible. Disassemble components only as necessary for shipment and installation.

Do not drill and tap for surface-mounted hardware items until time of installation of project site.

Welding: Comply with AWS recommendations; grind exposed welds smooth and restore mechanical finish.

Reinforcing: Install reinforcing as required for hardware and necessary for performance requirements, sag resistance and rigidity.

Dissimilar Metals: Separate dissimilar metals with zinc chromate primer, bituminous paint, or other separator that will prevent corrosion.

Continuity: Maintain accurate relation of planes and angles, with hairline fit of contacting members.

Uniformity of Finish: Abutting extruded aluminum members shall not have an integral color or texture variation greater than half the range indicated in the sample pair submittal.

Weather-Stripping: For exterior doors, provide compression weather-stripping against fixed stops; at other edges, provide sliding weather-stripping retained in adjustable strip mortised into door edge.

Provide finger guards of collapsible neoprene or PVC gasketing securely anchored into frame at hinge-jamb of center-pivoted doors.

FINISHES:

Fluoropolymer Coating: At all doors, framing systems and aluminum components, provide manufacturer's special kynar (Kynar 500) pigmented 2-coat baked enamel coating system of 33% thermoplastic polymer of vinylidine fluoride, 1.2 mils dry film thickness, medium gloss per ASTM D 523. All exposed components shall have even, consistent finish throughout.

One custom color shall be selected (not to be an "exotic"), for all components and systems.

PART 3 - EXECUTION

INSTALLATION:

Comply with manufacturer's instructions and recommendations for installation.

Set units plumb, level, and true to line, without warp or rack of framing members, doors, or panels. Provide proper support and anchor securely in place.

Drill and tap frames and doors and apply surface-mounted hardware items. Comply with hardware manufacturer's instructions and template requirements. Use concealed fasteners wherever possible.

Set sill members and other members in bed of sealant as indicated, or with joint fillers or gaskets as indicated to provide weathertight construction. Comply with requirements of Division 7 for sealant, fillers, and gaskets.

ADJUSTING AND CLEANING:

Adjust operating hardware to function properly, for smooth operation without binding, and for weathertight closure.

Clean the completed system, inside and out, promptly after installation, exercising care to avoid damage to coatings.

PROTECTION:

Institute protective measures required throughout the remainder of the construction period to ensure that aluminum entrances and storefronts will be without damage or deterioration, other than normal weathering, at time of acceptance.

END OF SECTION 08410

SECTION 08461 – AUTOMATIC ENTRANCE SYSTEMS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to the work of this section.

DESCRIPTION OF WORK:

Furnish and install automatic equipment as indicated on drawing and specifications

RELATED WORK:

ELECTRICAL INSTALLER shall furnish and install all conduit and electrical wiring for activating devices and door operators. A minimum of 5 amperes, 115 volts, A/C, 1-phase circuit shall be furnished for each door operator, terminate and connect to operator control panel, in operator housing.

CONCRETE INSTALLER shall prepare floor at location of automatic entrance system to accommodate the surface or recessed electric switch mats indicated on drawings.

QUALITY ASSURANCE:

A. Manufacturer's Qualifications:
Products specified shall be represented by a factory authorized and trained distributor. Distributor shall maintain a parts inventory and trained service personnel capable of providing service.

B. All automatic equipment to comply with ANSI A156.10.

C. Gyro Tech equipment as manufactured by NABCO ENTRANCES, INC. has been specified and shall be quoted as a base bid. Other systems can be quoted along with information specifically detailing the differences from the following specification.

SUBMITTALS:

A. Shop drawings showing complete elevations, details and methods of anchorage to location; installation of hardware; size, shape, joints and connections; and details of joining with other construction.

B. Templates and diagrams and/or shop drawings as needed shall be furnished to fabricators and installers of related work for coordination of sliding door system with concrete work, electrical work, and other related work.

C. A copy of appropriate manual shall be provided to owner's representative upon completion of installation.

WARRANTY:

Warranty power operators, controls and labor provided by automatic sliding door equipment installer against defects in material and workmanship, at no cost to owner, for a period of one year from date of substantial completion. Provide warranty to owner after completion of installation.

COMPLIANCE:

A completed American Association of Automatic Door Manufacturer (AAADM) compliance form shall be submitted as proof of compliance with ANSI A156.10 Standard for power operated pedestrian doors. Door(s) shall be inspected and form shall be signed by an AAADM certified inspector prior to placing door(s) in operation.

PART 2 - PRODUCTS

MANUFACTURERS:

Subject to compliance with requirements, provide products equal to that as supplied by the following:

Automatic equipment and controls shall be manufactured by:
NABCO ENTRANCES INC.
S82 W18717 Gemini Drive
P.O .Box 906
Muskego, W I53150
Phone: (877)622-2694
Fax: (888) 679-3319

MATERIALS:

A. GT Model #1175 Whisperslide as indicated on door schedule and details.

B. Mode of operation: Sliding door shall be driven by an electro-mechanical operator with a micro-computer control system. The door will be pulled from closed to open and open to close position stopping the door in both directions by electrically reducing the voltage, stalling door against mechanical stop. Opening, closing speeds and hold open time shall be adjustable. A reinforced timing belt shall be used to convert rotating motion from the operator sprocket into horizontal motion of the door

C. Components:

1. Aluminum doors, sidelites, operator housing and frame.
2. Rollers-support, anti-riser and guide.
3. Door carrier hanger assembly, breakaway latch, limiting arm and door lock.
4. Air infiltration and intrusion protection equipment.
5. Gyro Tech Whisperslide power close operator with micro-computer control.
6. (Optional) Access Security Equipment

1a) Door panel(s) and sidelite(s) panel shall be factory assembled with 3/8"-16 threaded tie rods spanning full length of top and bottom rails. Snap-in glass stop with integral extruded vinyl standoff to accommodate glass flexing. Provide a horizontal muntin bar to provide glass protection.

1b) Operator housing section shall be three piece construction 6-1/2"(165.10 mm) by 7-1/2"(190.5 mm) extrusion with enclosed end caps. All header sections shall have a minimum thickness of 0.140" (3.6mm) and shall be fabricated of 6063-T5 aluminum alloy.

1c)Sidelite configuration shall be fixed type.

1d) Finish: Aluminum shall have a factory white finish

1e) Vertical jambs shall be of 1-3/4" (44.4mm) by 4-1/2" (114.3mm) extruded aluminum tubes.

2a) The door assembly shall ride on two 2-11/16" (68.3mm) dia. support rollers incorporating lubricated sealed ball bearings rated at 250 lbs. each. The door shall be held on the track by means of two 2-7/16" (62.2mm) anti-riser rollers. Lateral adjustment of the door assembly shall provide positive sealing at door edges. Door height shall be adjustable by ± 9/32" (7.1mm).

2b) Fixed Sidelite and Pocket Units - Each door shall include one guide assembly incorporating double rollers with sleeve bushings. Guide assembly shall be attached to the door with 10 gage (3.44mm) thick formed guide bracket. All steel brackets and fittings shall be plated for corrosion resistance.

3a) Entrance systems shall have door panels attached to a door carrier hanger assembly by means of an adjustable support rod pivot assembly and corrosion resistant adjustable breakaway release latch holding panel in the closed position under normal automatic operation. The support rod pivot assembly allows the door panel to be broken outward at any point in the door's opening or closing cycle allowing for safe emergency egress in compliance with NFPA 101. The door panel in the breakout mode disconnects the power to the control circuit inhibiting automatic door operation. The control circuit shall be resettable by re-engaging the door panel with the door carrier hanger assembly. Breakaway pressure shall be field adjustable (5-50 lbs.) To meet local building code requirements but will be factory set at 50 lbs. maximum.

3b) Door assembly shall have a limiting arm to control the door as it swings in the direction of egress.

3c) The active door will incorporate a two point lock securing the lead stiles and door carrier hanger assembly. The lock assembly will incorporate a key cylinder on the exterior and a thumb turn on the interior in accordance with NFPA 101.

4) Double pile weatherstripping on the lead edge of the sliding door(s) .36" thick (9.1mm) including the area of the lock.

4a) 11/16" (17.3mm) wide nylon brush weatherstripping on the vertical stile of both the sliding door panel(s) and sidelite(s) panels

4b) 11/16" (17.3mm) wide nylon brush weatherstripping mounted on door bottom.

5) GyroTech Whisperslide Power Operator: Completely assembled and sealed unit which shall include gear-driven transmission, and bearings, all located in cast aluminum housing and filled with special lubricant for extreme temperature conditions. Attached to transmission system shall be a DC shunt-wound permanent magnet motor with sealed ball bearings. 1/10 HP motor shall operate from 115-volt supply and require less than 5 amps at full stall.

5a) Power Operator Control: Shall be a microprocessor unit. To facilitate service and continuing operations, the unit supplied with the slider shall also be able to operate other doors supplied for the project including swing or folding types. The microprocessor control shall allow the opening speed, closing speed, back check speed and latch check speed each to be adjusted separately and independently from each other to meet specific site conditions. The doors shall be set to be held closed with the motor. The control system shall also be set up to provide a count of the number of operations of the doors for maintenance purposes. Adjustable opening and closing speeds shall be set in accordance with ANSI 156.10. All adjustments shall be specific and reproducible. Settings with rotary switches are not allowed.

6) Access Security Equipment: Shall consist of Gyro Tech 24 V.D.C. power locking device. Lock shall be concealed in header. Sliding door to be fitted with Adams Rite 8600 Concealed Vertical Rod tamper proof exit device.

SENSOR DEVICES:

Acusensor: Manufactured by NABCO ENTRANCES, INC.
Sensors for door activation and threshold sensing shall provide a rectangular shaped pattern with a sensing area next to the door system. To provide optimum coverage to meet specific site conditions the sensing pattern shall be adjustable both in width and depth of coverage while remaining at a full power setting. Units shall be supplied and installed on both sides of the operator housing to activate doors for single or two-way traffic. Units shall be sealed for protection against dust, moisture and the elements.

PART 3 - EXECUTION

INSTALLATION:

Automatic door equipment shall be installed by factory-trained installers in compliance with manufacturer's recommendations and approved shop drawings.

CLEANING & PROTECTION:

After installation, clean framing members as recommended by the manufacturer. Aluminum surfaces in contact with masonry, concrete or steel shall be protected from contact by use of neoprene gaskets, where indicated, or a coat of bituminous paint to prevent galvanic or corrosive action. Advise general contractor to protect unit from damage during subsequent construction activities

END OF SECTION 08461

SECTION 08520 - ALUMINUM WINDOWS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to the work of this section.

DESCRIPTION OF WORK:

Section includes commercial grade aluminum, single hung and fixed window units as shown on the drawings and as specified herein.

RELATED WORK:

Section 07900, Joint Sealers.
Section 08410, Aluminum Entrances and Stick Framing.
Section 08800, Glass and Glazing.

SYSTEM DESCRIPTION:

Design Requirements: Comply with air infiltration, water penetration and structural performance requirements indicated in AAMA 101-85 for the type, grade and performance class of window units required.

Optional Performance Class Requirements: Where the required design pressure exceeds the minimum for the specified window grade, comply with requirements of AAMA 101-85, Section 3, "Optional Performance Classes" for higher than minimum performance class.

Heights of window units above grade at the window centerline, are indicated or can be determined from the drawings. Consult with the Architect for clarification needed to confirm required loading and test pressures.

Design wind velocity at the project site is 70 mph.
Design wind pressure for all windows is 50 lbs./ft. sq.

Testing: Test each type and size of required window unit through a recognized testing laboratory or agency, in accordance with ASTM E 330 for structural performance, with ASTM E 283 for air infiltration and with ASTM E 547 for water penetration. Provide certified test results.

Air Infiltration: Provide units with an air infiltration rate of not more than 0.37 cfm/ft. of operable sash joint for an inward test pressure of 6.24 psf.

Water Penetration: Provide units with no water penetration as defined in the test method at an inward test pressure of 8.00 lbf/sq. ft., for 15 minutes.

Condensation Resistance: Where window units are indicated to be of "thermal-break construction", provide units which have been tested for thermal performance in accordance with AAMA 1502 showing at condensation resistance factor (CRF) of 50.

Thermal Transmittance: Provide window units which have a "U"- value maximum of 0.69 BTU/hour/sq. ft./deg. F at 15 mph exterior wind velocity.

SUBMITTALS:

1. Shop Drawings: Submit shop drawings for each type of window including information not fully detailed in the manufacturer's standard product data including typical unit elevations, details, anchors, hardware, operators, accessories and glazing details.

2. Product Data: Submit manufacturer's product specifications, technical product data, recommendations and standard details for each type of aluminum window unit required.

3. Samples: Submit samples of the specified finish on l2" lengths of window members.

4. Certification: Provide certification by the manufacturer showing that each type, grade and size of window unit complies with requirements where the manufacturer's standard window units have been tested in accordance with specified tests and meet performance requirements specified. Where such testing has not been accomplished, perform required tests through a recognized testing laboratory or agency and provide certified test results.

QUALITY ASSURANCE:

1. Standards: Requirements for aluminum windows, terminology and standards of performance, and fabrication workmanship are those specified and recommended in AAMA 101-85 and applicable general recommendation published by AAMA and AA.

2. Single Source Responsibility: Provide aluminum windows produced by a single manufacturer capable of showing prior production of units similar to those required.

PROJECT CONDITIONS:

Field Measurements: Where possible, check actual window openings in construction work by accurate field measurement before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress as directed by the Contractor to avoid delay of work. Where necessary, proceed with fabrication without field measurements, and coordinate fabrication tolerances to ensure proper fit of window units.

PART 2 - PRODUCTS

MANUFACTURERS:

Manufacturers: Subject to compliance with requirements, provide products equal to the following:

All Seasons 200 Series, 1/2" insulated glass, factory white finish approved by Architect.
As manufactured by ALL SEASONS SASH & DOOR MFG., Longview, TX.

MATERIALS:

Aluminum Extrusions: Provide alloy and temper recommended by the window manufacturer for the strength, corrosion-resistance, and application of required finish, but not less than 22,000 psi ultimate tensile strength and not less than 0.062" thickness at any location for main frame and sash members.

Fasteners: Provide aluminum, non-magnetic stainless steel, epoxy adhesive , or other materials warranted by the manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors and other components of window units.

Reinforcement: Where fasteners screw-anchor into aluminum less than 0.125" thick, reinforce interior with aluminum or non-magnetic stainless steel to receive screw threads, or provide standard non-corrosive pressed-in splined grommet nuts.

Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match the finish of the member or hardware being fastened, as appropriate.

Anchors, Clips and Window Accessories: Fabricate anchors, clips and window accessories of aluminum, non-magnetic stainless steel or hot-dip zinc coated steel or iron complying with the requirements of ASTM A 386; provide sufficient strength to withstand design pressure indicated.

Compression Type Glazing Strips and Weatherstripping: Unless otherwise indicated, and at the manufacturer's option, provide compressible stripping for glazing and weatherstripping such as molded EPDM or neoprene gaskets complying with AAMA SG-1 or with ASTM D 2000 Designation 2BC415 to 3BC620, or molded PVC gaskets complying with ASTM D 2287, or molded expanded EPDM or neoprene gaskets complying with ASTM C 509, Grade 4.

Sealant: For sealants required within fabricated window units, provide type recommended by the manufacturer for joint size and movement. Sealant shall remain permanently elastic, non- shrinking, and non-migrating. Comply with Division-7 "Joint Sealants" section of these specifications for selection and installation of sealants.

Wire Fabric Insect Screen: Provide 18 x 16 mesh of 0.013" diameter extruded aluminum wire, complying with FS RR-W-365, Type VII. Frame shall include spring loaded plungers for removal, and shall be structurally adequate in supporting screens with no sag or warpage.

WINDOW PERFORMANCE CLASSIFICATION:

Heavy Commercial Windows: Provide window units complying with requirements of AAMA Grade and Performance Class HC40.

WINDOW UNITS:

General: The following paragraphs define the operating arrangement for the types of sash required in window units and specify minimum provisions for each type. Window units shall contain the manufacturer's prefered thermal break design for separating interior metal from exterior metal, and shall be continuous throughout the entire window unit. Windows shall include 5/8" thick insulated glass units, which are specified in Section 08800, Glass and Glazing. Refer to the drawings which indicate which panels of each window unit are operable sash and which are fixed.

Single-Hung windows are window units containing a fixed upper sash at the outer side of the frame and an operating lower sash at the inboard side of the frame. Sash operation shall permit inside cleaning of the glass.

Fixed windows are window units consisting of a glazed frame installed into one opening and are not operable.

HARDWARE:

General: Except to the extent that more specific or stringent requirements are indicated, provide the manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended.

Sash lock shall be provided at interior side of all single hung window units in compliance with AAMA.

Glides: Manufacturer's standard jamb glides.

Position Devices: Manufacturer's standard details for positioning open sash at a variety of locations up and down the jamb.

Limit Device: As required.

ACCESSORIES:

General: Except to the extent that more specific or stringent requirements are indicated, provide the manufacturer's standard accessories that comply with indicated standards.

Insect Screens: Provide insect screen units for each operable exterior sash or vent. Locate screen units on either the inside or outside of the sash, depending upon window type and location shown. Where possible, design window units and hardware to accommodate screens in a tight-fitting removable arrangement, with a minimum of exposed fasteners and latches, and without the necessity of wickets for hardware access. Where wickets are necessary, provide either sliding or hinged type, framed and trimmed for durability during handling, and for a tight fit.

Fabricate screen frames of extruded or formed aluminum tubular-shaped members of 0.040" minimum wall thickness, with miteredor coped joints and concealed mechanical fasteners. Provide removable PVC spline-anchor concealing the edge of the screen frame. Finish frames to match window units, unless otherwise indicated.

Weatherstripping: Provide sliding-type weatherstripping at locations where sash rails slide horizontally or vertically along the unit frame. Unless otherwise indicated, provide double compression-type weatherstripping at the perimeter of each operating sash where sliding-type weatherstripping is not appropriate.

Provide weatherstripping locked-in to extruded grooves in the sash.

FABRICATION:

General: Except to the extent that more specific or stringent requirements are indicated, provide manufacturer's standard fabrication that complies with indicated standards and that produces units that are reglazable without dismantling sash framing. Include a complete system for assembly of components and anchorage of window units, and prepare sash for glazing except where preglazing at the factory is indicated.

Sizes and Profiles: Required sizes for window units and profile requirements are indicated on the drawings. Variable dimensions are indicated along with maximum and minimum dimensions as required to achieve design requirements and coordination with other work.

Details shown are based upon standard details by one or more manufacturers. Similar details by other manufacturers will be acceptable, provided they comply with size requirements, minimum/maximum profile requirements, and performance standards as indicated or specified.

Thermal-Break Connection: Manufacturer's standard, prefered thermal barrier design, located between exterior materials and window members exposed on the interior, in a manner that eliminates direct metal-to-metal contact. Provide thermal-break construction which has been in use for not less than 3 years, has been tested to demonstrate resistance to thermal conductance and condensation, and has been tested to show adequate strength and security of glass retention.

Provide hardware with low conductivity or non-metallic material for hardware bridging thermal breaks at frame or vent sash.

Provide weepholes and internal water passages to conduct infiltrating water to the exterior.

Provide water-shed members above side-hinged ventilators and similar lines of natural water penetration.

Provide subframes and panning with anchors for window units where shown, of profile and dimensions indicated but not less than 0.062" thick extruded aluminum. Miter or cope corners, and weld and dress smooth with concealed mechanical joint fasteners. Finish to match window units.

Provide mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, in the manner indicated.

Glazing Stops: Provide screw-applied or snap-on glazing stops, coordinated with glass selection and glazing system indicated. Finish glazing stops to match window units.

Preglazing Fabrication: Preglaze window units at the factory where possible and practical for applications indicated. Comply with glass and glazing requirements of the "Glass and Glazing" sections of these specifications, and AAMA 101-85.

FINISHES:

Fluorocarbon Coating System: Manufacturer's special, 2-coat thermocured system, complying with AAMA 605.2, and ASTM D 523, composed of specially formulated inhibitive primer and fluorocarbon color topcoat containing polyvinyldene fluoride resin, equal to Kynar 500.

Color and Gloss: Factory white.

PART 3 - EXECUTION

INSPECTION:

Inspect openings before beginning installation. Verify that rough or masonry opening is correct and the sill plate is level.

Surfaces shall be visibly dry and free of excess mortar, sand and other construction debris.

Wood framing shall be dry, clean, sound and well-nailed, free of voids and without offsets at joints. Ensure that nail heads are driven flush with surfaces in the opening and within 3 inches of the opening.

Metal surfaces shall be dry, clean, free of grease, oil, dirt, rust and corrosion, and welding slag, without sharp edges or offsets at joints.

INSTALLATION:

Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, and other components of the work.

Set units plumb, level and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place.

Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with the requirements specified under paragraph "Dissimilar Materials" in the Appendix to AAMA 101-85.

Set sill members and other members in a bed of compound or with joint fillers or gaskets, as shown, to provide weathertight construction. Refer to the "Joint Sealer" sections of Division-7 for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the work.

Compounds, joint fillers and gaskets to be installed after installation of window units are specified as work in another section in Division-7.

FIELD QUALITY CONTROL:

Owner shall choose to conduct on-site tests for air and water infiltration with the window manufacturer's representative present. The Architect will select 3 units to be tested. Test units not meeting specified requirements shall cause testing of all similar units shall be tested and corrected at no cost to the Owner. Testing shall be performed by an accredited testing agency selected by the Architect.

Air Infiltration Tests: Conduct tests in accordance with the requirements of ASTM E 783. Allowable infiltration shall not exceed 1.5 times the amount indicated.

Water Resistance Tests: Conduct tests in accordance with the requirements of AAMA 501.3. No water leakage is permitted after a 15 minute test.

If window units fail during testing the window supplier shall pay for all tests prior to and after the failure(s) until units are replaced and repaired to meet specified performances.

ADJUSTING:

Adjust operating sash and hardware to provide a tight fit at contact points and at weatherstripping, for smooth operation and a weathertight closure.

CLEANING:

Clean aluminum surfaces promptly after installation of windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt and other substances. Lubricate hardware and other moving parts.

Clean glass of preglazed units promptly after installation of windows; comply with requirements of the "Glass and Glazing" section for cleaning and maintenance.

PROTECTION:

Initiate and maintain protection and other precautions required through the remainder of the construction period, to ensure that, except for normal weathering, window units will be free of damage or deterioration at the time of substantial completion.

END OF SECTION 08520

SECTION 08710 - FINISH HARDWARE

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to the work of this section.

DESCRIPTION OF WORK:

This section includes items known commercially as builders hardware which are required for swinging, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame.

Section includes finish hardware as indicated or implied on drawings and specified herein.

RELATED WORK:

Section 06200, Finish Carpentry.
Section 08110, Steel Doors and Frames.
Section 08210, Wood Doors.
Section 08410, Aluminum Storefronts, Fixed openings & Entrances.

Hardware for millwork, such as cabinets, reception desk and other items, is outlined and provided under Section 06400, Architectural Millwork.

QUALITY ASSURANCE:

1. Manufacturer: Obtain each type of hardware from only one manufacturer.

2. Supplier: A recognized architectural finish hardware supplier, with warehousing facilities, furnishing hardware in the project's vicinity for a period of not less than 5 years, and who is, or who employs an experienced architectural consultant who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements, to Owner, Architect and Contractor.

3. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 and local building code requirements. Provide only hardware which has been tested and listed by UL or FM for types and sizes of doors required and complies with requirements of door and door frame labels.

4. Keying: Coordinate the keying with the new set of cylinders and locking devices with Owner's requirements and master keying of locks. Verify the masterkey system of lock cylinders.

SUBMITTALS:

1. Product Data: Manufacturers product data for all hardware.

2. Hardware Schedule: Submit five copies of final hardware schedule. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function and finish of hardware.

3. Samples: Provide samples of hardware as required by Architect. Samples may be used after review as a part of the Work.

4. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.

PRODUCT HANDLING:

Tag each item or package separately, with identification related to final hardware schedule, and include basic installation instructions with each item or package.

Packaging of hardware, is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.

Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.

Provide secure lock-up for hardware delivered to the project, but not yet installed. Control handling and installation of hardware items which are not immediately replaceable, so that completion of the work will not be delayed by hardware losses, both before and after installation.

PART 2 - PRODUCTS

HARDWARE FINISHES:

Provide quality of finish, including thickness of plating or coating (if any), composition, hardness and other qualities complying with manufacturer's standards, but in no case less than specified for the applicable units of hardware by referenced standards.

In general, exposed hardware shall be satin brass at all interior doors and exterior doors, Duronodic aluminum and brushed chrome where noted.

The designations used in schedules and elsewhere to indicate hardware finishes are the industry-recognized standard commercial finishes, except as otherwise noted.

Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.

Tools and Maintenance Instructions for Maintenance: Furnisha complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.

PART 3 - EXECUTION

INSTALLATION:

Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by Architect.

Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the Division-9 sections. Do not install surface-mounted items until finishes have been completed on the substrate.

Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant.

ADJUST AND CLEAN:

Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

Clean adjacent surfaces soiled by hardware installation.

Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make final check and adjustment of all hardware items in such space or area. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

Instruct Owner's Personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustment of hardware.

ACCEPTABLE MANUFACTURERS:

Manufacturer's product designations: One or more manufacturers are listed for each hardware type required. An asterisk (*) after name indicates product designation listed in hardware schedule. Provide product of manufacturer specified or from the following approved list, which comply with requirements specified elsewhere in this section.

Butt Hinges: McKinney, Hager*, Lawrence or Stanley.

Flush Bolts: Yale, Door Controls, Glynn-Johnson, Ives* or Quality.

Locks: Yale*, Schlage, Russwin, or Corbin.

Lever Handles: Yale*, Schalage.

Pulls: Yale, Hiawatha, Hager*.

Panic Hardware: Yale*, Von Duprin.

Coordinators: Door Controls*, Glynn-Johnson or Ives.

Closers: LCN, Yale*.

Protective Plates: Hager*, Hiawatha, or Yale.

Overhead Stops: Glynn-Johnson* or Rixson-Firemark.

Floor or Wall Stops: Glynn-Johnson, Ives* or Quality.

Thresholds and weatherstrips: Reese*, Pemko, or National Guard.

*indicates base specification

REFER TO HARDWARE SCHEDULE ATTACHED AT THE END OF THIS SECTION

END OF SECTION

HARDWARE SCHEDULE

2007-460H COMFORT SUITES
VICKSBURG MS

Architect: RICHARD MOLENAAR

Customer: -

Schedule Date: 10/15/07

Revision Date:

NOTE: THE FOLLOWING SCHEDULE OF HARDWARE GROUPS IS TO BE CONSIDERED A GUIDE ONLY. THE SUPPLIER IS CAUTIONED TO REFER TO GENERAL CONDITIONS, SPECIAL CONDITIONS, AND THE PREAMBLE TO THIS SECTION. IT IS THE HARDWARE SUPPLIER'S RESPONSIBILITY TO FURNISH ALL REQUIRED HARDWARE. SHOULD ANY PARTICULAR DOOR OR ITEM BE OMITTED IN ANY SCHEDULED HARDWARE SET, PROVIDE DOOR OR ITEM WITH HARDWARE SAME AS REQUIRED FOR SIMILAR PURPOSES. THIS HARDWARE CAN BE PURCHASED BY CONTACTING HOTEL RESOURCES GROUP AT 1-800-679-5768.

HARDWARE SCHEDULE

2007-460H

Revised: 10/15/07

Manufacturers

AIPHONE
BOMMER IND
DON-JO MANUFACTURING
DORMA CLOSERS
DORMA EXITS
HAGER COMPANIES
KABA ILCO
MCDONALD DASH
NT FALCON LOCK
P.D.Q. MANUFACTURING
PEMKO
TESA ENTRY SYSTEMS(ONITY)

FINISHES:
26D SATIN CHROME
32D SATINLESS STEEL

KEYING INFO:
ALL LOCKS AND CYLINDER TO BE MASTER KEYED

MASTER KEYING:
10 EA. MASTER "A"

EXCEPTIONS:

Printed: 10/15/07

Door Index

2007-460H COMFORT SUITES - VICKSBURG, MS

Door	Set #
101	1
102	1
103	3
104	4
105	2
106	2
107	2
108	4
109	3
110	3
111	8
112	6
113	5
114	9
115	9
116	13
117	15
118	11
119	14
120	12

Door	Set #
121	16
122	16
123	7
124	17
125	15
126	15
127	5
128	18
129	19
130	10
131	7
132	7
133	7
134	15
135	20
136	6
201	6
202	10
203	6
204	10

Door	Set #
301	6
302	10
303	6
304	10
401	6
402	10
403	6
404	10
A	22
A	22
B	23
B	23
B	28
C	27
D	24
E	28
F	26
G	25
R1	21

2007-460H

Revised:

SET # 1

Keyset	Tag	Quantity	Mark	Door Location
		1	101	EXTERIOR FROM VESTIBULE
		1	102	VESTIBULE FORM LOBBY 2-3/0 X 7/0 GLD ALF

		Vendor
1.0 EA INTERCOM	ILCO REMOTE READER LEM-1DLS DOOR 102 BALANCE OF HARDWARE BY DOOR SUPPLIER	AIPHONE

SET # 2

Keyset	Tag	Quantity	Mark	Door Location
		1	105	EXTERIOR FROM ELEC EQUIP RM, PRS. 2-3/0 X 7/0 1-3/4 MD X MF
		1	106	EXTERIOR FROM POOL EQUIP. PRS. 2-3/0 X 7/0 1-3/4 MD X MF
		1	107	EXTERIOR FROM WATER HEATERS, PRS. 2-3/0 X 7/0 1-3/4 MD X MF

		Vendor
9.0 PR HINGES	BB5000450-652-NRP	BOMMER IND
3.0 EA LOCKSET	GT115 PHIL 2-3/4 ASA 26D ABRA.CTG	P.D.Q. MANUFACTURING
3.0 EA DOOR CLOSER WITH H/O	8616 SPAT SNB AL	DORMA CLOSERS
3.0 EA THRESHOLD	172A-72"	PEMKO
6.0 EA FLUSH BOLT	282D 26D	HAGER COMPANIES
3.0 EA WEATHERSTRIP	S88D-21'	PEMKO
3.0 EA RAIN DRIP	346C-76"	PEMKO
6.0 EA DOOR SWEEP	315CN-36"	PEMKO
6.0 EA FLOOR STOP	267F 26D	HAGER COMPANIES

SET # 3

Keyset	Tag	Quantity	Mark	Door Location
		1	103	EXTERIOR FROM CORRIDOR, LHR
		1	109	EXTERIOR FROM CORRIDOR, LHR
		1	110	EXTERIOR FROM POOL, LHR 3/0 X 7/0 GLD ALF

SET # 3 (Continued)

		Vendor
3.0 EA RIM PANIC INTERFACE	TESA RIM PANIC INTERFACE 626 ALUMINUM DOOR MUST HAVE 5" STILE BALANCE OF HARDWARE BY DOOR SUPPLIER	TESA ENTRY SYSTEMS(ONITY)

SET # 4

Keyset	Tag	Quantity	Mark	Door Location
		1	104	EXTERIOR FROM STAIR, LHR
		1	108	EXTERIOR FROM STAIR , RHR 3/0 X 7/0 1-3/4 MD X MF

		Vendor
3.0 PR HINGES	BB5000450-652-NRP	BOMMER IND
2.0 EA RIM DEVICE	9300 EO SNB US32D	DORMA EXITS
2.0 EA DOOR CLOSER	8616 AF86P FC SNB1 AL	DORMA CLOSERS
2.0 EA THRESHOLD	172A-36" WSLS	PEMKO
2.0 EA DOOR SWEEP	315CN-36"	PEMKO
2.0 EA WEATHERSTRIP	S88D-17'	PEMKO
2.0 EA RAIN DRIP	346C-40"	PEMKO
2.0 EA FLOOR STOP	267F 26D	HAGER COMPANIES

SET # 5

Keyset	Tag	Quantity	Mark	Door Location
		1	113	CORRIDOR TO GUEST LAUNDRY, LH 45 MIN
		1	127	CORRIDOR TO FITNESS CENTER, LH 20 MIN 3/0 X 6/8 1-3/4 WD X MF

		Vendor
3.0 PR HINGES	BB5000-450-26D	BOMMER IND
2.0 EA UTILITY CARD LOCK	E-771 K US26D	KABA ILCO
2.0 EA DOOR CLOSER	7414 ARP COV SNB1 689/AL	DORMA CLOSERS
2.0 EA WEATHERSTRIP	S88D-17'	PEMKO
2.0 EA KICK PLATE	190S 6" X 34" US32D	HAGER COMPANIES
2.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 6

Keyset	Tag	Quantity	Mark	Door Location
		1	112	STAIR FROM CORRIDOR, LHR
		1	136	STAIR FROM CORRIDOR, RHR
		1	201	STAIR FROM CORRIDOR, RHR
		1	203	STAIR FROM CORRIDOR, LHR
		1	301	STAIR FROM CORRIDOR, RHR
		1	303	STAIR FROM CORRIDOR, LHR
		1	401	STAIR FROM CORRIDOR, RHR
		1	403	STAIR FROM CORRIDOR, LHR
				3/0 X 6/8 1-3/4 WDX MF 90 MIN

			Vendor
12.0	PR HINGES	BB5000-450-26D	BOMMER IND
8.0	EA RIM EXIT DEVICE	F9300 YR23 SNB US32D	DORMA EXITS
8.0	EA DOOR CLOSER	7414 ARP COV SNB1 689/AL	DORMA CLOSERS
8.0	EA WEATHERSTRIP	S88D-17'	PEMKO
8.0	EA KICK PLATE	190S 6" X 34" US32D	HAGER COMPANIES
8.0	EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 7

Keyset	Tag	Quantity	Mark	Door Location
		1	123	WORK AREA FROM TELE/AUD, RHR
		1	132	LAUNDRY TO MAINT RM., RH
		1	131	LAUNDRY TO CLEAN LAUNDRY, LH
		1	133	PANTRY FROM STORAGE, RHR
				3/0 X 6/8 1-3/4 WDX MF

			Vendor
6.0	PR HINGES	BB5000-450-26D	BOMMER IND
4.0	EA LOCKSET	GT116 PHIL 2-3/4 ASA 26D	P.D.Q. MANUFACTURING
4.0	EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 8

Keyset	Tag	Quantity	Mark	Door Location
		1	111	GUEST LAUNDRY TO WATER HEATER, LH
				3/0 X 6/8 1-3/4 W DX MF

SET # 8 (Continued)

		Vendor
1.5 PR SPRING HINGE	4310 4-1/2" 4-1/2" 652	BOMMER IND
1.0 EA LOCKSET	GT115 PHIL 2-3/4 ASA 26D ABRA.CTG	P.D.Q. MANUFACTURING
1.0 EA WEATHERSTRIP	S88D-17'	PEMKO
1.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 9

Keyset	Tag	Quantity	Mark	Door Location
		1	114	CORRIDOR TO WOMEN TOILET, RH
		1	115	CORRIDOR TO MEN TOILET, LH
				3/0 X 6/8 1-3/4 WDX MF 45 MIN

		Vendor
3.0 PR HINGES	BB5000-450-26D	BOMMER IND
2.0 EA PRIVACY SET	GT176 PHIL 2-3/4 ASA 26D	P.D.Q. MANUFACTURING
2.0 EA DOOR CLOSER	7414 ARP COV SNB1 689/AL	DORMA CLOSERS
2.0 EA WEATHERSTRIP	S88D-17'	PEMKO
2.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 10

Keyset	Tag	Quantity	Mark	Door Location
		1	130	CORRIDOR TO STORAGE, RH
		1	204	CORRIDOR TO STORAGE, LH
		1	304	VENDING TO STORAGE, LH
		1	404	CORRIDOR TO STORAGE,
				3/0 X 6/8 1-3/4 WDX MF 45 MIN
		1	202	CORRIDOR FROM LINEN CHUTE, RHR
		1	302	CORRIDOR FROM LINEN CHUTE, RHR
		1	402	CORRIDOR FROM LINEN CHUTE, RHR
				3/0 X 6/8 1-3/4 WDX MF

		Vendor
10.5 PR SPRING HINGE	4310 4-1/2" 4-1/2" 652	BOMMER IND
7.0 EA UTILITY CARD LOCK	E-771 K US26D	KABA ILCO
7.0 EA WEATHERSTRIP	S88D-17'	PEMKO
7.0 EA KICK PLATE	190S 6" X 34" US32D	HAGER COMPANIES
7.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 11

Keyset	Tag	Quantity	Mark	Door Location
		1	118	CORRIDOR TO LAUNDRY, LH 4/0 X 6/8 1-3/4 WDX MF

		Vendor
4.0 PR HINGES	BB5000-450-26D	BOMMER IND
1.0 EA UTILITY CARD LOCK	E-771 K US26D	KABA ILCO
1.0 EA DOOR CLOSER	8616 AF86P FC SNB1 AL	DORMA CLOSERS
1.0 EA ARMOR PLATE	190S 34 X 46 X US32D	HAGER COMPANIES
1.0 EA WEATHERSTRIP	S88D-20'	PEMKO
1.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 12

Keyset	Tag	Quantity	Mark	Door Location
		1	120	CORRIDOR TO WORK AREA, LH 3/0 X 6/8 1-3/4 WDX MF 20 MIN

		Vendor
1.5 PR HINGES	BB5000-450-26D	BOMMER IND
1.0 EA ALARM LOCK	DL2700- US26D	MCDONALD DASH
1.0 EA DOOR CLOSER	7414 ARP COV SNB1 689/AL	DORMA CLOSERS
1.0 EA KICK PLATE	190S 6" X 34" US32D	HAGER COMPANIES
1.0 EA WEATHERSTRIP	S88D-17'	PEMKO
1.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 13

Keyset	Tag	Quantity	Mark	Door Location
		1	116	LAUNDRY FROM EMPLOYEE TOILET,LHR 3/0 X 6/8 1-3/4 WD X MF

		Vendor
1.5 PR HINGES	BB5000-450-26D	BOMMER IND
1.0 EA PRIVACY SET	GT176 PHIL 2-3/4 ASA 26D	P.D.Q. MANUFACTURING
1.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 14

Keyset	Tag	Quantity	Mark	Door Location
		1	119	LAUNDRY TO DRYERS, RH 3/0 X 6/8 1-3/4 WDX MF

		Vendor
1.5 PR HINGES	BB5000-450-26D	BOMMER IND
1.0 EA PASSAGE LATCH	GT126 PHIL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
1.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 15

Keyset	Tag	Quantity	Mark	Door Location
		1	117	WORK AREA FROM MECH, LHR
		1	126	WORK AREA FROM MECH, RHR
		1	134	STOR FROM MECH RM. LHR
		1	125	MANAGER OFFICE FROM CLOSET, LHR 2/6 X 6/8 1-3/4 WD X MF

		Vendor
6.0 PR SPRING HINGE	4310 4-1/2" 4-1/2" 652	BOMMER IND
4.0 EA STOREROOM LOCK	GT115 PHL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
4.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 16

Keyset	Tag	Quantity	Mark	Door Location
		1	122	WORK AREA TO MANAGER OFFICE, LH 3/0 X 6/8 1-3/4 WDX MF 45 MIN
		1	121	WORK AREA TO LAUNDRY, RH 3/0 X 6/8 1-3/4 WDX MF 45 MIN

		Vendor
3.0 PR HINGES	BB5000-450-26D	BOMMER IND
2.0 EA LOCKSET	GT116 PHIL 2-3/4 ASA 26D	P.D.Q. MANUFACTURING
2.0 EA DOOR CLOSER	7414 ARP COV SNB1 689/AL	DORMA CLOSERS
2.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 17

Keyset	Tag	Quantity	Mark	Door Location
		1	124	WORK AREA FROM RECPT, RHR 3/0 X 6/8 1-3/4 WD X MF

		Vendor
1.5 PR HINGES	BB5000-450-26D	BOMMER IND
1.0 EA PASSAGE LATCH	GT126 PHIL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
1.0 EA DOOR CLOSER	7414 ARP COV SNB1 689/AL	DORMA CLOSERS
1.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 18

Keyset	Tag	Quantity	Mark	Door Location
		1	128	FITNESS CENTER FROM ELEVATOR LOBBY, RHR 3/0 X 6/8 1-3/4 WD X MF

		Vendor
1.5 PR SPRING HINGE	4310 4-1/2" 4-1/2" 652	BOMMER IND
1.0 EA LOCKSET	GT115 PHIL 2-3/4 ASA 26D ABRA.CTG	P.D.Q. MANUFACTURING
1.0 EA WEATHERSTRIP	S88D-20'	PEMKO
1.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 19

Keyset	Tag	Quantity	Mark	Door Location
		1	129	CORRIDOR FROM POOL AREA, LHR 3/0 X 6/8 1-3/4 WD X MF

		Vendor
1.5 PR S.S. HINGES	BB1191 4-1/2 X 4-1/2 X 32D	HAGER COMPANIES
	ILCO EXIT DEVICE W/ CARD TRIM INTERFACE	
1.0 EA DOOR CLOSER	7414 ARP COV SNB1 689/AL	DORMA CLOSERS
1.0 EA WEATHERSTRIP	S88D-17'	PEMKO
2.0 EA KICK PLATE	190S 6" X 34" US32D	HAGER COMPANIES
1.0 EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 20

Keyset	Tag	Quantity	Mark	Door Location
		1	135	BREAKFAST AREA TO PANTRY, RH 3/0 X 6/8 1-3/4 WD X MF 45 MIN

			Vendor
1.5	PR HINGES	BB5000-450-26D	BOMMER IND
1.0	EA CLASSROOM LOCK	GT148 PHIL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
1.0	EA DOOR CLOSER	7414 ARP COV SNB1 689/AL	DORMA CLOSERS
1.0	EA WEATHERSTRIP	S88D-17'	PEMKO
1.0	EA KICK PLATE	190S 6" X 34" US32D	HAGER COMPANIES
1.0	EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 21

Keyset	Tag	Quantity	Mark	Door Location
		1	R1	STAIR TO ROOF VERIFY HAND 3/0 X 6/8 1-3/4 MD X MF

			Vendor
1.5	PR HINGES	BB5000450-652-NRP	BOMMER IND
1.0	EA STOREROOM LOCK	GT115 PHL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
1.0	EA DOOR CLOSER	7414 ARP COV SNB1 689/AL	DORMA CLOSERS
1.0	EA THRESHOLD	172A-36" WSLS	PEMKO
1.0	EA WEATHERSTRIP	S88D-17'	PEMKO
1.0	EA DOOR SWEEP	315CN-36"	PEMKO
1.0	EA FLOOR STOP	267F 26D	HAGER COMPANIES

SET # 22

Keyset	Tag	Quantity	Mark	Door Location
		62	A	CORRIDOR TO GUEST ROOMS
		4	A	CORRIDOR TO ACC GUEST ROOMS 3/0 X 6/8 1-3/4 WD X MF

SET # 22 (Continued)

			Vendor
93.0	PR SPRING HINGE	4310 4-1/2" 4-1/2" 652	BOMMER IND
6.0	PR HINGES	BB5000-450-26D ACC ROOM	BOMMER IND
		ILCO GUEST ROOM CARD LOCKS	
66.0	EA DOOR GUARD	1604 US26D	DON-JO MANUFACTURING
70.0	EA DOOR VIEWER	ULDV-180 DEGREE US26D	DON-JO MANUFACTURING
66.0	EA WEATHERSTRIP	S88D-17' ILCO FRONT DESK SYSTEM	PEMKO
6.0	EA DOOR CLOSER	7414 AR COV SNB1 689/AL ACC RM	DORMA CLOSERS
66.0	EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 23

Keyset	Tag	Quantity	Mark	Door Location
		62	B	GUEST ROOM TO BATH
		4	B	ACC GUEST FROM BATH 3/0 X 6/8 1-3/4 WD X MF

			Vendor
99.0	PR HINGES	5000-450-652	BOMMER IND
66.0	EA PRIVACY LOCK	GP176PHL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
62.0	EA DOME STOP	243F 26D	HAGER COMPANIES
4.0	EA O.H. DOOR STOP	702S AL ACC DOORS	DORMA CLOSERS

SET # 24

Keyset	Tag	Quantity	Mark	Door Location
		8	D	CONNECTING BETWEEN GUEST ROOM 2-3/0 X 6/8 1-3/4 WDX MF 20 MIN

			Vendor
12.0	PR SPRING HINGE	4310 4-1/2" 4-1/2" 652	BOMMER IND
8.0	EA CONN DOOR LOCK	GP125PHL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
8.0	EA CONNECTING DOOR DEAD	D861M 2-3/4" BS 26D	NT FALCON LOCK
8.0	EA WEATHERSTRIP	S88D-17'	PEMKO
8.0	EA WALL STOP	236W US32D	HAGER COMPANIES

SET # 25

Keyset	Tag	Quantity	Mark	Door Location
		4	G	ACC GUEST ROOM FROM CLOSET, PRS 2-1/6 X 6/8 1-3/4 WD X MF

		Vendor
12.0 PR HINGES	5000-450-652	BOMMER IND
4.0 EA PASSAGE SET	GP126PHL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
8.0 EA FLUSH BOLT	283D 26D	HAGER COMPANIES

SET # 26

Keyset	Tag	Quantity	Mark	Door Location
		3	F	BEDROOM FROM CLOSET 2-1/6 X 6/8 BI-PASS MIRROR DOOR

Vendor

ALL HARDWARE BY DOOR SUPPLIER

SET # 27

Keyset	Tag	Quantity	Mark	Door Location
		62	C	GUEST ROOM FROM CLOSET 2/6 X 6/8 1-3/4 WD X MF

		Vendor
93.0 PR HINGES	1279 4-1/2 X 4-1/2 26D	HAGER COMPANIES
62.0 EA PASSAGE SET	GP126PHL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
62.0 EA DOME STOP	243F 26D	HAGER COMPANIES

SET # 28

Keyset	Tag	Quantity	Mark	Door Location
		3	E	EXECUTIVE SUITES TO BEDROOM 3/0 X 6/8 1-3/4 WD X MF
		3	B	EXECUTIVE BEDROON TO BATH 3/0 X 6/8 1-3/4 WD X MF

SET # 28 (Continued)

		Vendor
9.0 PR HINGES	5000-450-652	BOMMER IND
6.0 EA PRIVACY LOCK	GP176PHL 2-3/4 ASA US26D	P.D.Q. MANUFACTURING
6.0 EA PROJECTION STOP	1506 US26D	DON-JO MANUFACTURING

COMFORT SUITES

SECTION 08800 - GLASS AND GLAZING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

RELATED WORK:

Section 08210,Wood Doors.
Section 08410,Aluminum Entrances.
Section 08520,Operable Windows.
Section 10800,Toilet and Bath Accessories.

SUMMARY:

Extent of glass and glazing work is indicated on drawings and schedules.

Types of work in this section include glass and glazing requirements for:

Window units, indicated as "preglazed".
Entrances and other doors, indicated as "preglazed".
Guestroom Bath and Restroom Mirrors.

Not Included in this section are decorative mirrors supplied by owner for the Lobby area.

SYSTEM DESCRIPTION:

Provide glass and glazing that has been produced, fabricated and installed to withstand normal thermal movement, wind loading and impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials and other defects in the work.

Normal thermal movement is defined as that resulting from an ambient temperature range of 120 deg. F (67 deg. C) and from a consequent temperature range within glass and glass framing members of 180 deg. F (100 deg. C).

Deterioration of insulating glass is defined as failure of hermetic seal due to other causes than breakage which results in intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coating, if any, resulting from seal failure, and any other visual evidence of seal failure or performance.

SUBMITTALS:

Product Data: Submit manufacturer's technical data for each glazing material and fabrication glass product required, including installation and maintenance instructions.

Samples: Submit, for verification purposes, 12" square samples of each type of glass indicated except for clear single pane units, and 12" long samples of each color required (except black) for each type of sealant or gasket

exposed to view. Install sealant or gasket sample between two strips of material representative of adjoining framing system in color.

Certificate: Submit certificates from respective manufacturers attesting that glass and glazing materials furnished for project comply with requirements.

Separate certification will not be required for glazing materials bearing manufacturer's permanent labels designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authorities having jurisdiction.

Compatibility and Adhesion Test Report: Submit statement from sealant manufacturer indicating that glass and glazing materials have been tested for compatibility and adhesion with glazing sealants and interpreting test results relative to material performance, including recommendations for primers and substrate preparation needed to obtain adhesion.

QUALITY ASSURANCE:

Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FMGA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.

Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide type of products indicated which comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.

Subject to compliance with requirements, provide safety glass permanently marked with certification label of Safety Glazing Certification Council (SGCC) or other certification agency acceptable to authorities having jurisdiction.

Insulating Glass Certification Program: Provide insulating glass units permanently marked either on spacers or at least one component pane of units with appropriate certification label of inspecting and testing organization indicated below:

Associated Laboratories, Inc. (ALI).

Fire Rated Glass Certification: Provide fire rated glass units permanently marked either on spacers or at least one component pane of units with appropriate certification label indicating glass has met the following test standards:

UL 263,UL 10B, ASTM E-119, ASTM E-152, NFPA 251, NFPA 252, ANSI Z97.1, CFR 1201.

Single Source Responsibility For Glass: To ensure consistent quality of appearance and performance, provide materials produced by a single manufacturer or fabricator for each kind and condition of glass indicated and composed of primary glass obtained from a single source for each type and class required.

DELIVERY, STORAGE, AND HANDLING:

Protect glass and glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.

Where insulating glass units will be exposed to substantial altitude changes, avoid hermetic seal ruptures by complying with insulating glass fabricator's recommendations for venting and sealing.

PROJECT CONDITIONS:

Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes.

Install liquid sealants at ambient and substrate temperatures above 40 deg. F (4.4 deg. C).

WARRANTY:

General: Warranties shall be in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents.

Manufacturer's Special Project Warranty on Insulating Glass: Provide written warranty signed by manufacturer of insulating glass agreeing to furnish f.o.b. point of manufacture, freight allowed project site, within specified warranty period indicated below, replacements for those insulating glass units developing manufacturing defects. Manufacturing defects are defined as failure or hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging, deterioration of protected internal glass coatings, if any, and other visual indications of seal failure or performance; provided the manufacturer's instructions for handling, installing, protecting and maintaining units have been complied with during the warranty period.

Warranty Period: Manufacturer's standard but not less than 10 years after date of substantial completion.

PART 2 - PRODUCTS

MANUFACTURERS:

Manufacturers: Subject to compliance with requirements, provide products of one of the following:

Manufacturers of Clear and Tinted Float Glass:

AFG Industries, Inc.
Ford Glass Division.
LOF Glass, Inc.
PPG Industries, Inc.
Saint-Gobain/Euroglass.

Manufacturers of Fire Rated Glass:

Advanced Glass Systems Corp.
Globe-Amerada Glass Co.
Saint-Gobain/Euroglass.
Viracon, Inc.

Manufacturers of Insulating Glass:

Advanced Coating Technology.
AFG Industries, Inc.
Cardinal IG.
Environmental Glass Products.
Falconer Glass Industries.
Ford Glass Division.
Hordis Brothers, Inc.

Independent Insulating Glass.
PPG Industries, Inc.
Spectrum Glass Prod. Div., H.H. Robertson Co.
Viracon, Inc.

GLASS PRODUCTS, GENERAL:

Primary Glass Standard: Provide primary glass which complies with ASTM C 1036 requirements, including those indicated by reference to type, class, quality, and if applicable, form, finish, mesh and pattern.

Heat-Treated Glass Standard: Provide heat-treated glass which complies with ASTM C 1048 requirements, including those indicated by reference to kind, condition, type, quality, class, and, if applicable, form, finish, and pattern.

Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

PRIMARY GLASS PRODUCTS:

Clear Float Glass: Type I, (transparent glass, flat), Class 1, Quality q3 (glazing select).

HEAT-TREATED GLASS PRODUCTS:

Manufacturing Process: Manufacture heat-treated glass as follows:

By horizontal (roller hearth) process with roll wave distortion parallel with bottom edge of glass as installed, unless otherwise indicated.

Uncoated Clear Heat-Treated Float Glass: Condition A (uncoated surfaces), Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select), kind as indicated below.

Kind FT (fully tempered) where indicated.

SEALED INSULATING GLASS UNITS:

General: Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space and complying with ASTM E 774 for performance classification indicated as well as with other requirements specified for glass characteristics, air space, sealing system, sealant, spacer material, corner design and dessicant.

For properties of individual glass panes making up units, refer to product requirements specified elsewhere in this section applicable to types, classes, kinds and conditions of glass products indicated.

Provide heat-treated panes of kind and at locations indicated or, if not indicated, provide heat-strengthened panes where recommended by manufacturer for application indicated and tempered where indicated or where safety glass is designated or required.

Thickness of Each Pane: Manufacturer's standard.
Air Space Thickness: Manufacturer's standard.
Sealing System: Dual seal; primary and secondary sealant:
manufacturer's standard materials.
Spacer Material: Manufacturer's standard metal.

Dessicant: Manufacturer's standard; either molecular sieve or silica gel or blend of both.
Corner Construction: Manufacturer's standard corner construction.

Uncoated Insulating Glass Units: Manufacturer's standard units complying with the following requirements:

Exterior Pane: Clear float glass.
Kind: As indicated.

Interior Pane of Glass: Clear float glass.
Kind: As indicated.

Fire Rated Insulating Glass Units: Manufacturer's standard units complying with the following requirements:

Exterior Pane: Fire rated clear glass.
Kind: As indicated.

Interior Pane of Glass: Clear float glass.
Kind: As indicated.

ELASTOMERIC GLAZING SEALANTS AND PREFORMED GLAZING TAPES:

General: Provide products of type indicated and complying with the following requirements:

Compatibility: Select glazing sealants and tapes of proven compatibility with other materials with which they will come into contact, including glass products, seals of insulating glass units, and glazing channel substrates, under conditions of installation and service, as demonstrated by testing and field experience.

Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants and tapes which have performance characteristics suitable for applications indicated and conditions at time of installation.

Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class and Uses.

Colors: Provide color of exposed sealants indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

One-Part Non-Acid-Curing Silicone Glazing Sealant: Type S; Grade NS, Glass 25; Uses NT, G, A, and, as applicable to uses indicated, O; and complying with the following requirements for modulus and additional joint movement capability.

Low Modulus: Tensile strength of 45 psi or less at 100 percent elongation when tested per ASTM D 412 after 14 days at 77 deg. F (20 deg. C) and 50 percent relative humidity.

Additional capability, when tested per ASTM C 719 for adhesion and cohesion under maximum cyclic movement, to withstand the following percentage increase and decrease of joint width, as measured at time of application, and remain in compliance with other requirements of ASTM C 920.

50 percent.

Preformed Butyl-Polyisobutylene Glazing Tape: Provide manufacturer's standard solvent-free butyl-polyisobutylene formulation with a solids content of 100 percent; complying with AAMA A 804.1; in extruded tape form; non-staining and non- migrating in contact with nonporous surfaces; packaged on rolls with a release paper on one side; with or

without continuous spacer rod as recommended by manufacturers of tape and glass for application indicated.

Products: Subject to compliance with requirements, provide one of the following:

One-Part Non-Acid Curing Low-Modulus Silicone Glazing Sealant:

"Chem-Calk 1000"; Bostik Construction Products Div.
"Dow Corning 790"; Dow Corning Corp.
"864"; Pecora Corp.
"Omniseal"; Sonneborn Building Products Div., Rexnord Chemical Products Inc.
"Spectrum 1"; Tremco, Inc.

Preformed Butyl-Polyisobutylene Glazing Tape Without Spacer Rod:

"Chem-Tape 40"; Bostik Construction Products Div.
"Extru-Seal"; Pecora Corp.
"PTI 303"; Glazing Tape; Protective Treatments, Inc.
"Tremco 440 Tape"; Tremco Inc.

Preformed Butyl-Polyisobutylene Glazing Tape With Spacer Rod:

"Chem-Tape 60"; Bostik Construction Products Div.
"Shim-Seal"; Pecora Corp.
"PTI 303" Shim Tape; Protective Treatments, Inc.
"Pre-shimmed Tremco 440 Tape"; Tremco Inc.

MISCELLANEOUS GLAZING MATERIALS:

Compatibility: Provide materials with proven record of compatibility with surfaces contacted in installation.

Cleaners, Primers, and Sealers: Type recommended by sealant or gasket manufacturer.

Setting Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.

Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.

Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) of glass.

Compressible Filler Rods: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5-10 psi compression strength for 25 percent deflection.

PART 3 - EXECUTION

EXAMINATION:

Require Glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain Glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until

unsatisfactory conditions have been corrected.

PREPARATION:

Clean glazing channels and other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrates. Remove lacquer from metal surfaces where elastomeric sealants are indicated for use.

GLAZING, GENERAL:

Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.

Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.

Apply primers to joint surfaces where required for adhesion of sealants, as determined by proconstruction sealant-substrate testing.

GLAZING:

Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but with edge nearest corner not closer than 6" from corner unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.

Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches (length plus height), except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.

Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

Tool exposed surfaces of sealants to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

PROTECTION AND CLEANING:

Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.

Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.

Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

END OF SECTION 08800

SECTION 09250 - GYPSUM DRYWALL

PART 1 - GENERAL

RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Section includes all labor and materials for Gypsum drywall systems including metal framing systems, back-up wall system for brick veneer, miscellaneous furring, sound insulation, exterior sheathing, plaster & drywall accessories, suspended gypsum board ceilings, tile backer boards for application of ceramic tile, noise control ceilings, drywall installation work and drywall finishing (joint tape-and-compound treatment), as indicated on the drawings and as specified herein.

RELATED WORK:

Section 03310. Concrete.
Section 04200. Unit Masonry.
Section 05400. Lightgage Structural Framing.
Section 05500. Metal Fabrications.
Section 07200. Insulation.
Section 09300. Tile.
Section 09900. Painting.

QUALITY ASSURANCE:

1. Fire-Resistance Rating: All gypsum drywall on this project to be type "x" (ASTM E 119), whether or not in required fire rated assemblies.

2. Gypsum Board Terminology Standard: GA-505 by Gypsum Association.

3. Single-Source Responsibility: Provide products from a single manufacturer, are as approved by prime manufacturer.

4. Deflection Limit: Metal framing system for brick veneer walls shall be limited to L/360 deflection.

SUBMITTALS:

1. Product Data: Manufacturer's specifications and installation instructions for each component including drywall, sheathing, sound batts and accessories.

2. Certification: Provide certification by an Engineer, licensed in the State of Minnesota that metal framing system for veneer brick walls comply with L/360 requirements specified.

DELIVERY, STORAGE AND HANDLING:

Deliver materials in original packages, containers or bundles bearing brand name and identification of manufacturer or supplier.

Store materials, properly stacked, inside under cover and protected. Neatly stack gypsum boards flat to prevent sagging.

Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal corner beads and trim from being bent or damaged.

PROJECT CONDITIONS:

Environmental Requirements, General: Follow manufacturers' instructions, and ASTM C 840.

Cold Weather Protection: Follow manufacturers' recommendations, but a minimum of 50o for 48 hours.

Ventilation: as required to reduce excess humidity.

PART 2 - PRODUCTS

MANUFACTURERS:

Subject to compliance with requirements provide products of one of the following:

Steel framing and Furring:

Bostwick Steel Framing Co.
Dale Industries, Inc.
Gold Bond Building Products Div., National Gypsum Co.
United States Gypsum Co.

Direct Suspension Systems:

Chicago Metallic Corp.
National Rolling Mills Co.
United States Gypsum Co.
Kinetics Noise Control, Inc.

Gypsum Board and Related Products:

American Gypsum Co.
Flintkote Products, Genstar Building Materials Co.
Georgia-Pacific Corp.
Gold Bond Building Products Div., National Gypsum Co.
United States Gypsum Co.

STEEL FRAMING COMPONENTS FOR SUSPENDED AND FURRED CEILINGS:

General: Comply with ASTM C 754 for materials and sizes.

Wire for hangers and ties: ASTM A 641, Class 1 zinc coating, soft temper.

Hanger rods: #9 mild steel, zinc coated or protected with rust inhibitive paint.

Flat hangers: mild steel, zinc coated or protected with rust inhibitive paint.

Channels: 1- 1/2" deep, cold rolled steel, 0.0598 inch minimum thickness of base (uncoated) metal, and 7/16 inch wide flanges, protected with rust inhibitive paint.

STEEL FRAMING MATERIALS:

General: Comply with ASTM C 754.

Provide main runners, hanger wire (ASTM A641), rods and flats, and anchors as required. Size devices for 3 x calculated load supported except size direct pull-out concrete inserts for 5 x calculated loads.

Steel Members: ASTM C 645; 25 gage runners, 6" studs, 3-1/2" studs, C-sections, Z-sections, hat-shaped, and other sections shown.

Where shown provide Resilient, special sound reduction type.

Steel Rigid Furring Channels: ASTM C 645, 7/8" and 1- 1/2" hat shaped type. Exterior furring members or members in Spa room shall be galvanized.

Furring Anchorages: 16 gage galvanized wire ties, manufacturer's standard wire-type clips, bolts, nails or screws as recommended by furring manufacturer and complying with C 754.

Provide 16 and 18 gage heavy duty "C" shaped steel studs and track enclosures (rails) at all brick veneer walls and interior walls as shown on the drawings. Exterior studs shall be galvanized. Refer to Section 05400.

GYPSUM BOARD PRODUCTS, INTERIOR:

Gypsum Wallboard: ASTM C 36, tapered, type X, 5/8", unless otherwise indicated.

Gypsum Backing Board for Multi-Layer Applications: ASTM C 442, type X, 5/8", unless otherwise indicated.

Water-Resistant Backing Board: ASTM C 630, type X, 5/8", unless otherwise indicated.

Trim Accessories: Corner beads, L-type beads, U-type beads, and one-piece control joint beads(ASTM C 1047, with removable strip).

JOINT TREATMENT MATERIALS:

General: ASTM C 475; type recommended by the manufacturer for the application indicated, except as otherwise indicated.

Joint Tape: Paper reinforcing tape.

Joint Compound: Ready-mixed vinyl-type for interior use, of separate grades; one specifically for bedding tapes and filling depressions, and one for topping and sanding.

Water-Resistant Joint Compound: Special water-resistant type at water-resistant backing board.

EXTERIOR SHEATHING MATERIALS:

Gypsum Sheathing: Provide 5/8" thick gypsum sheathing board complying with FS SS-L-30 for type II, Class 2, form A of water resistant core and square edges. Sizes to be 4' by 8'.

Exterior Gypsum Soffit Board: G-P Gypsum Corp. Dens-Glass Gold sheathing, ASTM C 1177, 1/2", unless otherwise indicated. Install at entrance canopy soffit.

Glass mesh mortar units: cement coated portland cement panels backing units, with glass mesh fiber mesh reinforcing and water resistant coating on both faces.

> High density, 7/16" portland cement surface coating on both faces and lightweight concrete core composed of portland cement and expanded ceramic aggregate, "Wonderboard", as manufactured by Modulars, Inc. Sizes to be 4' x 8' , or as recommended by the Contractor. Install at parapet wall construction (where fire retardant plywood is not permitted), at exterior soffits which receive EIFS or plaster, and other areas as shown on the drawings.

Building Paper: Provide 15# building paper, shingled, with a minimum of a 4" overlap.

Bridging Channel: 1-1/2" metal bridging channel, 20 gage.

Refer to Masonry section 04200, for additional information, masonry fasteners and accessories.

Fasteners: Provide the highest quality galvanized screws as recommended by the gypsum board supplier.

MISCELLANEOUS MATERIALS:

Laminating Adhesive: Special adhesive or joint compound specifically recommended for laminating gypsum boards.

Gypsum Board Screws: Comply with ASTM C 1002.

Concealed Acoustical Sealant: Refer to Section 07900, Joint sealers.

Sound Attenuation Blankets: ASTM C 665, Type I, mineral fiber.

Thermal Insulation: Fiberglas batt insulation with kraft paper face, in thicknesses shown on the drawings.

Foil Faced Sheets: To be used as vapor barrier. Refer to Section 07200, "Insulation".

Acoustical Sealant: Provide a continuous bead of resilient (non-hardening) bead at the edge of each gypsum board surface that abuts or meets dissimilar materials at floors, ceilings and walls. Compress sealant slightly when installing gypsum board.

PART 3 - EXECUTION

EXAMINATION

Examine areas to receive drywall attachment, anchors, or frames. Ensure that subsurface conditions are acceptable prior to installation.

PREPARATION

Ceiling Anchorages: Coordinate work with structural ceiling work to ensure that inserts and other structural anchorage provisions have been installed to receive ceiling hangers.

Furnish concrete inserts, steel deck hanger clips and similar devices to other trades for installation well in advance of time needed for coordination with other work.

INSTALLATION:

Install metal supports per ASTM C 754 and ASTM C 840.

Do not bridge building expansion joints with support system. Frame both sides of joints with furring and other support as indicated.

Ceiling Support Suspension Systems:

Install auxiliary framing at termination of drywall work, and at openings for light fixtures and similar work, as required for support of both the drywall construction and other work indicated for support thereon. Provide supports at 4' centers in each direction, or as recommended by the manufacturer.

WALL/PARTITION SUPPORT SYSTEMS:

Install supplementary framing, blocking and bracing at terminations in the work and for support of fixtures, equipment services, heavy trim, grab bars, wall mounted handrails, toilet accessories, and other furnishings.

Isolate stud system from transfer of structural loading to system, both horizontally and vertically. Provide slip or cushioned type joints to attain lateral support and avoid axial loading.

Install runner tracks at floors, ceilings and structural walls and columns where gypsum drywall stud system abuts other work, except as otherwise indicated.

Extend partition stud system through acoustical ceilings and elsewhere as indicated to the structural support or substrate above the ceiling.

Space studs 16" o.c., unless otherwise indicated.

BRICK VENEER BACK-UP FRAMING SYSTEM:

Install metal studs and top/bottom supports in sizes specified. At midheight of stud wall, provide continuous bridging channel, secured to studs.

Install gypsum sheathing in accordance with manufacturers recommendations. Over entire wall lay up and secure building paper, in a shingle fashion with a minimum of 4" overlap.

Refer to Section 04200, for installation of masonry anchors and brick veneer.

Install Batt insulation at interior side after all rough-in work by other trades is complete. Refer to Section 07200.

Install foil facer sheets on interior side of exterior insulated walls per ASTM C 755. Seal joints by lapping and

bonding with tape. Extend coverage to extremities of areas to receive retarders. Seal punctures, tears and penetrations through retarders with tape. Refer to Section 07200.

Provide galvanized studs at all exterior walls and high-moisture areas. Where required for the attachment of miscellaneous angles, plates, bent plates, etc., weld connections may be performed in accordance with AWS standards. At welded connections, contractor shall touch-up galvanizing with galvanized paint prior to application of gypsum board sheathing, building paper, brick, etc. and other materials in veneer back-up framing system.

Galvanizing repair paint is specified in Section 05500.

GENERAL GYPSUM BOARD INSTALLATION REQUIREMENTS:

Gypsum Board Application and Finishing Standards: ASTM C 840 and GA 216.

Install sound attenuation blankets at all interior walls and as indicated, prior to gypsum board unless readily installed after board has been installed.

Install ceiling and wall boards minimizing the number of end-butt joints. Stagger end joints at least 1'-0". Butt boards together for a light contact at edges and ends with not more than 1/16" open space between boards. Do not force into place.

Located either edge or end joints over supports, except in horizontal applications or where intermediate supports or gypsum board back-blocking is provided behind end joints. Position boards so that like edges abut, tapered edges against tapered edges and mill-cut or field-cut ends against mill-cut or field- cut ends. Do not place tapered edges against cut edges or ends. Stagger vertical joints over different studs on opposite sides of partitions.

Attach gypsum board to supplementary framing and blocking provided for additional support at openings and cutouts.

Provide for expansion joints at continuous walls and ceilings at a maximum of 30' on center.

Isolate perimeter of non-load-bearing drywall partitions at structural abutments. Provide 1/4" to 1/2" space and trim edge with L-type semi-finishing edge trim. Seal joints with acoustical sealant.

Space fasteners in gypsum boards in accordance with referenced standards and manufacturer's recommendations, except as otherwise indicated.

Isolate steel framing from building structure to prevent the transfer of loading imposed by structural movement, where edges of suspended ceilings abut building structure horizontally at ceiling perimeters, where partition and wall framing abuts overhead structure, or at the penetration of structural elements through suspended ceilings.

METHODS OF GYPSUM DRYWALL APPLICATION:

Wall Tile Base: Where drywall is base for thin-set ceramic tile and similar rigid applied wall finishes, install gypsum backing board.

Double-Layer Application: Install gypsum backing board for base layer at right angles to exposed gypsum board with at least 10" between joints. Fasten base layers and face layers with separate screws.

INSTALLATION OF DRYWALL TRIM ACCESSORIES:

General: Where feasible, use the same fasteners to anchor trim accessory flanges as required to fasten gypsum

board to the supports. Otherwise, fasten flanges by nailing or stapling in accordance with manufacturer's instructions and recommendations.

Install metal corner beads at external corners of drywall work with screws.

Install metal edge trim whenever edge of gypsum board would otherwise be exposed or semi-exposed. Install L-type trim where work is tightly abutted to other work. Install U-type trim where edge is exposed, revealed, gasketed, or sealant-filled (including expansion joints).

Install metal control joint (beaded-type) where indicated, or as specified above.

INSTALLATION OF STEEL FRAMING FOR WALLS AND PARTITIONS:

Install runners at floors, ceilings, and structural walls and columns where gypsum drywall stud system abuts other construction.

Installation Tolerances: Install each steel framing and furring member so that fastening surface does not vary more than 1/8 inch from plane of faces of adjacent framing.

Extend partition framing full height to structural supports, unless noted otherwise on the drawings.

INSTALLATION OF STEEL FRAMING FOR SUSPENDED CEILINGS:

Do not connect or suspend steel framing from ducts, pipes or conduit.Keep hangers and braces 2 inches clear of ducts, pipes and conduits.

Wire Hangers: 0.1620 inch diameter, 4' on centers each direction.

Carrying Channels: 1-1/2", 4' on center each direction.

Installation tolerances: cross furring members or grid suspension members are to be level within 1/8" in 12 ft. as measured both lengthwise on each member and transversely between parallel members.

Wire tie or clip furring members to main runners and to other structural supports.

Grid Suspension System: Attach perimeter wall track or angle where grid suspension system meets vertical surfaces. Mechanically join main beam and cross furring members to each other and butt-cut to fit into wall track.

For extr\erior soffits: provide cross bracing and additional framing required to resist wind uplift.

FINISHING OF DRYWALL:

General: Apply tape and compound at joints, accessories, penetrations, fasteners, surface defects and as required to prepare work for decoration, with a minimum of three coats.

Water-Resistant Gypsum Board Base for Ceramic Tile: Treat joints and fasteners to comply with directions of water-resistant joint compound manufacturer.

Partial Finishing: "Fire taping" is permitted at non-exposed or concealed drywall.

PROTECTION OF WORK:

Provide final protection and maintain conditions, in a manner suitable to Installer, which ensures gypsum drywall work being without damage or deterioration at time of substantial completion.

END OF SECTION 09250

SECTION 09300 - TILE

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Definition: Tile includes ceramic surfacing units made from clay or other ceramic materials.

Extent of tile work is indicated on drawings and schedules included at end of this section.

Types of tile work in this section include the following:

Unglazed ceramic floor tile.
Glazed wall tile.

Sealing expansion and other joints in tile work with elastomeric joint sealers is work of this section.

QUALITY ASSURANCE:

Source of Materials: Provide materials obtained from one source for each type and color of tile, grout and setting materials.

SUBMITTALS:

Product Data: Submit manufacturer's technical information and installation instructions for materials required, except bulk materials.

Shop Drawings: Submit shop drawings indicating tile patterns and locations and widths of control, contraction and expansion joints in tile surfaces.

Samples for Initial Selection Purposes: Submit manufacturer's color charts consisting of actual tiles or sections of tiles showing full range of colors, textures and patterns available for each type of tile indicated. Include samples of grout and accessories involving color selection.

Samples for Verification Purposes: Submit the following:

Samples for each type of tile and for each color and texture required, not less than 12" square, on plywood or hardboard backing and grouted.

Full size samples for each type of trim, accessory and for each color.

Samples of metal edge strip.

Certification: Furnish Master Grade Certificates for each shipment and type of tile, signed by manufacturer and Installer.

Certified Test Reports: Submit certified test reports from a qualified independent testing laboratory evidencing compliance of tile and tile setting products with requirements specified based on comprehensive testing of current products. Include in reports testing laboratory's interpretation of test results relative to specified requirements.

DELIVERY, STORAGE, AND HANDLING:

Deliver and store packaged materials in original containers with seals unbroken and labels intact until time of use. Prevent damage or contamination to materials by water, freezing, foreign matter or other causes.

PROJECT CONDITIONS:

Maintain environmental conditions and protect work during and after installation to comply with referenced standards and manufacturer's printed recommendations.

Vent temporary heaters to exterior to prevent damage to tile work from carbon dioxide buildup.

Maintain temperatures at not less than 50 deg F (10 deg C) in tiled areas during installation and for 7 days after completion, unless higher temperatures are required by referenced installation standard or manufacturer's instructions.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, provide products of one of the following:

Manufacturers of Unglazed Ceramic Mosaic Tile:

American Olean Tile Co., Inc.
Dal-Tile Corp.
Summitville Tiles, Inc.
United States Ceramic Tile Co.

Manufacturers of Glazed Wall Tile:

American Olean Tile Co., Inc.
Buchtal Quality Ceramics.
Dal-Tile Corp.
Florida Tile Div., Sikes Corp.
Porcelain USA.

Manufacturers of Organic Adhesives, Type I:

American Olean Tile Co., Inc.
Boiardi Products Corp.
Cambridge Tile Mfg. Co.
Custom Building Products.
C-Cure Chemical Co., Inc.
H.B. Fuller Co.
Jamo, Inc.

L & M Surco Mfg., Inc.
Southern Grouts & Mortars, Inc.
Syracuse Adhesives Co.
Upco Co. Div., Emhart Corp.

Manufacturers of Latex Portland Cement Grouts:

American Olean Tile Co., Inc.
Boiardi Products Corp.
Cambridge Tile Mfg. Co.
Custom Building Products.
C-Cure Chemical Co., Inc.
H.B. Fuller Co.
Jamo, Inc.
L & M Surco Mfg., Inc.
Southern Grouts & Mortars, Inc.
Syracuse Adhesives Co.
Upco Co. Div., Emhart Corp.
W.R. Bonsal Co.

PRODUCTS, GENERAL:

ANSI Standard for Ceramic Tile: Comply with ANSI A137.1 "American National Standard Specifications for Ceramic Tile" for types and grades of tile indicated.

Furnish tile complying with "Standard Grade" requirements unless otherwise indicated.

ANSI Standard for Tile Installation Materials: Comply with ANSI standard referenced with products and materials indicated for setting and grouting.

Colors, Textures and Patterns: For tile, grout and other products requiring selection of colors, surface textures or other appearance characteristics, provide products to match characteristics indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standards.

Provide tile trim and accessories which match color and finish of adjoining flat tile.

Mounting: Where factory-mounted tile is required provide back- or edge-mounted tile assemblies as standard with manufacturer unless another mounting method is indicated.

TILE PRODUCTS:

Unglazed Ceramic Tile (Guest Bathrooms): Provide factory-mounted flat tile complying with the following requirements:

Type: Porcelain
Wearing Surface: Without abrasive content.
Nominal Facial Dimensions: 8" x 8", square.
Nominal Thickness: 1/4".
Face: Plain with cushion or square edges.

Glazed Wall Tile: Provide flat tile complying with the following requirements:

Nominal Facial Dimensions: 4-1/4" x 4-1/4".
Nominal Thickness: 5/16".

Face: Plain with cushion edge.
Mounting: Factory back-mounted.

Unglazed Ceramic Tile(Lobby/Breakfast Area): Provide flat tile complying with the following requirements:

Nominal Facial Dimensions: 18" x 18".
Nominal Thickness: 1/4".
Face: Plain with cushion edge.

Trim Units: Provide tile trim units to match characteristics of adjoining flat tile and to comply with following requirements:

Size: As indicated, coordinated with sizes and coursing of adjoining flat tile, where applicable.

Shapes: As follows, selected from manufacturer's standard shapes:

Base for Thinset Installations: Coved.

Edge for Thinset Installations: Bullnose.

SETTING MATERIALS:

Organic Adhesive: Provide product complying with ANSI A136.1 for Type I.

GROUTING MATERIALS:

Latex-Portland Cement Grout: Provide product complying with ANSI A118.6 for the following composition and of color indicated:

Prepackaged dry grout mix incorporating dry polymer additive in the form of a re-emulsifiable powder to which only water is added at job site.

ELASTOMERIC SEALANTS:

Elastomeric Sealant Standard: Provide manufacturer's standard chemically curing, elastomeric sealant of base polymer indicated which complies with ASTM C 920 requirements, including those for Type, Grade, Class and Uses.

Compatibility: Provide sealants, joint fillers and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by testing and field experience.

Colors: Provide colors of exposed sealants to match colors of grout in tile adjoining sealed joints, unless otherwise indicated.

One-Part Mildew Resistant Silicone Sealant: Type S; Grade NS; Class 25; Uses NT, G, A, and as applicable to nonporous joint substrates indicated, O; formulated with fungicide for sealing interior joints in and around ceramic tile, showers, sinks and plumbing fixtures.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

"Dow Corning 786"; Dow Corning Corp.
"SCS 1702"; General Electric Co.
"863 #345 White"; Pecora Corp.

"Proglaze White"; Tremco Corp.

CEMENTITIOUS BACKER UNITS (GLASS MESH MORTAR UNITS)

Proprietary backing units with glass fiber mesh reinforcing and water-resistant coating on both faces, complying with either of the following requirements:

Cement-Coated Portland Cement Panels: High-density portland cement surface coating on both faces and lightweight concrete core composed of portland cement and expanded ceramic aggregate; fabricated in panels 7/16-inch thick by 36 inches wide by 36, 48, 60, 64, or 72 inches long and weighing 3.2 to 3.8 psf.

Vinyl-Coated Portland Cement Panels: Core formed in a continuous process from aggregated portland cement slurry and reinforced with vinyl-coated woven glass fiber mesh embedded in both surfaces, with one face smooth and other textured; fabricated in panels 1/2-inch thick and by 36 inches wide by 48, 60, and 72 inches long; and weighing 3 lbs psf.

Mortar Unit Finishing Materials: Tape and joint compounds as recommended by manufacturer of cementitious backer units.

Products: Subject to compliance with requirements, provide one of the following products:

"Wonder-Board"; Modulars Inc.
"Durock Tile Backer Board"; Durabond Div., USG Industries, Inc.

MIXING MORTARS AND GROUT:

Mix mortars and grouts to comply with requirements of referenced standards and manufacturers for accurately proportioning of materials, water or additive content, mixing equipment and mixer speeds, mixing containers, mixing time, and other procedures needed to produce mortars and grouts of uniform quality with optimum performance characteristics for application indicated.

PART 3 - EXECUTION

EXAMINATION:

Examine surfaces to receive tile work and conditions under which tile will be installed. Do not proceed with tile work until surfaces and conditions comply with requirements indicated in referenced tile installation standard.

INSTALLATION, GENERAL:

ANSI Tile Installation Standard: Comply with applicable parts of ANSI 108 series of tile installation standards included under "American National Standard Specifications for the Installation of Ceramic Tile".

TCA Installation Guidelines: TCA "Handbook for Ceramic Tile Installation"; comply with TCA installation methods indicated or, if not otherwise indicated, as applicable to installation conditions shown.

Extend tile work into recesses and under or behind equipment and fixtures, to form a complete covering without interruptions, except as otherwise shown. Terminate work neatly at obstructions, edges and corners without disrupting pattern or joint alignments.

Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Carefully grind cut edges of tile abutting trim, finish or built-in items for straight aligned joints. Fit tile closely to electrical outlets, piping, fixtures and other penetrations so that plates, collars, or covers overlap tile.

Jointing Pattern: Unless otherwise shown, lay tile in grid pattern. Align joints when adjoining tiles on floor, base, walls and trim are same size. Layout tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise shown.

For tile mounted in sheets make joints between tile sheets same width as joints within tile sheets so that extent of each sheet is not apparent in finished work.

Grout tile to comply with the requirements of the following installation standards:

For ceramic tile grouts (sand-portland cement, dry-set, commercial portland cement, and latex-portland cement grouts) comply with ANSI A108.10.

FLOOR INSTALLATION METHODS:

Ceramic Mosaic Tile: Install tile to comply with requirements indicated below for setting bed methods, TCA installation methods related to types of subfloor construction, and grout types:

Organic Adhesive: ANSI A108.4.

Concrete Subfloors, Interior: TCA F116.
Wood Subfloors, Interior: TCA F142.

Grout: Latex-portland cement.

WALL TILE INSTALLATION METHODS:

Install types of tile designated for wall application to comply with requirements indicated below for setting bed methods, TCA installation methods related to subsurface wall conditions, and grout types:

Organic Adhesive: ANSI A108.4.
Gypsum Board, Interior: TCA W242.

Dry-Set Portland Cement Mortar: ANSI A108.5
Masonry, Exterior: TCA W202.

Grout: Latex-portland cement.

CLEANING AND PROTECTION:

Cleaning: Upon completion of placement and grouting, clean all ceramic tile surfaces so they are free of foreign matter.

Unglazed tile may be cleaned with acid solution only when permitted by tile and grout manufacturer's printed instructions, but no sooner than 14 days after installation. Protect metal surfaces, cast iron and vitreous plumbing fixtures from effects of acid cleaning. Flush surface with clean water before and after cleaning.

Finished Tile Work: Leave finished installation clean and free of cracked, chipped, broken, unbonded, or otherwise defective tile work.

Protection: When recommended by tile manufacturer, apply a protective coat of neutral protective cleaner to completed tile walls and floors. Protect installed tile work with kraft paper or other heavy covering during construction period to prevent staining, damage and wear.

Prohibit foot and wheel traffic from using tiled floors for at least 7 days after grouting is completed.

Before final inspection, remove protective coverings and rinse neutral cleaner from tile surfaces.

VERIFY SPECIFIC TILE REQUIRED WITH OWNER AND/OR OWNER'S INTERIOR DESIGNER

END OF SECTION 09300

SECTION 09510 - ACOUSTICAL CEILINGS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

SUMMARY:

Section includes acoustical ceiling tiles and suspension systems as shown and scheduled on drawings, and as specified herein.

SUBMITTALS:

1. Product Data: Manufacturer's technical data and installation instructions.

2. Coordination Drawings: Submit reflected ceiling plans, prepared by Installer showing suspension members, method of anchorage, hangers, and ceiling-mounted work.

3. Samples: Submit one full-sized panel sample of each acoustical panel type, pattern and color, 12" long samples of exposed runners and moldings for each color and system type required.

QUALITY ASSURANCE:

1. Fire Performance Characteristics: Provide acoustical ceiling components tested for the following: Surface Burning Characteristics, with flame Spread of 25 or less, Smoke Developed of 50 or less.

2. Coordination of Work: Coordinate layout and installation of acoustical ceiling units and suspension system components with other work supported by, or penetrating through, ceilings, including light fixtures, HVAC equipment, fire-suppression system components (if any), and partition system (if any).

DELIVERY, STORAGE, AND HANDLING:

Deliver acoustical ceiling units to project site in original, unopened packages and store them in a fully enclosed space where they will be protected against damage from moisture, direct sunlight, surface contamination or other causes.

Before installing acoustical ceiling units, permit them to reach room temperature and a stabilized moisture content.

Handle acoustical ceiling units carefully to avoid chipping edges or damaging units in any way.

PROJECT CONDITIONS:

Space Enclosure: Do not install interior acoustical ceilings until space is enclosed and weatherproof, wet-work in space is completed and nominally dry, work above ceilings is complete, and ambient conditions of temperature and humidity will be continuously maintained at values near those indicated for final occupancy.

PART 2 - PRODUCTS

MANUFACTURERS

1. Acoustic Tile:

Acoustone.
Armstrong.
Celotex.

Products:

Lobby/Corridors: Subject to requirements: provide products identical to Armstrong #557, 3/4" x 24" x 24" wet-formed mineral fiber, and factory applied vinyl latex paint coating: colour selected by Owner. Provide tegular lay-in tile for "Suprafine" 9/16" exposed tee grid system.

Spa/Pantry: Subject to requirements: provide products identical to Armstrong, "Ceramaguard", 5/8" x 24" x 24" ceramic and mineral fiber, and factory applied vinyl plastic paint coating: white. Provide square-cut lay-in tile for water-resistant standard grid system.

2. Metal Suspension System:

Armstrong.
Chicago Metallic.
Donn.

Product: 9/16" or 15/16" as scheduled, exposed, aluminum "T" type grid system, including all main runners, cross tees, wall moldings and accessories. Provide water-resistant grid system with stainless steel or galvanized support components for Spa Area. Colour selected by Owner.

3. Acoustical Sealant:

Products: Refer to requirements under Section 07900.

MATERIALS:

Standard for Acoustical Ceiling Units: Provide manufacturer's standard units of configuration indicated which are prepared for mounting method designated and which comply with FS SS-S-118 requirements, including those indicated by reference to type, form, pattern, grade (NRC or NIC' as applicable), light reflectance coefficient (LR), edge detail, and joint detail (if any).

Mounting Method for Measuring NRC: No. 7 (mechanically mounted on special metal support), FS SS-S-118; or Type E-400 mounting as per ASTM E 795.

Sound Attenuation Performance: Provide acoustical ceiling units with ratings for ceiling sound transmission class (STC) of range indicated as determined according to AMA 1-II "Ceiling Sound Transmission Test by Two-Room Method" with ceilings continuous at partitions and supported by a metal suspension system of type appropriate for ceiling unit of configuration indicated (concealed for tile, exposed for panels).

Standard for Metal Suspension Systems: Provide metal suspension systems of type, structural classification and finish indicated which comply with applicable ASTM C 635 requirements.

Attachment Devices: Size for 5 times design load indicated in ASTM C 635, Table 1, Direct Hung.

Concrete Inserts: Inserts formed from hot-dipped galvanized sheet steel and designed for attachment to concrete forms and for embedment in concrete, with holes or loops for attachment at hanger wires.

Hanger Wire: Galvanized carbon steel wire, ASTM A 641, soft temper, prestretched, Class 1 coating, sized so that stress at 3- times hanger design loan (ASTM C 635, Table 1, Direct Hung), will be less than yield stress of wire, but provide not less than 12 gage.

Edge Moldings and Trim: Metal or extruded plastic of types and profiles indicated or, if not indicated, provide manufacturer's standard molding for edges and penetrations of ceiling which fits with type of edge detail and suspension system indicated.

For lay-in panels with reveal edge details, provide stepped edge molding which forms reveal of same depth and width as that formed between edge of panel and flange at exposed suspension member.

For circular penetrations of ceiling, provide edge moldings fabricated to diameter required to fit penetration exactly.

For narrow faced suspension systems, provide suspension system manufacturer's standard edge moldings which match width and configuration of exposed runners.

PART 3 - EXECUTION

PREPARATION:

Coordination: Furnish layouts for inserts, clips, or other supports required to be installed by other trades for support of acoustical ceilings. Furnish concrete inserts and similar devices to other trades for installation well in advance of time needed for coordination of other work.

Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders, and comply with reflected ceiling plans wherever possible.

Review existing conditions and provide products for the continuity of the existing system.

INSTALLATION:

General: Install materials in accordance with manufacturer's printed instructions, and to comply with governing regulations, fire resistance rating requirements as indicated, and CISCA standards applicable to work.

Arrange acoustical units and orient directionally-patterned units (if any) in manner shown by reflected ceiling plans.

Install tile with pattern running in one direction.

Install suspension systems to comply with ASTM C 636, with hangers supported only from building structural members. Locate hangers not less than 6" from each end and spaced 4'-0" along each carrying channel or direct-hung runner, unless otherwise indicated, leveling to tolerance of 1/8" in 12'-0".

Secure wire hangers by looping and wire-tying, either directly to structures or to inserts, eye-screws, or other devices which are secure and appropriate for substrate, and which will not deteriorate or fail with age or elevated temperatures.

Install hangers plumb and free from contact with insulation or other objects within ceiling plenum which are not part of supporting structural or ceiling suspension system. Splay hangers only where required to miss obstructions and offset resulting horizontal force by bracing, countersplaying or other equally effective means.

Install edge moldings of type indicated at perimeter of acoustical ceiling area and at locations where necessary to conceal edges of acoustical units.

Sealant Bed: Apply continuous ribbon of acoustical sealant, concealed on back of vertical leg before installing moldings.

Screw-attach moldings to substrate at intervals not over 16" o.c. and not more than 3" from ends, leveling with ceiling suspension system to tolerance of 1/8" in 12'-0". Miter corners accurately and connect securely.

Install acoustical panels in coordination with suspension system, with edges concealed by support of suspension members. Scribe and cut panels to fit accurately at borders and at penetrations.

Install hold-down clips in areas indicated, and in areas where required by governing regulations or for fire-resistance ratings; space as recommended by panel manufacturer, unless otherwise indicated or required.

CLEANING:

Clean exposed surfaces of acoustical ceilings, including trim, edge moldings, and suspension members; comply with manufacturer's
instructions for cleaning and touch-up of minor finish damage. Remove and replace work which cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 09510

SECTION 09650 - RESILIENT FLOORING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of resilient flooring and accessories is shown on drawings and in schedules included at end of this section.

QUALITY ASSURANCE:

Manufacturer: Provide each type of resilient flooring and accessories as produced by a single manufacturer, including recommended primers, adhesives, sealants, and leveling compounds.

Installer's Qualifications: Engage Installer who is certified in writing by resilient flooring manufacturer as qualified for installation of sheet vinyl employing heat welded seams.

SUBMITTALS:

Product Data: Submit manufacturer's technical data for each type of resilient flooring and accessory.

Samples for Initial Selection Purposes: Submit manufacturer's standard color charts in form of actual sections of resilient flooring, including accessories, showing full range of colors and patterns available, for each type of resilient flooring required.

Samples for Verification Purposes: Submit the following samples of each type, color, and pattern of resilient flooring required, showing full-range of color and pattern variations.

6" x 9" samples of sheet flooring.
2-1/2" long samples of resilient flooring accessories.
Welding beads for sheet flooring.
Other materials as required.

Certification for Fire Test Performance: Submit certification from independent testing laboratory acceptable to authorities having jurisdiction that resilient flooring complies with fire test performance requirements.

Maintenance Instructions: Submit 2 copies of manufacturer's recommended maintenance practices for each type of resilient flooring and accessory required.

PROJECT CONDITIONS:

Maintain minimum temperature of 65°F (18°C) in spaces to receive resilient flooring for at least 48 hours prior to installation, during installation, and for not less than 48 hours after installation. Store resilient flooring materials in spaces where they will be installed for at least 48 hours before beginning installation. Subsequently, maintain minimum temperature of 55°F (13°C) in areas where work is completed.

Install resilient flooring and accessories after other finishing operations, including painting, have been completed. Do not install resilient flooring over concrete slabs until the latter have been cured and are sufficiently dry to achieve bond with adhesive as determined by manufacturer's recommended bond and moisture test.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, provide products of one of the following:

Armstrong World Industries, Inc.
Kentile Floors, Inc.
Flintkote
Tarkett Inc.

Manufacturers of Vinyl Wall Base:

Armstrong World Industries, Inc.
Azrock Floor Products Div., Azrock Industries, Inc.
Flexco Div., Textile Rubber Co.
Kentile Floors, Inc.
Mercer Plastics Co., Inc.
Vinyl Plastics, Inc.

RESILIENT FLOORING COLORS AND PATTERNS:

Provide color and patterns as indicated, or if not otherwise indicated, as selected by Owner from manufacturer's standards.

TILE FLOORING:

Resilient floor tile shall be composition vinyl tile, 12" X 12" .
Composition: Asbestos free.
Gage: 0.080"

ACCESSORIES:

Vinyl Wall Base: Provide vinyl base complying with FS SS-W-40, Type II, with matching end stops and preformed or molded corner units, and as follows:

Height: 4".
Thickness: 0.080" gage.
Style: Standard top-set cove.
Finish: Matte.

PART 3 - EXECUTION

PREPARATION:

Require Installer to inspect subfloor surfaces to determine that they are satisfactory. A satisfactory subfloor surface is defined as one that is smooth and free from cracks, holes, ridges, coatings preventing adhesive bond, and other defects impairing performance or appearance.

Perform bond and moisture tests on concrete subfloors to determine if surfaces are sufficiently cured and dry as well as to ascertain presence of curing compounds.

Do not allow resilient flooring work to proceed until subfloor surfaces are satisfactory.

INSPECTION:

Prepare subfloor surfaces as follows:

Use leveling and patching compounds as recommended by resilient flooring manufacturer for filling small cracks, holes and depressions in subfloors.

Remove coatings from subfloor surfaces that would prevent adhesive bond, including curing compounds incompatible with resilient flooring adhesives, paint, oils, waxes and sealers.

Broom clean or vacuum surfaces to be covered, and inspect subfloor.

Apply concrete slab primer, if recommended by flooring manufacturer, prior to application of adhesive. Apply in compliance with manufacturer's directions.

INSTALLATION:

Install resilient flooring using method indicated in strict compliance with manufacturer's printed instructions. Extend flooring into toe spaces, door reveals, and into closets and similar openings.

Scribe, cut, and fit resilient flooring to permanent fixtures, built-in furniture and cabinets, pipes, outlets and permanent columns, walls and partitions.

Maintain reference markers, holes, or openings that are in place or plainly marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other non-permanent marking device.

Tightly cement resilient flooring to subbase without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, or other surface imperfections. Hand roll resilient flooring at perimeter of each covered area to assure adhesion.

INSTALLATION OF ACCESSORIES:

Apply wall base to walls, columns, pilasters, casework and other permanent fixtures in rooms or areas where base is required. Install base in lengths as long as practicable, with preformed corner units, or fabricated from base materials with mitered or coped inside corners. Tightly bond base to substrate throughout length of each piece, with continuous contact at horizontal and vertical surfaces.

On Masonry surfaces, or other irregular substrates, fill voids along top edge of resilient wall base with manufacturer's recommended adhesive filler material.

Place resilient edge strips tightly butted to flooring and secure with adhesive. Install edging strips at edges of flooring which would otherwise be exposed.

CLEANING AND PROTECTION:

Perform following operations immediately upon completion of resilient flooring:

Sweep or vacuum floor thoroughly.

Do not wash floor until time period recommended by resilient flooring manufacturer has elapsed to allow resilient flooring to become well-sealed in adhesive.

Damp-mop floor being careful to remove black marks and excessive soil.

Remove any excess adhesive or other surface blemishes, using appropriate cleaner recommended by resilient flooring manufacturers.

Protect flooring against damage during construction period to comply with resilient flooring manufacturer's directions.

Protect resilient flooring against damage from rolling loads for initial period following installation by covering with plywood or hardboard. Use dollies to move stationary equipment or furnishings across floors.

Cover resilient flooring with undyed, untreated building paper until inspection for substantial completion.

END OF SECTION 09650

SECTION 09900 - PAINTING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of painting work is indicated on drawings and schedules, as herein specified, and as indicated in color schedules included at the end of this section.

Work includes painting and finishing of interior and exterior exposed items and surfaces throughout project, except as otherwise indicated.

Surface preparation, priming and coats of paint specified are in addition to shop-priming and surface treatment specified under other sections of work.

Work includes field painting of exposed bare and covered pipes and ducts (including color coding), and of hangers, exposed steel and iron work, and primed metal surfaces of equipment installed under mechanical and electrical work, except as otherwise indicated.

"Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.

Surfaces to be Painted: Except where natural finish of material is specifically noted as a surface not to be painted, paint exposed surfaces whether or not colors are designated in "schedules". Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. If color or finish is not designated, Architect will select these from standard colors or finishes available.

Following categories of work are not included as part of field- applied finish work.

Pre-Finished Items: Unless otherwise indicated, do not include painting when factory-finishing or installer-finishing is specified for such items as (but not limited to) metal toilet enclosures, prefinished partition systems, acoustic materials, architectural woodwork and casework, elevator entrance doors and frames, elevator equipment, and finished mechanical and electrical equipment, including light fixtures, switchgear and distribution cabinets.

Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, utility tunnels, pipe spaces, duct shafts and elevator shafts.

Finished Metal Surfaces: Unless otherwise indicated, metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting.

Operating Parts: Unless otherwise indicated, moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sinkages, sensing devices, motor and fan shafts will not require finish painting.

Following categories of work are included under other sections of these specifications.

Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under various sections for structural steel, metal fabrications, hollow metal work and similar items.

Unless otherwise specified, shop priming of fabricated components such as architectural woodwork, wood casework and shop- fabricated or factory-built mechanical and electrical equipment or accessories is included under other sections of these specifications.

Mechanical and Electrical Work: Painting of exposed elements of mechanical and electrical work installed as part of the work of separate contracts is included as part of the work of this section.

Do not paint over any code-required labels, such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

QUALITY ASSURANCE:

Single Source Responsibility: Provide primers and other undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

Coordination of Work: Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information or characteristics of finish materials provided for use, to ensure compatible prime coats are used.

SUBMITTALS:

Product Data: Submit manufacturer's technical information including Paint label analysis and application instructions for each material proposed for use.

Samples: Prior to beginning work, Architect will furnish color chips for surfaces to be painted. Use representative colors when preparing samples for review. Submit samples for Architect's review of color and texture only. Provide a listing of material and application for each coat of each finish sample.

On 12" x 12" hardboard, provide two samples of each color and material, with texture to simulate actual conditions. Resubmit samples as requested by Architect until acceptable sheen, color, and texture is achieved.

On actual wood surfaces, provide two 4" x 8" samples of natural and stained wood finish. Label and identify each as to location and application.

On concrete masonry, provide two 8" square samples of masonry for each type of finish and color, defining filler, prime and finish coat.

On actual wall surfaces and other exterior and interior building components, duplicate painted finishes of prepared samples. Provide full-coat finish samples on at least 100 sq. ft. of surface, as directed, until required sheen, color and texture is obtained; simulate finished lighting conditions for review of in-place work.

Final acceptance of colors and textures will be from samples applied on the job.

DELIVERY AND STORAGE:

Deliver materials to job site in original, new and unopened packages and containers bearing manufacturer's name and label, and following information:

Name or title of material.
Fed. Spec. number, if applicable.
Manufacturer's stock number and date of manufacture.
Manufacturer's name.
Contents by volume, for major pigment and vehicle constituents.
Thinning instructions.
Application instructions.
Color name and number.

Store materials not in actual use in tightly covered containers. Maintain containers used in storage of paint in a clean condition, free of foreign materials and residue.

Protect from freezing where necessary. Keep storage area neat and orderly. Remove oily rags and waste daily. Take all precautions to ensure that workmen and work areas are adequately protected from fire hazards and health hazards resulting from handling, mixing and application of paints.

JOB CONDITIONS:

Apply water-base paints only when temperature of surfaces to be painted and surrounding air temperatures are between 50°F (10°C) and 90°F (32°C), unless otherwise permitted by paint manufacturer's printed instructions.

Apply solvent-thinned paints only when temperature of surfaces to be painted and surrounding air temperatures are between 45°F (7°C) and 95°F (35°C), unless otherwise permitted by paint manufacturer's printed instructions.

Do not apply paint in snow, rain, fog or mist, or when relative humidity exceeds 85%, or to damp or wet surfaces, unless otherwise permitted by paint manufacturer's printed instructions.

Painting may be continued during inclement weather if areas and surfaces to be painted are enclosed and heated within temperature limits specified by paint manufacturer during application and drying periods.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

Devoe and Reynolds Co. (Devoe).
Glidden Coatings and Resins, Division of SCM Corporation (Glidden).
Benjamin Moore and Co. (Moore).
PPG Industries, Pittsburgh Paints (Pittsburgh).
Pratt and Lambert (P & L).

MATERIALS:

Material Quality: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable.

Proprietary names used to designate color or materials are not intended to imply that products of named

manufacturers are required to exclusion of equivalent products of other manufacturers.

Federal Specifications establish minimum acceptable quality for paint materials. Provide written certification from paint manufacturer that materials provided meet or exceed these minimums.

Color Pigments: Pure, non-fading, applicable types to suit substrates and service indicated.

Lead content in pigment, if any, is limited to contain not more than 0.06% lead, as lead metal based on the total non- volatile (dry-film) of paint by weight.

This limitation is extended to interior surfaces and those exterior surfaces, such as stairs, decks, porches, railings, windows, and doors which are readily accessible to children under seven years of age.

PART 3 - EXECUTION

INSPECTION:

Applicator must examine areas and conditions under which painting work is to be applied and notify Contractor in writing of conditions detrimental to proper and timely completion of work. Do not proceed with work until unsatisfactory conditions have been correct in a manner acceptable to Applicator.

Starting of painting work will be construed as Applicator's acceptance of surfaces and conditions within any particular area.

Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions otherwise detrimental to formation of a durable paint film.

SURFACE PREPARATION:

General: Perform preparation and cleaning procedures in accordance with paint manufacturer's instructions and as herein specified, for each particular substrate condition.

Provide barrier coats over incompatible primers or remove and reprime as required. Notify Architect in writing of any anticipated problems in using the specified coating systems with substrates primed by others.

Remove hardware, hardware accessories, machined surfaces, plates, lighting fixtures, and similar items in place and not to be finish-painted, or provide surface-applied protection prior to surface preparation and painting operations. Remove, if necessary, for complete painting of items and adjacent surfaces. Following completion of painting of each space or area, reinstall removed items.

Clean surfaces to be painted before applying paint or surface treatments. Remove oil and grease prior to mechanical cleaning. Program cleaning and painting so that contaminants from cleaning process will not fall onto wet, newly-painted surfaces.

Cementitious Materials: Prepare cementitious surfaces of concrete, concrete block, cement plaster and cement-asbestos board to be painted by removing efflorescence, chalk, dust, dirt, grease, oils, and by roughening as required to remove glaze.

Determine alkalinity and moisture content of surfaces to be painted by performing appropriate tests. If surfaces are found to be sufficiently alkaline to cause blistering and burning of finish paint, correct this condition before application of paint. Do not paint over surfaces where moisture content exceeds that permitted in manufacturer's printed directions.

Clean concrete floor surfaces scheduled to be painted with a commercial solution or muriatic acid, or other etching cleaner. Flush floor with clean water to neutralize acid, and allow to dry before painting.

Wood: Clean wood surfaces to be painted of dirt, oil, or other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sandpaper smooth those finished surfaces exposed to view, and dust off. Scrape and clean small, dry, seasoned knots any apply a thin coat of white shellac or other recommended knot sealer, before application of priming coat. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood-filler. Sandpaper smooth when dried.

Prime, stain, or seal wood required to be job-painted immediately upon delivery to job. Prime edges, ends, faces, undersides, and backsides of such wood, including cabinets, counters, cases, paneling.

When transparent finish is required, use spar varnish for backpriming.

Backprime paneling on interior partitions only where masonry, plaster, or other wet wall construction occurs on backside.

Seal tops, bottoms, and cut-outs of unprimed wood doors with a heavy coat of varnish or equivalent sealer immediately upon delivery to job.

Ferrous Metals: Clean ferrous surfaces, which are not galvanized or shop-coated, of oil, grease, dirt, loose mill scale and other foreign substances by solvent or mechanical cleaning.

Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent.

MATERIALS PREPARATION:

Mix and prepare painting materials in accordance with manufacturer's directions.

Maintain containers used in mixing and application of paint in a clean condition, free of foreign materials and residue.

Stir materials before application to produce a mixture of uniform density, and stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

APPLICATION:

General: Apply paint in accordance with manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

Paint colors, surface treatments, and finishes, are indicated in "schedules" of the contract documents.

Provide finish coats which are compatible with prime paints used.

Apply additional coats when undercoats, stains or other conditions show through final coat of paint, until paint film is of uniform finish, color and appearance. Give special attention to insure that surfaces, including edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

Paint surfaces behind movable equipment and furniture same as similar exposed surfaces. Paint surfaces behind permanently- fixed equipment or furniture with prime coat only before final installation of equipment.

Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular black paint.

Paint back sides of access panels, and removable or hinged covers to match exposed surfaces.

Finish exterior doors on tops, bottoms and side edges same as exterior faces, unless otherwise indicated.

Sand lightly between each succeeding enamel or varnish coat.

Omit first coat (primer) on metal surfaces which have been shop-primed and touch-up painted, unless otherwise indicated.

Scheduling Painting: Apply first-coat material to surfaces that have been cleaned, pretreated or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

Allow sufficient time between successive coatings to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and application of another coat of paint does not cause lifting or loss of adhesion of the undercoat.

Minimum Coating Thickness: Apply materials at not less than manufacturer's recommended spreading rate, to establish a total dry film thickness as indicated or, if not indicated, as recommended by coating manufacturer.

Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to those items exposed to mechanical equipment rooms and in occupied spaces.

Prime Coats: Apply prime coat of material which is required to be painted or finished, and which has not been prime coated by others.

Recoat primed and sealed surfaces where there is evidence of suction spots or unsealed areas in first coat, to assure a finish coat with no burn-through or other defects due to insufficient sealing.

Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling such as laps, irregularity in texture, skid marks, or other surface imperfections.

Pigmented (Opaque) Finishes: Completely cover to provide an opaque, smooth surface of uniform finish, color, appearance and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness or other surface imperfections will not be acceptable.

Transparent (Clear) Finish: Use multiple coats to produce glass- smooth surface film of even luster. Provide a finish free of laps, cloudiness, color irregularity, runs, brush marks, orange peel, nail holes, or other surface imperfections.

Provide satin finish for final coats, unless otherwise indicated.

Completed Work: Match approved samples for color, texture and coverage. Remove, refinish or repaint work not in compliance with specified requirements.

FIELD QUALITY CONTROL:

The right is reserved by Owner to invoke the following material testing procedure at any time, and any number of times during period of field painting:

Engage services of an independent testing laboratory to sample paint being used. Samples of materials delivered to project site will be taken, identified and sealed, and certified in presence of Contractor.

Testing laboratory will perform appropriate tests for any or all of following characteristics: Abrasion resistance, apparent reflectivity, flexibility, washability, absorption, accelerated weathering, dry opacity, accelerated yellowness, recoating, skinning, color retention, alkali resistance and quantitative materials analysis.

If test results show that material being used does not comply with specified requirements, Contractor may be directed to stop painting work, and remove non-complying paint; pay for testing; repaint surfaces coated with rejected paint;

remove rejected paint from previously painted surfaces if, upon repainting with specified paint, the two coatings are non-compatible.

CLEAN-UP AND PROTECTION:

Clean-Up: During progress of work, remove from site discarded paint materials, rubbish, cans and rags at end of each work day.

Upon completion of painting work, clean window glass and other paint spattered surfaces. Remove spattered paint by proper methods of washing and scraping, using car not to scratch or otherwise damage finished surfaces.

Protection: Protect work of other trades, whether to be painted or not, against damage by painting and finishing work. Correct any damage by cleaning, repairing or replacing, and repainting, as acceptable to Architect.

Provide "Wet Paint" signs as required to protect newly-painted finishes. Remove temporary protective wrappings provided by others for protection of their work, after completion of painting operations.

At completion of work of other trades, touch-up and restore all damaged or defaced painted surfaces.

EXTERIOR PAINT SCHEDULE:

General: Provide the following Paint systems for the various substrates, as indicated. Not all of the systems listed may be used; ignore paint systems listed that do not apply to the work.

Concrete, Stucco and Masonry: (Other than concrete masonry units).

Lusterless (Flat) Acrylic Finish: 2 coats with total dry film thickness not less than 2.5 mils.

First and Second Coats: Acrylic Emulsion (FS TT-P-19).

Devoe: 15XX Wonder-Shield Exterior Acrylic Latex Flat House Paint.
Glidden: Y3525 Spred Glide-On.
Moore: Moorglo House and Trim Paint.
Pittsburgh: 6-610 Speedhide Acrylic Latex House Paint.
P & L: Pro-Hide Plus Latex House Paint.

Heavy-Duty Textured Coating: One coat with total dry film thickness not less than 15.0 mils.

First Coat: Heavy-duty, Textured Coating (FS TT-C-555, Type II).

Devoe: 481XX Re-New Coat Interior/Exterior Modified Epoxy Masonry Texture Coating.
Glidden: Y-5392 Glid-Tex High Profile Spray Texture.
P & L: Pro-Hide Texture Masonry Coating.

Concrete Masonry Units:

Lusterless (Flat) Acrylic Finish: 2 coats over filler coat with total dry film thickness not less than 2.5 mils, excluding filler coat.

Filler Coat: Solvent Thinned Block Filler for Porous Surfaces (FS TT-F-1098).

Devoe: 52901 Bloxfil Interior/Exterior Acrylic Latex Block Filler.
Glidden: Y-5317 Ultra-Hide Acrylic Latex Block Filler.
Moore: Moore's Waterproofing Masonry Paint.

First and Second Finish Coats: Acrylic Emulsion (FS TT-P- 19).

Devoe: 15XX Wonder Shield Exterior Acrylic Latex Flat House Paint.
Glidden: Y3525 Spred Glid-On.
Moore: Moorgard Latex House Paint.

Heavy-Duty Textured Coating: 2 coats with total dry film thickness not less than 25.0 mils.

First and Second Coats: Heavy-duty, Textured Coating (FS TT-C-555, Type II).

Devoe: 481XX Re-New Coat Interior/Exterior Modified Epoxy Masonry Texture Coating.
Glidden: Y5392 Glid-Tex High Profile Spray Texture.
P & L: Pro-Hide Texture Masonry Coating.

General Painted Wood:

Alkyd Semi-Gloss Finish: 2 finish coats over primer with total dry film thickness not less than 3.5 mils.

Prime Coat: Exterior Primer Coating (FS TT-P-25).

Devoe: 1102 All-Weather Exterior Alkyd House Paint Primer.
Glidden: Y-1951 Spred Gel-Flo Base Coat.
Moore: Moore's Moorwhite Primer.
Pittsburgh: 6-Line Speedhide Exterior Wood Primer.
P & L: Permalize Exterior Primer.

First and Second Finish Coats: Exterior Alkyd Semi-Gloss Enamel (TT-E-489).

Devoe: 70XX Mirrolac Interior/Exterior Alkyd Semi Gloss Enamel.
Glidden: Y-4500-Line Glid-Guard Industrial Enamel.
Moore: Impervo Semi-Gloss Enamel Exterior/ Interior.
Pittsburgh: 6-Line Speedhide Quick-Dry Alkyd Enamel.
P & L: Effecto Enamel.

Painted Plywood:

Lusterless (Flat) Acrylic Finish: 2 Finish coats over primer and sealer.

Sealer: Varnish-type Surface Sealer (FS TT-S-176).

Devoe: 4900 Wonder Wood Sealer Interior Quick-Dry Clear Sealer.
Glidden: Y-3651 Spread House Paint Prime Coat.
Moore: (No sealer coat required).
Pittsburgh: 77-1 Rez Sealer-Primer.
P & L: Varmor Penetrating Sealer.

Prime Coat: Exterior Primer Coating (FS TT-P-25).

Devoe: 1102 All-Weather Alkyd House Paint Primer.
Glidden: Y-3651 Spred House Paint Prime Coat.
Moore: Moore's Moorwhite Primer.
Pittsburgh: 6-9 Speedhide Exterior Wood Primer.
P & L: Permalize Exterior Primer.

First and Second Finish Coats: Finish Coats: Acrylic Emulsion (FS TT-P-19).

Devoe: 15XX Wonder-Shield Exterior Acrylic Latex Flat House Paint.
Glidden: Y-3600-Line Spred House Paint.
Moore: Moorgard Latex House Paint.
Pittsburgh: 6-610 Line Speedhide Acrylic Latex House Paint.
P & L: Pro-Hide Plus Latex House Paint.

Stained Wood:

Full Gloss Stained Varnish Finish: 3 Finish Coats over stain plus a filler on open grain wood.

Stain Coat: Semi-transparent Exterior Oil Stain (FS TT-S- 708).

Devoe: 94XX Wonder Woodtones Exterior Alkyd Semi-Transparent Stains.
Glidden: Y-721 Line Spred Semi-Transparent Oil Stain.
Moore: Moorwood Semi-Transparent Stain and Wood Preservative.
Pittsburgh: 77-660 Rez Semi-Transparent Stain, Alkyd Oil Type.
P & L: Penetrating Rustin Stain.

Filler Coat on Open Grain Wood: Paste Wood Fillers (FS TT- F-336). Wipe before first varnish coat.

Devoe: 4800 Wonder Woodstain Interior Paste Wood Filler.
Glidden: Y-700 Line Paste Wood Filler.

First, Second and Third Finish Coats: Exterior Spar Varnish (FS TT-V-121).

Devoe: 5500 87 Spar Interior/Exterior Alkyd Gloss Spar Varnish.
Glidden: Y-40 Spred Spar Varnish.
Moore: Impervo 440 Spar Varnish.
Pittsburgh: 77-10 Rez Spar Varnish.

P & L: Spar Varnish.

Flat Stain, No Finish: 1 coat.

First Coat: Exterior Semi-Transparent Oil Stain (FS TT-S- 708).

Devoe: 94XX Wonder Woodtones Exterior Alkyd Semi-Transparent Stains.
Glidden: Y-721 Line Spred Semi-Transparent Oil Stain.
Moore: Moorwood Semi-Transparent Stain and Wood Preservative.
Pittsburgh: 77-660 Rez Semi-Transparent Stain, Alkyd Oil Type.
P & L: Penetrating Rustic Stain.

Natural Finish Wood:

Full Gloss Varnish Finish: 3 Coats: Fill open grain wood and wipe before first varnish coat.

Filler Coat on Open Grain Wood: Paste Wood Filler (FS TT-F-336). Wipe before first varnish coat.

Devoe: 4800 Wonder Woodstain Interior Paste Wood Filler.
Glidden: Y-700 Line Paste Wood Filler.

First, Second and Third Coats: Exterior Spar Varnish (FS TT-V-121).

Devoe: 5500 87 Spar Interior/Exterior Alkyd Gloss Spar Varnish.
Glidden: Y-40 Spred Spar Varnish.
Moore: Impervo 440 Spar Varnish.
Pittsburgh: 77-10 Rez Spar Varnish.
P & L: Spar Varnish.

Ferrous Metal:

Semi-Gloss Alkyd Enamel: 2 Finish coats over primer.

Prime Coat: Red Lead Pigmented Primer (FS TT-P-86). Primer is not required on items delivered shop primed.

Devoe: 41821 Bar-Ox Red Lead Metal Primer.
Glidden: Y-5532 Glid-Guard Red Lead Metal Primer.
Pittsburgh: UC 10424 Red Lead Primer.
P & L: P & L Red Lead Primer.

First and Second Finish Coats: Semi-Gloss Alkyd Enamel (FS TT-E-529, Class A).

Devoe: 1XX All-Weather Exterior Alkyd Gloss House and Trim Paint.
Glidden: Y-4600 Line Spred Lustre.

Pittsburgh: 6-90 Speedhide Lo-Sheen Enamel.
P & L: Vitralite Eggshell Enamel.

Zinc-Coated Metal:

Semi Gloss Alkyd Enamel: 2 Finish coats over primer.

Prime Coat: Zinc Dust-Zinc Oxide Primer (FS TT-P-641).

Devoe: 14100 Zinc Dust Primer and Finish.
Glidden: Y-5229 Glid-Guard All-Purpose Metal Primer.
Pittsburgh: 6-215 Speedhide Galvanized Steel Primer.

First and Second Finish Coats: Semi-Gloss Alkyd Enamel (FS TT-E-529, Class A).

Devoe: 1XX All-Weather Exterior Alkyd Gloss House and Trim Paint.
Glidden: Y-4600 Line Spred Lustre.
Pittsburgh: 6-90 Speedhide Lo-Sheen Enamel.
P & L: Vitralite Eggshell Enamel.

Aluminum:

Semi-Gloss Alkyd Enamel: 2 Finish coats over primer.

Prime Coat: Zinc Chromate Primer (FS TT-P-645).

Devoe: 13201 Mirrolac Galvanized Metal Primer.
Glidden: Y-5229 - Glid-Guard All-Purpose Metal Primer.
Pittsburgh: 6-204 PPG Zinc Chromate Primer.
P & L: Noxide Zinc Chromate Primer.

First and Second Finish Coats: Semi-Gloss Alkyd Enamel (FS TT-E-529, Class A).

Devoe: 1XX All-Weather Exterior Alkyd Gloss House and Trim Paint.
Glidden: Y-4600 Line Spred Lustre.
Pittsburgh: 6-90 Speedhide Lo-Sheen Enamel.
P & L: Vitralite Eggshell Enamel.

INTERIOR PAINT SCHEDULE:

General: Provide the following paint systems for the various substrates, as indicated. Not all paint systems listed may be used; ignore systems listed that are not used in the Work.

Concrete and Masonry: (Other than concrete masonry units).

Lusterless (Flat) Latex Finish: 2 coats.

First and Second Coats: Interior Flat Latex Base Paint (FS TT-P-29).

Devoe: 36XX Wonder-Tones Interior Latex Flat Wall Paint.
Glidden: Y-3400-Line Spred Satin Latex Wall Paint.
Moore: Moore's Regal Wall Satin.
Pittsburgh: 6-70 Speedhide Latex Wall Paint.
P & L: Pro-Hide Plus Latex Flat.

Concrete:

Interior Polyester Epoxy in Gloss or Semi-Gloss Finish: 3 Coats with total dry film thickness not less than 4.0 mils.

First Coat: Interior Latex Emulsion (FS TT-P-29).

Devoe: 36XX Wonder-Tones Interior Latex Flat Wall Paint.
Moore: Moore's Regal Wall Satin.
Pittsburgh: 6-70 Speedhide Latex Flat Wall Paint.

Second and Third Coats: Polyester Epoxy (FS TT-C-545).

Devoe: 124XX Tru-Glaze 4 Epoxy Gloss.
Moore: Tile-Like Catalyzed Architectural Coatings.
Pittsburgh: 16-610/16-630 Pitt-Glaze High Solids

Texured Paint Finish: 2 coat system.

First Coat: Interior latex paint with sand additive.

Moore: 38701

Second Coat: Interior latex paint.

Moore: 38701
Polyester Epoxy Finish Coatings.

Concrete Masonry Units:

Lusterless (Flat) Emulsion Finish: 2 Finish coats over filled surface.

Filler Coat: Solvent-Thinned Block Filler (FS TT-F-1098). Apply filler coat at a rate to ensure complete coverage with pores filled.

Devoe: 52901 Bloxfil Acrylic Flat Latex Block Filler.
Glidden: Y-5317 Line Ultra-Hide Acrylic Block Filler.
Moore: Moore's Waterproofing Masonry Paint.

First and Second Finish Coats: Interior Latex Emulsion (FS TT-P-29).

Devoe: 36XX Wonder-Tones Latex Flat Wall Paint.
Glidden: Y-2400-Line - Spred Satin Latex Wall Paint.
Moore: Moore's Regal Wall Satin.

Gypsum Drywall Systems:

Lusterless (Flat) Emulsion Finish: 2 Coats.

First Coat: Interior Latex Base Primer Coat (FS TT-P- 650).

Devoe: 50801 Wonder-Tones Latex Flat Wall Paint.
Glidden: Y-3416 Spred Primer Sealer.
Moore: Moore's Latex Quick-Dry Prime Seal.
Pittsburg: 6-2 PPG Quick-Drying Interior Latex Primer sealer.
P & L: Pro-Hide Plus Latex Primer.

Second Coat: Interior Flat Latex Base Paint (FS TT-P-29).

Devoe: 36XX Wonder-Tones Interior Latex Flat Wall Paint.
Glidden: Y-3400 Line - Spred Satin Latex Wall Paint.
Moore: Moore's Regal Wall Satin.
Pittsburgh: 6-70 Speehide Latex Flat Wall Paint.
P & L: Pro-Hide Plus Latex Flat.

Odorless Semi-Gloss Alkyd Enamel Finish: 3 coats with total dry film thickness not less than 2.5 mils.

First Coat: Interior Latex Base Primer Coat (FS TT-P- 650).

Devoe: 50801 Wonder-Tones Latex Primer and Sealer.
Glidden: Y-3416 Spred Primer Sealer.
Moore: Moore's Latex Quick-Dry Primes seal.
Pittsburgh: 6-2 PPG Quick-Drying Interior Latex Primer Sealer.
P & L: Pro-Hide Plus Latex Primer.

Second and Third Coats: Odorless Interior Semi-Gloss Alkyd Enamel (FS TT-E-509).

Devoe: 26XX Velour Alkyd Semi-Gloss Enamel.
Glidden: Y-4600 Line - Spred Lustre Semi-Gloss.
Moore: Moore's Satin Impervo Enamel.
Pittsburgh: 27-109 Wall-Hide Semi-Gloss.
P & L: Pro-Hide Plus Alkyd Semi-Gloss Enamel.

Texured Paint Finish: 2 coat system.

First Coat: Interior latex paint with sand additive.

Moore: 38701

Second Coat: Interior latex paint.

Moore: 38701

Plaster:

Lusterless (Flat) Emulsion Finish: 2 Coats.

First Coat: Interior Flat Latex Base Paint (FS TT-P-29).

Devoe: 36XX Wonder-Tones Interior Latex Flat Wall Paint.
Glidden: Y-3400 Line - Spred Satin.
Moore: Moore's Latex Quick-Dry Prime Seal.
Pittsburgh: 6-70 Speedhide Latex Flat Paint.
P & L: Pro-Hide Plus Latex Flat Paint.

Second Coat: Interior Flat Latex Base Paint (FS TT-P-29).

Devoe: 36XX Wonder-Tones Interior Latex Flat Wall Paint.
Glidden: Y-3400 Line - Spred Satin.
Moore: Moore's Regal Wall Satin.
Pittsburgh: 6-70 Speedhide Latex Flat Wall Paint.
P & L: Pro-Hide Plus Latex Flat Paint.

Ferrous Metal:

Semi-Gloss Enamel Finish: 2 Coats over primer, with total dry film thickness not less than 2.5 mils.

Prime Coat: Red Lead Base Primer (FS TT-P-86). Prime coat is not required on items delivered shop primed.

Devoe: 41821 Bar-Ox Red Lead Metal Primer.
Glidden: Y-5532 - Glid-Guard Red Lead Metal Primer.
Moore: Iron-Clad Retardo Rust Inhibitive Paint.
Pittsburgh: U610424 Speedhide Red Lead Primer.
P & L: P & L Red Lead Primer.

First Coat: Interior Enamel Undercoat (FS TT-E-543).

Devoe: 8801 Velour Alkyd Enamel Undercoat.
Glidden: Y-4600 Series SpredLustre Semi-Gloss Enamel.
Moore: Moore's Alkyd Enamel Underbody.
Pittsburgh: 6-6 Speedhide Quick-Drying Enamel Undercoater.
P & L: Interior Trim Primer.

Second Coat: Odorless Interior Semi-Gloss Enamel (FS TT-E- 509.

Devoe: 26XX Velour Alkyd Semi-Gloss Enamel.
Glidden: Y-4600 Line - Spred Lustre Semi-Gloss.
Moore: Moore's Satin Impervo Enamel.
Pittsburgh: 27-109 Wall-Hide Semi-Gloss Enamel.
P & L: Pro-Hide Plus Alkyd Semi-Gloss Enamel.

Zinc-Coated Metal:

Semi-Gloss Finish: 2 Coats over primer, with total dry film thickness not less than 2.5 mils.

Prime Coat: Zinc-Dust - Zinc Oxide Primer Coating (FS TT- P-641).

Devoe: 14100 Zinc Dust Primer.
Glidden: Y-5229 - Glid-Guard All-Purpose Metal Primer.
Moore: Iron-Clad Galvanized Metal Primer.
Pittsburgh: 6-215/6-216 Speedhide Galvanized Steel Paint Zinc Dust.

Second Coat: Interior Enamel Undercoat (FS TT-E-543).

Devoe: 8801 Velour Alkyd Enamel Undercoat.
Glidden: Y-4600 Series Spred Lustre Semi-Gloss Enamel.
Moore: Moore's Alkyd Enamel Underbody.
Pittsburgh: 6-6 Speedhide Quick-Drying Enamel Undercoater.
S-W: S-W Pro-Mar Alkyd Semi-Gloss.

Third Coat: Odorless Interior Alkyd Semi-Gloss Enamel (FS TT-P-509).

Devoe: 26XX Velour Alkyd Semi-Gloss Enamel.
Glidden: Y-4600 Line - Spred Lustre Semi-Gloss.
Moore: Moore's Satin Impervo Enamel.
Pittsburgh: 27-109 Wall-Hide Semi-Gloss Enamel.

Painted Woodwork and Hardboard:

Semi-Gloss Enamel Finish: 3 Coats.

First Coat: Interior Enamel Undercoat (FS TT-E-543).

Devoe: 8801 Velour Alkyd Enamel Undercoat.
Glidden: Y-555-Line - Spred Undercoater.
Moore: Moore's Alkyd Enamel Underbody.
Pittsburgh: 6-6 Speedhide Quick-Drying Enamel Undercoater.
P & L: Interior Trim Primer.

Second and Third Coats: Odorless Interior Semi-Gloss Enamel (FS TT-E-509).

Devoe: 26XX Velour Alkyd Semi-Gloss Enamel.
Glidden: Y-4600 Line - Spred Lustre Semi-Gloss.
Pittsburgh: 27-109 Wall-Hide Semi-Gloss Enamel.
P & L: Pro-Hide Plus Alkyd Semi-Gloss Enamel.

Natural/Stained Woodwork:

Satin Alkyd Finish: 2 coats plus filler and stain.

First Coat: 1 coat paste wood filler (if specified on open grain woods).

P & L: P & L Paste Filler

Second Coat: 1 coat wood stain (if stained finish).

P & L: Tonetic Wood Stain.

Third Coat: 1 coat sanding sealer.

P & L: P & L Sanding Sealer.

Fourth Coat: 1 coat clear alkyd finish.

P & L: P & L 38 Clear Finish.

SEE PAINT SCHEDULE BY OWNER'S INTERIOR DESIGNER

END OF SECTION 09900

COMFORT SUITES

SECTION 09950 - WALLCOVERINGS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of wallcovering work is indicated on drawings and in schedule provided by Interior Designer.

Work included in this section includes furnishing of all installation and miscellaneous materials and installation of Owner supplied wallcovering materials.

QUALITY ASSURANCE:

Manufacturer: Provide each type of wall covering as produced by a single manufacturer, including recommended primers, adhesives, and sealants.

Installer: A firm specializing in wallcovering work with not less than three years of experience in installing wallcoverings similar to those required for this project.

Test Panels: Install 3 test panels of full usable width, including one corner, in areas designated by Architect. Replace test panels which are not acceptable to Architect until satisfactory installation is achieved.

SUBMITTALS:

Product Data: Submit manufacturer's technical data and installation instructions for each type of installation material.

Certification: Submit manufacturer's certification that materials furnished comply with requirements specified.

DELIVERY AND STORAGE:

General: Comply with instructions and recommendations of manufacturer and as herein specified.

Deliver materials to project site in original packages or containers clearly labeled to identify manufacturer, brand name, quality or grade, and fire hazard classification.

Store materials in original undamaged packages or containers. Maintain temperature in storage area above 40°F (4°C).

JOB CONDITIONS:

Maintain constant minimum temperature of 60°F (16°C) at areas of installation for at least 72 hours before and 48 hours after application of materials.

Illuminate areas of installation using building's permanent lighting system; temporary lighting alone will not be acceptable.

PART 2 - PRODUCTS

WALLCOVERING:

Wallcoverings will be supplied by Owner.

ACCESSORY ITEMS:

Adhesives: Provide manufacturer's recommended adhesive, primer, and sealer, produced expressly for use with selected wallcovering on substrate as shown on drawings. Provide materials which are mildew-resistant and nonstaining to wall covering.

Release Coat: Oil base sealer or enamel undercoater for virgin drywall substrates as recommended by wallcovering manufacturer.

Corner Guards: Provide clear vinyl corner guards, 1" x 1" x 48" at all outside corners in public corridors and areas.

PART 3 - EXECUTION

PREPARATION:

Acclimatize wall covering materials by removing from packaging in area of installation not less than 24 hours before application.

Remove switchplates, wall plates, and surface-mounted fixtures in areas where wall covering is to be applied.

Prime and seal substrates in accordance with wallcovering manufacturer's recommendations for type of substrate Apply surface sealer to gypsum drywall which will permit subsequent removal of wall covering without damage to paper facing.

Test substrates with electronic moisture meter to verify that surfaces to be covered do not exceed 4% moisture content.

INSTALLATION:

Vinyl Wallcovering:

Place wallcovering panels consecutively in order cut from rolls, including filling of spaces above or below openings Hang by reversing alternate strips except on match patterns.

Apply adhesive to back of wallcovering and place in accordance with manufacturer's instructions. Install seams plumb, and at least 6" away from corners. Horizontal seams are not permitted. Overlap seams and double-cut to assure tight closure. Roll, brush, or use broad knife to remove air bubbles, wrinkles, blisters, and other defects. Cut wall covering evenly to edges of outlet boxes or support.

Trim selvages as required to assure color uniformity and pattern match.

Remove excess adhesive along finished seams while it is still wet using warm water and clean sponge, and wipe dry.

ADJUST AND CLEAN:

Replace removed plates and fixtures; verify cut edges of wall coverings are completely concealed.

Install corner guards according to manufacturer's instructions.

Remove surplus materials, rubbish, and debris resulting from wall covering installation upon completion of work, and leave areas of installation in neat, clean condition.

REFER TO SCHEDULE OF WALLCOVERINGS BY INTERIOR DESIGNER

END OF SECTION 09950

SECTION 10200 - LOUVERS AND VENTS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of louvers and vents is indicated on drawings, including indications of sizes and locations.

Types of louvers and vents include the following:

Extruded aluminum louvers

Sealants including installation are specified in Division 7.

Field-applied paint is specified in Division 9.

QUALITY ASSURANCE:

Comply with SMACNA "Architectural Sheet Metal Manual" recommendations for fabrication, construction details and installation procedures, except as otherwise indicated.

Field Measurements: Verify size, location and placement of louver units prior to fabrication, wherever possible.

Shop Assembly: Coordinate field measurements and shop drawings with fabrication and shop assembly to minimize field adjustments, splicing, mechanical joints and field assembly of units. Preassemble units in shop to greatest extent possible and disassemble as necessary for shipping and handling limitations. Clearly mark units for reassembly and coordinated installation.

SUBMITTALS:

Product Data: Submit manufacturer's specifications; certified test data, where applicable; and installation instructions for required products, including finishes.

Samples: Submit 12" square, of each required finish. Prepare samples on metal of the same gage and alloy to be used in work. Where normal color and texture variations are to be expected, include 2 or more units in each sample showing limits of such variations.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

The Airolite Co.

Construction Specialties, Inc.
Industrial Louvers, Inc.
Ruskin Mfg. Co.

MATERIALS:

Aluminum Sheet: ASTM B 209, Alloy 3003 or 5005 with temper as required for forming, or as otherwise recommended by metal producer to provide required finish.

Aluminum Extrusions: ASTM B 221, Alloy 6063-T52.

Fastenings: Use same material as items fastened, unless otherwise indicated. Fasteners for exterior applications may be hot- dip galvanized, stainless steel or aluminum. Provide types, gages and lengths to suit unit installation conditions. Use Phillips flat-head machine screws for exposed fasteners, unless otherwise indicated.

Anchors and Inserts: Use non-ferrous metal or hot-dip galvanized anchors and inserts for exterior installations and elsewhere as required for corrosion resistance. Use steel or lead expansion bolt devices for drilled-in-place anchors. Furnish inserts, as required, to be set into concrete or masonry work.

Bituminous Paint: SSPC-Paint 12 (cold-applied asphalt mastic).

FABRICATION, GENERAL:

Provide louvers and accessories of design, materials, sizes, depth, arrangement, and metal thicknesses indicated, or if not indicated, as required for optimum performance with respect to airflow; water penetration; air leakage, where applicable (for adjustable units, if any); strength; durability; and uniform appearance.

Fabricate frames including integral sills to suit adjacent construction with tolerances for installation, including application of sealants in joints between louvers and adjoining work.

Include supports, anchorages, and accessories required for complete assembly.

Provide sill extensions and loose sills made of same material as louvers, where indicated, or required for drainage to exterior and to prevent water penetrating to interior.

Join frame members to one another and to stationary louver blades by welding, except where indicated otherwise or where field bolted connections between frame members are made necessary by size of louvers. Maintain equal blade spacing, including separation between blades and frames at head and sill, to produce uniform appearance.

STATIONARY EXTRUDED ALUMINUM WALL LOUVERS:

Horizontal Drainable Blade Louvers: Units designed to collect and drain water to exterior at sill by means of gutters in front edges of blades, and channels in jambs and mullions. Furnish units with extrusions not less than 0.081" thick, of depth, and sizes indicated, complying with following performance requirements.

Free Area: Not less than 50% for a 48" x 48" size.

Static Pressure Loss: Not more than 0.15" of water gage at an airflow of 1050 fpm free area velocity in intake direction.

Water Penetration: Not more than 0.052 oz. per sq. ft. of free area at an airflow of 1000 fpm free area velocity.

LOUVER SCREENS:

Provide removable screens for exterior louvers where indicated.

Fabricate screen frames of same metal and finish as louver units to which secured, unless otherwise indicated.

Provide rewireable frames consisting of formed or extruded metal with a driven spline or insert for securing screen mesh.

Use insect screens where indicated, of the following:

18" x 16" mesh, 0.011" aluminum wire.

Locate screens on inside face of louvers, unless otherwise indicated. Secure screens to louver frames with machine screws, spaced at each corner and at 12" o. c. between.

METAL FINISHES:

General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations, except as otherwise indicated. Apply finishes in factory after products are assembled. Protect finishes on exposed surfaces with protective covering, prior to shipment. Remove scratches and blemishes from exposed surfaces which will be visible after completing finishing process.

Provide colors or color matches as indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

Aluminum Finishes:

Conversion-Coated and Factory-Primed Finish: AA-C12C42 Rlx (cleaned with inhibited chemicals, conversion coated with an acid- chromate-fluoride-phosphate treatment, and painted with organic coating specified below). Apply where painting after installation is indicated (not work of this section).

Organic Coating: Air dried zinc chromate primer with not less than 2.0 mils dry film thickness.

PART 3 - EXECUTION

PREPARATION:

Coordinate setting drawings, diagrams, templates, instructions and directions for installation of anchorages which are to be embedded in concrete or masonry construction. Coordinate delivery of such items to the project site.

INSTALLATION:

Locate and place louver units plumb, level and in proper alignment with adjacent work.

Use concealed anchorages wherever possible. Provide brass or lead washers fitted to screws where required to protect metal surfaces and to make a weathertight connection.

Form tight joints with exposed connections accurately fitted together. Provide reveals and openings for sealants and joints fillers, as indicated.

Repair finishes damaged by cutting, welding, soldering and grainding operations require for fitting and jointing. Restore finishes so there is no evidence for corrective work. Return items which cannot be refinished in field to shop, make required alterations, and refinish entire unit, or provide new units, at Contractor's option.

Protect galvanized and non-ferrous metal surfaces from corrosion or galvanic action by application of a heavy coating of bituminous paint on surfaces which will be in contact with concrete, masonry or dissimilar metals.

Provide concealed gaskets, flashings, joint fillers, and insulations, and install as work progresses to make installations weathertight.

Refer to Division-7 sections for sealants in connection with installations of louvers.

END OF SECTION 10200

COMFORT SUITES

SECTION 10305 PREFABRICATED FIREPLACE

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Work includes materials and installation of prefabricated metal fireplace, complete with components required for a complete and functional installation.

Refer to Division 15 sections for provisions as they apply to this work.

QUALITY ASSURANCE:

Code compliance: Provide prefabricated fireplace that conforms to applicable local and state codes.

UL Listing: Provide units that are listed by UL.

SUBMITTALS:

Product Data: Submit manufacturer's specifications, details and installation instructions for products used in the installation of the prefabricated metal fireplace.

PART 2 - PRODUCTS:

Available Manufacturers: Subject to compliance with requirements, provide products of the following:

Heat-N-Glow
Div. of Hearth Technologies
6665 West Highway 13
Savage, MN 55378
(612)890-8367

FABRICATION:

General: Product listed is that of Heat-N-Glow. Products of other manufacturers meeting design and performance intent may be bid, as judged solely by the Architect.

Fireplace: Provide electric fireplace model 32E-XL-Electrafire, 240 volts, 6.8 amps, 1630 watts.

Accessories: Provide other miscellaneous items necessary for a complete installation and to meet code requirements.

PART 3 - EXECUTION

INSTALLATION:

Install fireplace equipment in locations shown on drawings according to manufacturer's details and instructions.

Comply with all local and state codes in installation of fireplace.

Provide necessary electrical supply.

END OF SECTION 10305

COMFORT SUITES

SECTION 10350 - FLAGPOLES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Section includes flagpoles where shown on Drawings, as specified herein, and as needed for a complete and proper installation.

QUALITY ASSURANCE:

Manufacturing Standards: Provide each flagpole as a complete unit produced by a single manufacturer, including fittings accessories, bases and anchorage devices.

Design Criteria: Provide flagpoles and installations constructed to withstand a 100 mph wind velocity unflagged, and a wind velocity of 100 mph when flying a flag 6' x 10'.

Pole Construction: Construct pole and ship to site in one piece if possible. If more than one piece is necessary, provide snug-fitting precision joints with self-aligning, internal splicing sleeve arrangement for weather-tight, hairline field joints.

SUBMITTALS:

Product Data: Submit manufacturer's technical data and installation instructions for each type of flagpole required.

Shop Drawings: Submit four (4) copies each of shop drawings of flagpoles and bases, showing general layout, jointing and complete anchoring and supporting systems.

DELIVERY, STORAGE AND HANDLING:

Spiral wrap flagpole with heavy Kraft paper or other protective wrapping, and prepare for shipment in hard fiber tubes or other protective container.

Deliver flagpoles and accessories completely identified for installation procedure. Handle carefully to avoid soiling or damage, and store flagpoles unwrapped to avoid staining from wrappings.

PART 2-PRODUCTS:

ACCEPTABLE MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Concord Industries, Inc.

FLAGPOLE TYPE:

Commercial Groundset Cone-Tapered Aluminum Flagpoles: Fabricate from seamless extruded tubing, complying with ASTM B 241, alloy 6063-T6, having a minimum wall thickness of .188", tensile strength not less than 30,000 psi and a yield point of 25,000 psi. Heat-treat and age-harden flagpoles after fabrication

Description:

Exposed height: 40'
Overall Height: 44'
Butt Diameter: 8"
Top Diameter: 3.5"
Wall Thickness: .188"

FLAGPOLE MOUNTING:

Foundation Tube: Fabricated from 16 ga. Galvanized steel, with a steel base plate whose square dimension is at least the i.d. of the sleeve plus 4". A setting plate 6" square shall be securely welded to the ground spike at least 6" below the base plate. The ground spike shall be ¾" diameter, not less than 18" long. Shaft foundation dimensions as per manufacturer's recommendation for specified flagpole.

Provide spun aluminum collar, Type FC-11, finished to match flagpole shaft. Diameter shall be at least 1" greater than diameter of sleeve.

SHAFT FINISH:

Aluminum: Deep Luster Finish. Fine, directional, mechanical satin polish (NAAMM-32), finished as follows:
Color anodized finish, AA M32-C12-A42, Color Duranodic #312 Med. Bronze.

FITTINGS:

Finial: 14 ga. Spun aluminum ball, gold anodized finish with flush seam sized to match but diameter of shaft.

Truck: Cast aluminum, double revolving, non-fouling, complete with 26 stainless steel ball bearings, and two 2-3/8" diameter cast nylon sheaves.

Halyards: Two sets of #10 white waterproof polopropylene, each equipped with two chrome swivel-snaps to secure the flag.

Cleats: Two 9" cast aluminum cleats, with stainless steel socket-head bolts included. Finish to match the shaft. Provide cleat covers with key-operated cylinder lock, finished to match shaft.

PART 3-EXECUTION:

INSTALLATION:

Excavation: Excavate for foundation concrete to neat clean lines in undisturbed soil. Provide forms where required due to unstable soil conditions. Remove wood, loose soil, rubbish and other foreign matter from excavation, and moisten earth before placing concrete.

Concrete: Provide concrete composed of Portland cement, coarse aggregate, fine aggregate and water, mixed in proportions to attain 28-day compressive strength of not less than 3000 psi. Use not less than 5 sacks of Portland cement, complying with ASTM C 150, per cubic yard of wet concrete. Place concrete immediately after mixing. Perform chuting to avoid segregation of mix. Compact concrete in place by use of vibrators to consolidate. Moisten-cure exposed concrete for not less than seven days, or use a non-staining curing compound in freezing weather. Finish trowel exposed concrete surfaces to smooth dense surface. Provide positive slope for water runoff to base perimeter.

Flagpole Installation: Install flagpole as indicated and in compliance with final shop drawings and manufacturer's instructions. Provide positive lightning ground for each flagpole with a heavy coat of bituminous paint.

END OF SECTION 10350

SECTION 10522 - FIRE EXTINGUISHERS, CABINETS, AND ACCESSORIES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of fire extinguishers, cabinets and accessories is indicated on drawings.

Definition: "Fire extinguishers" as used in this section refers to units which can be hand-carried as opposed to those which are equipped with wheels or to fixed fire extinguishing systems.

Types of products required include:

Fire extinguishers.
Fire extinguisher cabinets.
Mounting brackets.

Fixed fire protection systems are specified in Division-15 sections.

QUALITY ASSURANCE:

Single Source Responsibility: Obtain products in this section from one manufacturer.

Coordination: Verify that fire extinguisher cabinets are sized to accommodate fire extinguishers of type and capacity indicated which will be provided by Owner under separate contract.

UL-Listed Products: Provide new portable fire extinguishers which are UL-listed and bear UL "Listing Mark" for type, rating, and classification of extinguisher indicated.

FM Listed Products: Provide new portable fire extinguishers which are approved by Factory Mutual Research Corporation for type, rating and classification of extinguisher indicated and carry appropriate FM marking.

SUBMITTALS:

Product Data: Submit product data for each type of product included in this section. For fire extinguisher cabinets include roughing-in dimensions and details showing mounting methods, relationships of box and trim to surrounding construction, door hardware, cabinet type and materials, trim style and door construction, and panel style and materials.

Samples: Submit for verification purposes, samples of each required finish. Prepare samples on metal of same gage as used for actual production run. Where normal color variations are to be expected, include 2 or more units in each sample set showing limits of such variations.

For initial selection of colors and finishes, submit manufacturer's color cards showing full range of standard colors available.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include, but are not limited to, the following:

J. L. Industries.
Larsen's Mfg. Co.
Johnson-Lee, Division of W.F. Lee Corp.
Muckle Manufacturing, Division of Technico, Inc.
Watrous, Inc.
Kidde- The Fire Extinguisher Co.

FIRE EXTINGUISHERS:

General: Provide fire extinguishers for each extinguisher cabinet and other locations indicated, in colors and finishes selected by Architect from manufacturer's standard which comply with requirements of governing authorities.

Abbreviations indicated below to identify extinguisher types relate to UL classification and rating system and not, necessarily, to type and amount of extinguishing material contained in extinguisher.

Multi-Purpose Dry Chemical Type: UL-rated 4-A:60-B: C 10 lb. nominal capacity, in enameled steel container, for Class A, Class B and Class C fires.

MOUNTING BRACKETS:

Provide manufacturer's standard bracket designed to prevent accidental dislodgement of extinguisher, of sizes required for type and capacity of extinguisher indicated, in manufacturer's standard plated finish.

Provide brackets for extinguishers not located in cabinets.

FIRE EXTINGUISHER CABINETS:

General: Provide fire extinguisher cabinets where indicated, of suitable size for housing fire extinguishers of types and capacities indicated.

Construction: Manufacturer's standard enameled steel box, with trim, frame, door and hardware to suit cabinet type, trim style, and door style indicated. Weld all joints and grind smooth. Miter and weld perimeter door frames.

Cabinet Type: Suitable for mounting conditions indicated, of the following types:

Recessed: Cabinet box (tub) recessed in chase walls.

Trim Style: Fabricate trim in one piece with corners mitered, welded and ground smooth.

Exposed Trim: One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend) (at recessed cabinets).

Rolled-Edge Trim: Rounded edges with backbend depth as follows:

Depth: 5".

Trim Metal: Of same metal as door.

Door Material and Construction: Manufacturer's standard door construction, of material indicated, coordinated with cabinet types and trim styles selected.

Enameled Steel: Manufacturer's standard flush, hollow steel door construction with tubular stiles and rails.

Door Glazing: Clear float glass complying with FS DD-G-451, type I, class 1, quality q3.

Door Style: Manufacturer's standard design as indicated below and on drawing.

Full Glass Panel: Float glass, 1/8" thick.

Door Hardware: Provide manufacturer's standard door operating hardware of proper type for cabinet type, trim style, and door material and style indicated. Provide either lever handle with cam action latch, or door pull, exposed or concealed, and friction latch. Provide concealed or continuous type hinge permitting door to open 180°.

FACTORY FINISHING OF FIRE EXTINGUISHER CABINETS

General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations except as otherwise indicated. Apply finishes in factory after products are assembled. Protect cabinets with plastic or paper covering, prior to shipment.

Painted Finishes: Provide painted finish to comply with requirements indicated below for extent, preparation and type:

Extent of Painted Finish: Apply painted finish to both concealed and exposed surfaces of cabinet components except where other than a painted finish is indicated.

Color: Provide color or color matches indicated, or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

Preparation: Clean surfaces of dirt, grease, and loose rust or mill scale.

Baked Enamel Finish: Immediately after cleaning and pretreatment, apply cabinet manufacturer's standard baked enamel finish system to the following surfaces:

Interior of cabinet.

Field-Paintable Factory Finish: Immediately after cleaning and pretreatment, apply to surfaces indicated below, manufacturer's standard factory-applied paint system which is suitable, after deglossing, as an undercoat for field-applied paint system specified in Division-9 section "Painting":

Exterior of cabinet except for those surfaces indicated to receive another finish.

PART 3 - EXECUTION

INSTALLATION:

Install items included in this section in locations and at mounting heights indicated, or if not indicated, at heights to comply with applicable regulations of governing authorities.

Prepare recesses in walls for fire extinguisher cabinets as required by type and size of cabinet and style of trim and to comply with manufacturer's instructions.

Securely fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.

Where exact location of surface-mounted cabinets and bracket- mounted fire extinguishers is not indicated, locate as directed by Architect.

IDENTIFICATION:

Identify existence of fire extinguisher in cabinet with lettering spelling "FIRE EXTINGUISHER" applied to door by process indicated below. Provide lettering to comply with requirements indicated for letter style, color, size, spacing and location or, if not otherwise indicated, as selected by Architect from manufacturer's standard arrangements.

Application Process: Silk screen.

Identify bracket-mouunted extinguishers with red letter decals spelling "FIRE EXTINGUISHER" applied to wall surface. Letter size, style and location as selected by Architect.

END OF SECTION 10522

COMFORT SUITES

SECTION 10800 - TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK:

Extent of each type of toilet accessory is indicated on drawings and schedules.

Types of toilet accessories required include the following:

- Toilet tissue dispenser.
- Towel dispenser unit.
- Grab bar(s).
- Shower curtain rod.
- Towel bar.
- Towel rack.
- Facial Tissue dispenser.
- Robe hook.
- Electric hand dryer
- Soap dispenser

QUALITY ASSURANCE:

Inserts and Anchorages: Furnish inserts and anchoring devices which must be set in concrete or built into masonry; coordinate delivery with other work to avoid delay.

Accessory Locations: Coordinate accessory locations with other work to avoid interference and to assure proper operation and servicing of accessory units.

Products: Provide products of same manufacturer for each type of accessory unit and for units exposed in same areas, unless otherwise acceptable to Architect.

SUBMITTALS:

Product Data: Submit manufacturer's technical data and installation instructions for each toilet accessory.

Setting Drawings: Provide setting drawings, templates, instructions, and directions for installation of anchorage devices and cut-out requirements in other work.

PART 2 - PRODUCTS:

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, provide products of one of the following:

Bobrick Washroom Equipment, Inc.
Bradley Corporation.
The Broadway Collection.
Parker-Scovill.
Watrous,Inc.
Franklin Brass

MATERIALS, GENERAL:

Stainless Steel: AISI Type 302/304, with polished No. 4 finish, 22 gage (.034") minimum, unless otherwise indicated.

Chromium Plating: Nickel and chromium electro-deposited on base metal, ASTM B 456, Type SC 2.

Galvanized Steel Mounting Devices: ASTM A 153, hot-dip galvanized after fabrication.

Fasteners: Screws, bolts, and other devices of same material as accessory unit or of galvanized steel where concealed.

TOILET TISSUE DISPENSERS:

Double-Roll Dispenser: Size to accommodate two separate rolls of core type tissue to 5" diameter.

Fabrication: Chrome-plated zinc alloy construction with non- controlled delivery; designed for surface mounting.

TOWEL DISPENSER UNITS:

Recessed Unit: Stainless steel unit fabricated for nominal 4" wall depth and with continuous seamless 1" wall flange. Provide towel compartment in upper portion of unit, designed to dispense not less than 400 C-fold or 700 multi-fold paper towels, panel door with continuous piano hinge and tumbler lock.

GRAB BARS:

Stainless Steel Type: Provide grab bars with wall thickness not less than 18 (.050") gage and as follows:

Mounting: Concealed, manufacturer's standard flanges and anchorages.

Clearance: 1-1/2" clearance between wall surface and inside face of bar.

Gripping Surfaces: Manufacturer's standard non-slip texture.

Heavy-Duty Size: Outside diameter of 1-1/2".

SHOWER AND BATH ACCESSORIES

Shower Curtain Rod, Curved, Heavy Duty: 1" O.D., 20-gauge stainless steel, bright finish equal to Franklin Brass #1905BS.

Towel Bars: 24" long satin finished Type 304 stainless steel tubular (3/4" square) bar and rectangular end brackets. Provide galvanized backplates for concealed mounting.

MISCELLANEOUS ACCESSORIES:

Facial Tissue Dispenser: Wall-mounted recessed unit with 22 gage stainless steel satin finished face plate with rolled rim on dispenser opening, corrosion resistant steel mounting cabinet; minimum capacity 200 tissues.

Robe Hook: Heavy-duty satin-finished stainless steel robe hook, rectangular wall bracket with backplate for concealed mounting.

FABRICATION:

General: Only an unobtrusive stamped logo of manufacturer, as approved by Architect, is permitted on exposed face of toilet or bath accessory units. On either interior surface not exposed to view or back surface, provide additional identification by means of either a printed, waterproof label or a stamped nameplate, indicating manufacturer's name and product model number.

Surface-Mounted Toilet Accessories, General: Except where otherwise indicated, fabricate units with tight seams and joints, exposed edges rolled. Hang doors or access panels with continuous stainless steel piano hinge. Provide concealed anchorage wherever possible.

Recessed Toilet Accessories, General: Except where otherwise indicated, fabricate units of all welded construction, without mitered corners. Hang doors or access panels with full-length stainless steel piano hinges. Provide anchorage which is fully concealed when unit is closed.

PART 3 - EXECUTION

INSTALLATION:

Install toilet accessory units in accordance with manufacturers' instructions, using fasteners which are appropriate to substrate and recommended by manufacturer of unit. Install units plumb and level, firmly anchored in locations and at heights indicated.

ADJUSTING AND CLEANING:

Adjust toilet accessories for proper operation and verify that mechanisms function smoothly. Replace damaged or defective items.

Clean and polish all exposed surfaces after removing temporary labels and protective coatings.

SCHEDULE OF TOILET ACCESSORIES:

See Drawings for Toilet Accessories Schedule Model numbers of toilet accessories listed on drawings are those of Franklin Brass or Bobrick.

END OF SECTION 10800

SECTION 14240 – HYDRAULIC ELEVATOR

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.01 SUMMARY

A. Section includes: Hydraulic passenger elevators as shown and specified. Elevator work includes:
   1. Commercial, standard pre-engineered hydraulic passenger elevators.
   2. Elevator car enclosures, hoistway entrances and signal equipment.
   3. Jacks.
   4. Operation and control systems.
   5. Accessibility provisions for physically disabled persons.
   6. Equipment, machines, controls, systems and devices as required for safely operating the specified elevators at their rated speed and capacity.
   7. Materials and accessories as required to complete the elevator installation.

B. Related Sections:
   1. Division 3 Sections: Installing inserts, sleeves and anchors in concrete.
   2. Division 4 Sections: Installing inserts, sleeves and anchors in masonry.
   3. Division 5 Sections:
      a. Providing hoist beams, pit ladders, steel framing, auxiliary support steel and divider beams for supporting guide-rail brackets.
      b. Providing steel angle sill supports and grouting hoistway entrance sills and frames.
   4. Division 9 Sections: Providing elevator car finish flooring and field painting unfinished and shop primed ferrous materials.
   5. Division 15 Sections:
      a. Sump pit and oil interceptor.
      b. Heating and ventilating hoistways and machine rooms.
   6. Division 16 Sections:
      a. Providing electrical service to elevators, including fused disconnect switches.
      b. Emergency power supply, transfer switch and auxiliary contacts.
      c. Heat and smoke sensing devices.
      d. Convenience outlets and illumination in machine room, hoistway and pit.

1.02 SUBMITTALS

A. Product data: When requested, submit product data for the following:
   1. Elevator car enclosures and hoistway entrances.
   2. Operation, control, and signal systems.

B. Shop drawings:
   1. Show equipment arrangement in the machine room, pit and hoistway. Provide plans, elevations, sections and details of assembly, erection, anchorage, and equipment location.
   2. Indicate elevator system capacities, sizes, performances, safety features, finishes and other pertinent information.
   3. Show floors served, travel distances, maximum loads imposed on the building structure at points of support and all similar considerations of the elevator work.
   4. Indicate electrical power requirements and branch circuit protection device recommendations.

C. Color selection: Submit color charts of exposed finishes and materials for color selection.
   1. When requested, submit samples of exposed finishes and materials selected for the elevator system materials and components.

D. Certificates: Inspection and acceptance certificates of elevator system installation.

E. Operation and maintenance data. Include the following:
   1. Operation and maintenance instructions.
   2. Parts list, with recommended parts inventory.

1.03 QUALITY ASSURANCE

A. Manufacturer Qualifications: An approved manufacturer regularly engaged in manufacturing, installing, and servicing elevators of the type required for the project.
   1. The manufacturer of the machine, controller, signal fixtures, door operators cab, entrances, and all other major parts of the elevator operating equipment.
      a. The major parts of the elevator equipment shall be manufactured in the United States, and not be an assembled system.
   2. The manufacturer shall have a documented, on-going quality assurance program.

B. Installer Qualifications: The manufacturer or an authorized agent of the manufacturer with not less than five years of satisfactory experience installing elevators equal in character and performance to the project elevators.

C. Regulatory Requirements:
   1. ASME A17.1 Safety Code for Elevators and Escalators, latest edition or as required by the local building code.
   2. International Building Code.
   3. NFPA 70 National Electrical Code.
   4. NFPA 80 Fire Doors and Windows.
   5. Americans with Disabilities Act - Accessibility Guidelines (ADAAG).

D. Fire-rated entrance assemblies: Opening protective assemblies including frames, hardware, and operation shall comply with ASTM E2074, CAN4-S104 (ULC-S104), UL10(b), and NFPA Standard 80. Provide entrance assembly units bearing Class B or 1 1/2 hour label by a Nationally Recognized Testing Laboratory (2 hour label in Canada).

E. Inspection and testing: Elevator Installer shall obtain and pay for all required inspections, tests, permits and fees for elevator installation.
   1. Arrange for inspections and make required tests.
   2. Deliver to the Owner upon completion and acceptance of elevator work.

1.04 DELIVERY, STORAGE AND HANDLING

A. Deliver elevator materials, components and equipment in manufacturer's protective packaging.

B. Store materials in a dry protected area provided by others. Protect and handle materials in accordance with manufacturer's recommendations to prevent damage, soiling, or deterioration.

1.05 PROJECT CONDITIONS

A. Prohibited Use: Elevators shall not be used for any purpose during the construction period before Substantial Completion.

B. Painting:
   1. Except as otherwise specified, paint all metal work provided by the elevator manufacturer and installer.
   2. Provide all ferrous metals installed in the hoistway shop primed with a rust inhibitive primer.

C. Provide the hole for the jack unit if required by the type of jack provided, based on excavation through normal soil or clay which can be removed by manual digging or by standard truck-mounted regular drilling unit. Provide a casing if required to retain the walls of the hole. General contractor shall remove excavation spoils deposited in the elevator pit.
   1. If a physical obstruction or hindrance is encountered below the ground surface, including boulders, rock, gravel, wood, metal, pilings, sand, water, quick sand, caves, public utilities or any other foreign material, obtain written authorization to proceed with excavating using special excavation equipment.
   2. Maintain a daily log of time and material costs involved.
   3. Elevator contractor will be compensated on a time and material basis for additional costs incurred after encountering the physical obstruction or hindrance, including the cost of the special excavation equipment.

1.06 WARRANTY

A. Warranty: Submit elevator manufacturer's standard written warranty agreeing to repair, restore or replace defects in elevator work materials and workmanship not due to ordinary wear and tear or improper use or care for 12 months from date of Substantial Completion.

1.07 MAINTENANCE

A. Furnish maintenance and call back service for a period of 3 months months for each elevator from date of Substantial Completion. Service shall consist of periodic examination of the equipment, adjustment, lubrication, cleaning, supplies and parts to keep the elevators in proper operation.
   1. Maintenance work, including emergency call back repair service, shall be performed by trained employees of the elevator contractor during regular working hours.
   2. Submit parts catalog and show evidence of local parts inventory with complete list of recommended spare parts. Parts shall be produced by manufacturer of original equipment.
   3. Manufacturer shall have a service office and full time service personnel within a 50 mile radius of the project site.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Manufacturer: ThyssenKrupp Elevator, Memphis, TN.

2.02 MATERIALS, GENERAL

A. Colors, patterns, and finishes: As selected by the Architect from manufacturer's full range of standard colors, patterns, and finishes.

B. Steel:
   1. Shapes and bars: ASTM A 36.
   2. Sheet: ASTM A 366, cold-rolled steel sheet, commercial quality, Class 1, matte finish, stretcher leveled.
   3. Finish: Factory-applied baked enamel.

C. Stainless steel:
   1. Shapes and bars: ASTM A 276, Type 304 (18-8).
   2. Tubing: ASTM A 269, Type 304 (18-8).

D. Bronze:
   1. Drawn pipe: ASTM B 43, alloy UNS C23000, red brass.
   2. Sheet: ASTM B 36, alloy UNS C28000, muntz metal.
   3. Extrusions: ASTM B 455, alloy UNS C38500, architectural bronze.

E. Aluminum:
   1. Sheet and plate: ASTM B 209, alloy 6063-T52.
   2. Extrusions: ASTM B 221, alloy 6063-T52.

F. Nickel silver: ASTM B 151 extrusions, alloy UNS No. C74500, polished finish.

G. Plastic laminate: Decorative high-pressure type, complying with NEMA LD3, Type GP-50 General Purpose Grade, nominal 0.050" thickness.

H. Wood:

I. Glass: Clear laminated safety glass, complying with ANSI Z97.1, nominal 9/16" thickness.

J. Carpet: Manufacturer's standard Herculon IV color fast, stain and soil resistant, jute-backed carpet. Class B fire-resistance rating when tested in accordance with ASTM E 84. Available in four colors.

2.03 HOISTWAY EQUIPMENT

A. Platform: Fabricated frame of formed or structural steel shapes, gusseted and rigidly welded with a wood subfloor. Underside of the platform shall be fireproofed.

B. Sling: Steel stiles affixed to a steel crosshead and bolstered with bracing members to remove strain from the car enclosure.

C. Guide Rails: Steel, omega shaped, fastened to the building with steel brackets.

D. Guide Shoes: Slide guides shall be mounted on top and bottom of the car.

E. Guide Rail Lubricators: Provide a leakproof reservoir on top of upper guide shoes. Wool felt wiper shall apply an even, uniform flow of lubricant which shall thoroughly cover face of guide rail.

F. Buffers: Provide substantial buffers in the elevator pit. Mount buffers on continuous channels fastened to the elevator guide rail or securely anchored to the pit floor. Provide extensions if required by project conditions.

G. Jack: Jack unit shall be of sufficient size to lift the gross load the height specified. Factory test jack to insure adequate strength and freedom from leakage. Brittle material, such as gray cast iron, is prohibited in the jack construction. Jack unit shall consist of the following components:
   1. Heavy seamless steel tubing plunger accurately turned and polished.
   2. Stop ring shall be electrically welded to the plunger to prevent plunger leaving the cylinder.
   3. Internal guide bearing.
   4. Packing or seal of suitable design and quality.
   5. Drip ring around cylinder top.
   6. Cylinder made of steel pipe and provided with a pipe connection and air bleeder.
   7. Weld brackets to the jack cylinder for supporting the elevator on pit channels.
   8. An auxiliary safety bulkhead shall be provided in the lower end of the cylinder.
   9. Corrosion protection for the jack cylinder by encasing the entire length of the cylinder below ground with plastic auxilliary casing.

H. Automatic Terminal Limits: Place electric limit switches in the hoistway near the terminal landings. Limit switches shall be designed to cut off the electric current and stop the car if it runs beyond either terminal landing.

I. Automatic Self-Leveling: Provide each elevator car with a self-leveling feature to automatically bring the car to the floor landings and correct for overtravel or undertravel. Self-leveling shall, within its zone, be automatic and independent of the operating device. The car shall be maintained approximately level with the landing irrespective of its load.

J. Failure Protection: Design electrical control circuit so if a malfunction occurs, due to motor starter failure, oil becoming low in the system, or the car failing to reach a landing in the up direction within a pre-determined time, the elevator car will automatically descend to the lowest terminal landing. If power operated doors are used, the doors will automatically open when the car reaches that landing to allow passengers to depart. The doors will then automatically close and all control buttons, except the "door open" button in the car station, shall be made inoperative.

K. Wiring, Piping, and Oil: Provide all necessary hoistway wiring in accordance with the National Electrical Code. All necessary pipe and fittings shall connect the power unit to the jack unit. Provide proper grade oil.

L. Emergency Terminal Stopping Device: Provide emergency terminal stopping devices for speeds over 100 FPM. The emergency terminal stopping device shall operate independently of the normal terminal stopping device if it fails to slow down the car at the terminal as intended. Stopping devices shall not be prevented from functioning by a single short circuit caused by a combination of grounds or by other conditions.
   1. Normal and emergency terminal stopping devices shall not control the same controller switches unless two or more separate and independent switches are furnished, two or which shall be closed in either direction of travel to complete the circuit to the control valve solenoids in the down direction and to complete the circuit to the pump motor for the up direction of travel.

2.04 POWER UNIT

A. Power Unit (Oil Pumping and Control Mechanism): A self-contained unit consisting of the following items:
   1. Oil reservoir with tank cover and controller compartment with cover.
   2. An oil hydraulic pump.
   3. An electric motor.
   4. Oil control unit with the following components built into single housing; high pressure relief valve, check valve, automatic unloading up start valve, lowering and leveling valve, and magnetic controller.

B. Pump: Positive displacement type pump specifically manufactured for oil-hydraulic elevator service. Pump shall be designed for steady discharge with minimum pulsation to give smooth and quiet operation. Output of pump shall not vary more than 10 percent between no load and full load on the elevator car.

C. Drive: Drive shall be by direct coupling with the pump and motor submerged in the oil reservoir or by multiple V-belts and sheaves of number and size to insure maximum factor of safety. Drive type shall be determined based primarily on the load on the car, travel, and speed.

D. Motor: Standard manufacture motor specifically designed for oil-hydraulic elevator service. Duty rating shall comply with specified speeds and loads.

E. Oil Control Unit: The following components shall be built into a single housing. Welded manifolds with separate valves to accomplish each function are not acceptable. Adjustments shall be accessible and be made without removing the assembly from the oil line.
   1. Relief valve shall be externally adjustable and be capable of bypassing the total oil flow without increasing back pressure more than 10 percent above that required to barely open the valve.

2. Up start and stop valve shall be externally adjustable and designed to bypass oil flow during start and stop of motor pump assembly. Valve shall close slowly, gradually diverting oil to or from the jack unit, ensuring smooth up starts and up stops.
3. Check valve shall be designed to close quietly without permitting any perceptible reverse flow.
4. Lowering valve and leveling valve shall be externally adjustable for drop-away speed, lowering speed, leveling speed and stopping speed to ensure smooth "down" starts and stops. The leveling valve shall be designed to level the car to the floor in the direction the car is traveling when slowdown is initiated.

F. Power controller shall contain electrical contactors, electro-mechanical switches and thermal overload relays. Mount components in a NEMA 1 enclosure. Logic control system shall be microprocessor based and protected from environmental extremes and excessive vibrations.

G. Starting: Provide solid state.

2.05 HOISTWAY ENTRANCES

A. Doors and Frames: Provide complete hollow metal type hoistway entrances at each hoistway opening.
1. Manufacturer's standard entrance design consisting of 14 gauge frames with 2 inch (50 mm) profile, 16 gauge doors, hangers, hanger supports, hanger covers, fascia plates, sight guards, and necessary hardware.
2. Elevator wall interface with hoistway entrance assembly shall comply with elevator manufacturer's requirements.
3. Doors: Flush construction
   a. Bronze: Primed steel panels faced with ASTM B 36, bronze sheet, alloy UNS No. C28000 (muntz metal), natural satin finish, lacquered.
4. Frames: Formed construction.
   a. Bronze: Primed steel panels faced with ASTM B 36, bronze sheet, alloy UNS No. C28000 (muntz metal), natural satin finish, lacquered.
5. Transom: No transom.

B. Interlocks: Equip each hoistway entrance with an approved type interlock tested as required by code. Interlock shall be designed to prevent operation of the car away from the landing until the doors are locked in the closed position as defined by code and shall prevent opening the doors at any landing from the corridor side unless the car is at rest at that landing or is in the leveling zone and stopping at that landing.

C. Door Hanger and Tracks: Provide sheave type two point suspension hangers and tracks for each hoistway sliding door.
1. Sheaves: Polyurethane tires with ball bearings properly sealed to retain grease.
2. Hangers: Provide an adjustable slide to accommodate the up-thrust of the doors.
3. Tracks: Drawn steel shapes, smooth surface and shaped to conform to the hanger sheaves.

D. Hoistway Sills: Extruded, with grooved surface, 1/4 inch (6.4 mm) thickness
1. Bronze: ASTM B 455 architectural bronze, alloy UNS C38500, polished finish.

2.06 CAR ENCLOSURE

A. Car Enclosure:
1. Walls: Cab type DLP, durable wood core finished on both sides with high pressure plastic laminate
2. Canopy: Reinforced 14 gauge cold-rolled steel with hinged exit. Finish: Two coats factory applied reflective baked enamel.
3. Ceiling: Downlight type, 16 gauge metal pans with halogen downlights suspended and dimmer switch 7'-4" (2235 mm) above the finished floor. Number of downlights shall be dependent on platform size with a minimum of six.
   a. Metal finish: Bronze, natural satin finish, lacquered.

4. Cab Columns, Front, and Transom: Bronze: Primed steel panels faced with ASTM B 36, bronze sheet, alloy UNS No. C28000 (muntz metal), natural satin finish, lacquered.finish
5. Doors: Horizontal sliding car doors reinforced with steel for panel rigidity. Hang doors on sheave type hangers with polyurethane tires that roll on a polished steel track and are guided at the bottom by non-metallic shoes sliding in a smooth threshold groove.
   a. Door Finish: Bronze: Primed steel panels faced with ASTM B 36, bronze sheet, alloy UNS No. C28000 (muntz metal), natural satin finish, lacquered.
   b. Cab Sills: Extruded, with grooved surface, 1/4 inch (6.4 mm) thickness.
      1) Bronze: ASTM B 455 architectural bronze, alloy UNS C38500, polished finish.
6. Handrail: metal bar, 2" wide, satin bronze. Provide at rear wall only.
7. Ventilation: Two speed exhaust fan mounted on the car top.
8. Pad Buttons: Provide pad buttons on cab front(s) and walls.
   a. Provide one set of vinyl protection pads for the project.
9. Base: satin bronze
10. Finished Floor: Manufacturer's standard carpet

B. Car Top Inspection: Provide a car top inspection station with an "emergency stop" switch and constant pressure "up-down" direction buttons to make the normal operating devices inoperative and give the inspector complete control of the elevator. Mount the car top inspection station in the door operator assembly.

2.07 DOOR OPERATION

A. Door Operation: Provide a direct current motor driven heavy duty operator designed to operate the car and hoistway doors simultaneously. Door movements shall be electrically cushioned at both limits of travel and the door operating mechanism shall be arranged for manual operation in event of power failure. Doors shall automatically open when the car arrives at the landing and automatically close after an adjustable time interval or when the car is dispatched to another landing. Direct drive geared operators, AC controlled units with oil checks, or other deviations are not acceptable.
   1. No Un-Necessary Door Operation: Car door shall open only if the car is stopping for a car or hall call, answering a car or hall call at the present position or selected as the next car up.
   2. Door Open Time Saver: If a car is stopping in response to a car call assignment only (no coincident hall call), the current door hold open time is changed to a shorter field programmable time when the electronic door protection device is activated.
   3. Double Door Operation: When a car stops at a landing with concurrent up and down hall calls, no car calls, and no other hall call assignments, the car door opens to answer the hall call in the direction of the car's current travel. If an onward car call is not registered before the door closes to within 6 inches of fully closed, the travel will reverse and the door will reopen to answer the other call.
   4. Nudging Operation: The doors shall remain open as long as the electronic detector senses the presence of a passenger or object in the door opening. If door movement is obstructed for a field programmable time, a buzzer will sound and the doors will close at reduced speed. If the infra-red door protection system detects a person or object while closing, the doors will stop and resume closing after the obstruction has been removed.
   5. Limited Door Reversal: If the doors are closing and an infra-red beam is interrupted, the doors will reverse and reopen partially. After the obstruction is cleared, the doors will begin to close.
   6. Door Open Sentinel: If the doors are opening, but do not fully open after a field adjustable time, the doors will recycle closed then open six times to try and correct the fault.
   7. Door Close Sentinel: If the doors are closing, but do not fully close after a field adjustable time, the doors will recycle open then close six times to try and correct the fault.
   8. Door Close Assist: When the doors have failed to fully close and are in the recycle mode, the door drive motor shall have increased torque applied to possibly overcome mechanical resistance or differential air pressure and allow the door to close.

B. Door Protection Devices: Provide a door protection system using 40 microprocessor controlled infra-red

light beams. The beams shall project across the car opening detecting the presence of a passenger or object. If door movement is obstructed, the doors shall immediately reopen. A mechanical reopening device is not acceptable.

2.08 CAR OPERATING STATION

A. Car Operating Station, General: The main car control in each car shall contain the devices required for specific operation mounted in satin bronze integral swing return panel requiring no applied faceplate. The panel shall consist of a series of modules, inclined 20 degrees from vertical for optimum viewing and accessibility.
   1. The lowest module shall contain the "door open," "door close," "alarm" buttons and a keyed "emergency stop" switch.
   2. Intermediate modules shall contain floor buttons which illuminate when a call is registered and remain illuminated until the call is answered. Raised floor indications and handicap symbols shall be located immediately adjacent to the floor buttons and be fully integrated in the module design. No applied symbols or floor indications or symbols on the buttons shall be permitted.
   3. The next module shall contain required switches.
   4. The top module shall contain fire service features in accordance with ASME A17.1, Rule 211.3, including operating instructions.

B. Position Indicator: An electronic dot matrix position indicator inclined 20 degrees from vertical and mounted in a module matching the control panel for optimum viewing. As the car travels, its position in the hoistway shall be indicated by the illumination of the alpha/numeric character corresponding to the landing which the elevator is stopped or passing.

C. Emergency Light: An emergency light and capacity plate shall be integrated into a module inclined 20 degrees from vertical. Emergency light shall illuminate automatically upon loss of the building's normal power supply.

D. Emergency Communications System: Provide an emergency communications device mounted in the swing return. Emergency communications device shall comply with Americans with Disabilities Act (ADA) requirements.

E. Auxillary Operating Panel: not applicable in this application.

F. Column Mounted Car Riding Lantern: A car riding lantern shall be installed in the elevator cab and located in the entrance. The lantern, when illuminated, will indicate the intended direction of travel. The lantern will illuminate and a signal will sound when the car arrives at a floor where it will stop. The lantern shall remain illuminated until the door(s) begin to close.

G. Special Accessories:
   1. Independent service switch.
   2. Inspection switch.
   3. Two speed fan/light switch.
   4. Telephone jack.
   5. Certificate frame.

2.09 CONTROL SYSTEMS

A. Controller: The elevator control system shall be microprocessor based and software oriented and be linked together for purposes of communication by a serial communications link. Control of the elevator shall be automatic in operation by means of push buttons in the car numbered to correspond to floors served, for registering car stops, and by "up-down" push buttons at each intermediate landing and "call" push buttons at terminal landings.
   1. Momentary pressing of one or more buttons shall dispatch the car to the designated landings in the order in which the landings are reached by the car, irrespective of the sequence in which the

buttons are pressed. Each landing call shall be canceled when answered.

2. When the car is traveling in the up direction, it shall stop at all floors for which car buttons or "up" hall buttons have been pressed. The car shall not stop at floors where "down" buttons have been pressed, unless the stop for that floor has been registered by a car button or unless the down call is at the highest floor for which any buttons have been pressed. Pressing the "up" button when the car is traveling in the down direction shall not intercept the travel unless the stop for that floor has been registered by a car button or unless the up call is the lowest for which any button has been pressed.
3. When the car has responded to its highest or lowest stop, and stops are registered for the opposite direction, its direction of travel shall reverse automatically and it shall then answer the calls registered for that direction. If both up and down calls are registered at an intermediate floor, only the call corresponding to the direction of car travel shall be canceled upon the stopping of the car at the landing.

B. Microprocessor: Locate the main microprocessor and car controller in the elevator machine room.
1. Microprocessor door operator shall reside in the door operator and control all functions of the elevator door(s).
2. Electronic selector shall reside on the car top and contain hall effect transducers that detect magnetic fields. Magnets, corresponding to floor positions and top/bottom of hoistway are mounted on a perforated metal tape that runs the length of the hoistway.

C. Group Operation: The system shall operate on a real time response, demand basis, constantly scanning and calculating the most efficient car assignment. Hall call assignments shall be based on the availability of each car in the group and shall be based primarily on the principle of the nearest car selection and priority call assignment. Car available status is determined based on the following input:
1. Car position.
2. Direction of car travel.
3. Car calls registered.
4. Direction and unanticipated delay.
5. Perform new calculation and reassignment for each occurrence.

D. Provide a key operated switch in the elevator for the purpose of removing the car from normal operation. When the switch is in the "independent service" position, the elevator will bypass all landing calls and answer only car calls. The operator will have complete control over the operation of the car.

E. Emergency Power 10D-OC: In the event of a normal power supply failure, the elevator system shall be arranged to lower from an emergency power supply. The emergency power supply shall consist of a battery furnished by the elevator contractor. The elevator contractor shall provide circuitry so after normal power failure and establishment of emergency power, each elevator shall lower to a field adjustable return landing and park with the doors closed. If the designated return landing is above the current position, the elevator shall run down to the next lower landing and park with the doors closed.

2.10 HALL STATIONS

A. Hall Stations, General: Buttons shall illuminate to indicate call has been registered at that floor for the indicated direction. Faceplates shall be satin bronze. Provide one set of risers.
1. Each terminal station shall contain one illuminating push button.
2. Each intermediate station shall consist of two illuminating pushbuttons, one for the up direction and one for the down position.
3. Phase 1 firefighters service key switch, with instructions, shall be incorporated into the hall station at the designated level.

B. Floor Identification Pads: Provide door jamb pads at each floor. Jamb pads shall comply with Americans with Disabilities Act (ADA) requirements.

C. Hall Lanterns: No applicable in this application

D. Hall Position Indicator: A dot matrix position indicator shall be provided and inclined 20 degrees from vertical and mounted in a module for optimum viewing. As the car travels, its' position in the hoistway shall be indicated by the illumination of the alpha/numeric character corresponding to the landing which the elevator is stopped or passing. When hall lanterns are provided, the position indicator shall be combined with the hall lanterns in the same faceplate.
   1. Hall Position Indicator: Located at floor(s) [identify].
   2. Faceplates shall match hall stations.

2.11 MISCELLANEOUS ELEVATOR COMPONENTS

A. Oil Hydraulic Silencer: Install an oil hydraulic silencer (muffler device) at the power unit location. Silencer shall contain pulsation absorbing material inserted in a blowout proof housing arranged for inspecting interior parts without removing unit from oil line. Rubber hose without blowout proof features will not be acceptable.

B. Vibration Pads: Mount vibration pads under the power unit assembly to isolate the unit from the building structure.

C. Sound Insulating Panels: When pump and motor are not submerged, provide panels manufactured of reinforced 14 gauge steel with 1 inch (25 mm) thick 1-1/2 pound fiberglass core attached to interior and mounted on all four open sides of the power unit frame.

D. Sound Isolating Couplings: When pump and motor are not submerged, install a minimum of two couplings in the oil line in the machine room between pump and jack.

PART 3 EXECUTION

3.01 EXAMINATION

A. Before starting elevator installation, inspect hoistway, hoistway openings, pits and machine rooms, as constructed, verify all critical dimensions, and examine supporting structures and all other conditions under which elevator work is to be installed. Do not proceed with elevator installation until unsatisfactory conditions have been corrected in a manner acceptable to the installer.

B. Installation constitutes acceptance of existing conditions and responsibility for satisfactory performance.

3.02 INSTALLATION

A. Install elevator systems components and coordinate installation of hoistway wall construction.
   1. Work shall be performed by competent elevator installation personnel in accordance with ASME A17.1, manufacturer's installation instructions and approved shop drawings.
   2. Comply with the National Electrical Code for electrical work required during installation.

B. Perform work with competent, skilled workmen under the direct control and supervision of the elevator manufacturer's experienced foreman.

C. Supply in ample time for installation by other trades, inserts, anchors, bearing plates, brackets, supports, and bracing including all setting templates and diagrams for placement.

D. Jack unit excavation: Drill or otherwise excavate below elevator pit construction as required to install the jack unit.
   1. Install casing for jack unit.
   2. Set casing for jack unit assembly plumb, and fill water-settled sand, eliminating voids.

E. Set jack unit-cylinder assembly plumb, centered accurately and shimmed to proper elevation, using centering lugs to prevent dislocation during filling. Fill space between casing and cylinder with clean, dry, compacted sand.

F. Welded construction: Provide welded connections for installation of elevator work where bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, and replacement of worn Parts. Comply with AWS standards for workmanship and for qualification of welding operators.

G. Coordination: Coordinate elevator work with the work of other trades, for proper time and sequence to avoid construction delays. Use benchmarks, lines, and levels designated by the Contractor, to ensure dimensional coordination of the work.

H. Install machinery, guides, controls, car and all equipment and accessories to provide a quiet, smoothly operating installation, free from side sway, oscillation or vibration.

I. Sound isolation: Mount rotating and vibrating elevator equipment and components on vibration-absorption mounts, designed to effectively prevent the transmission of vibrations to the structure, and eliminate sources of structure-borne noise from the elevator system.

J. Alignment: Coordinate installation of hoistway entrances with installation of elevator guide rails for accurate alignment of entrances with cars. Where possible, delay final adjustment of sills and doors until car is operable in shaft. Reduce clearances to minimum safe, workable dimensions at each landing.

K. Erect hoistway sills, headers, and frames before erection of rough walls and doors; erect fascias and toe guards after rough walls finished. Set sill units accurately aligned and slightly above finish floor at landings.

L. Lubricate operating parts of system, including ropes, as recommended by manufacturer.

3.03 FIELD QUALITY CONTROL

A. Acceptance testing: Upon completion of the elevator installation and before permitting use of elevator, perform acceptance tests as required and recommended by Code and governing regulations or agencies. Perform other tests, if any, as required by governing regulations or agencies.

B. Advise Owner, Contractor, Architect, and governing authorities in advance of dates and times tests are to be performed on the elevator.

3.04 ADJUSTING

A. Make necessary adjustments of operating devices and equipment to ensure elevator operates smoothly and accurately.

3.05 CLEANING

A. Before final acceptance, remove protection from finished surfaces and clean and polish surfaces in accordance with manufacturer's recommendations for type of material and finish provided.

B. At completion of elevator work, remove tools, equipment, and surplus materials from site. Clean equipment rooms and hoistway. Remove trash and debris.

3.06 PROTECTION

A. At time of Substantial Completion of elevator work, or portion thereof, provide suitable protective

coverings, barriers, devices, signs, or other such methods or procedures to protect elevator work from damage or deterioration. Maintain protective measures throughout remainder of construction period.

3.07 DEMONSTRATION

A. Instruct Owner's personnel in proper use, operations, and daily maintenance of elevators. Review emergency provisions, including emergency access and procedures to be followed at time of failure in operation and other building emergencies. Train Owner's personnel in normal procedures to be followed in checking for sources of operational failures or malfunctions.

B. Make a final check of each elevator operation, with Owner's personnel present, immediately before date of substantial completion. Determine that control systems and operating devices are functioning properly.

3.08 ELEVATOR SCHEDULE

A. Elevator Qty. 1.
   1. Elevator Model: Marquis 25
   2. Rated Capacity: 2500 LBS.
   3. Rated Speed: 125 feet per second.
   4. Operation System: ThyssenKrupp Elevator TAC20
   5. Travel: 30ft 2 in.
   6. Openings:
      a. Front: 1
      b. Rear: 0
   7. Clear Car Inside: 6'-8" wide x 4'-3"
   8. Cab Height: Nominal 8'-0"
   9. Hoistway Entrance Size: 7'-0" high x 3' -6" wide.
   10. Door Type: One speed single slide
   11. Door Operation: Automatic, direct current powered.
   12. Power Characteristics: 460 volts, 3 Phase, 60 Hz.
   13. Seismic requirements for zone 2

END OF SECTION 14240

COMFORT SUITES

SECTION 14560 - CHUTES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions, Division-1, Division-7, Division-9, Division-15 and Division-16 Specification sections apply to work of this section.

SUMMARY:

Extent and location of each chute is indicated on drawings and by provisions of this section.

Types of chutes required include the following:

24" diameter soiled linen chute

REFERENCE STANDARDS:

NFPA Code: Comply with applicable portions of National Fire Protection Association (NFPA) No. 82 Standard on "Incinerators, Waste and Linen Handling Systems and Equipment".

SUBMITTALS:

Product Data: Submit manufacturer's product specifications, standard details, installation instructions and general recommendations for total pre-engineered chute system. Mark-up data sheets to indicate actual selections for sizes and other details of installation.

Shop Drawings: Submit 1/4" scale section/elevation drawing, 1/2" scale typical landing plans, and 1-1/2" scale details of chute fabrication and installation including roof flashing. Distinguish between factory fabrication and field assembly work. Show required piping, and wiring connections and conduit runs for wiring.

QUALITY ASSURANCE:

Fabricator Qualifications: Firm with at least 5 years of experience in fabrication of chutes similar to those required for project.

PART 2 - PRODUCTS

MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

Cutler-Federal, Inc.; Eaton Park, FL
Midland Metalcraft Corp.; Joliet, IL
U.S. Chutes Corp.; Brookfield, CT
Wilkinson Chutes, Inc.; Stow, OH

MATERIALS AND FABRICATION:

General: Provide manufacturer's standard chute system of type, service, sizes and shapes indicated. Fabricate of metals and finishes as indicated; include support units, expansion joint materials; roof counterflashing and retainer band, roof- termination vent unit; intake chute throat sections located where indicated to accommodate door units as specified, discharge door units of type indicated; sanitizing or flushing units as specified, sprinkler heads where indicated, and manufacturer's standard accessories, fasteners and installation materials.

Chute Metal: Aluminum-coated cold rolled commercial quality, steel sheet ASTM A 463, Type 1 with T1-40 coating, gages as indicated.

Gage: U.S. No. 16 (0.062" thick).

Chute Intake Door/Frame Units: Provide self-closing units at each landing and at heights above floor as indicated. Use manufacturer's recommended heights if not otherwise shown. Intake door: stainless steel, 21" wide x 21" high, side hinged, with the full 180 degree opening swing. Equip doors with positive latch and latch handle. Provide manufacturer's standard stainless steel door units, AISI Type 304/304 with standard satin finish or No. 3 directional polish.

Discharge: U.S. #16 gauge aluminized steel type "H" hopper with 24" wide x 30" high, top hinged, hand operated doors with 165 deg. F. fusible link. Provide reinforced bottom with #13 gauge impact plate. Hopper to be supported with 2" pipe pedestal and equipped with 2" IPS drain flange for connection by plumber, as required by city or state and/or fire codes.

UL Labeled Door Units: Provide UL "B" labeled door units (1.0
hour with 30-min temp. rise of 250 deg F. (139 deg. C), complete with closers.

Electrical Interlocks: Equip intake door units of each chute with manufacturer's standard electrical interlocks; normally unlocked, locked when energized to prevent opening of door until unenergized. Design door lock units for wiring together (for each chute), and for connection to power source and control elements as indicated (if any). Conduit for wiring is not work of this section.

Fire Protection: Provide interlock system with temperature- rise elements which lock all doors of chute at predetermined, adjustable temperature in chute.

Manual Control Switch: Provide interlock system with manual control stations where indicated, with switch to lock all doors of chute during shut-down hours and service operations.

Roof-Termination Vent Units: Provide vent unit with roof-deck flange. Comply with NFPA requirements for full-sized chute extension to 4'-0" above roof, with full diameter screened vent area and metal safety cap or glass explosion-release cap. Provide nonferrous metal roof counterflashing and clamping ring, compatible with chute metal.

Fire Sprinklers: Equip chute with sprinkler heads in accordance with NFPA Standard No. 13, ready for piping connections (as work of another specification section). Provide access for maintenance of heads. Except as otherwise indicated or required by governing regulations, provide 1/2" I.P.S. heads, one located in chute above highest intake door, and one located at intake door on alternate floors and at lowest service level.

Flushing Spray Unit: Provide 3/4" I.P.S. spray head unit in chute above highest intake door, ready for hot water piping connection (as work of another specification section). Provide access for maintenance of head and piping.

Equip spray unit with disinfecting and sanitizing unit, including 1-gal tank and adjustable proportioning valve with by-pass for manual control of sanitizing and flushing operation.

PART 3 - EXECUTION

INSTALLATION:

General: Comply with chute manufacturer's instructions and recommendations. Assemble components with tight, nonleaking joints; and anchor securely to supporting structure with sufficient anchorages to withstand impact and wind loading stresses on vent units. Provide for thermal expansion movement of chute sections. Except as otherwise indicated, install chutes plumb, without offsets or obstructions, for free fall of materials within chutes. Install chute systems complete with doors, and with safety, sanitizing and fire-resistive components and accessories.

Coordination with Roofing: Where roof deck curb units are not shown to receive chute roof-termination vent units, anchor vent unit support flange directly to deck before installation of roofing/insulation system. Install counterflashing after roofing/flashing system has been installed.

Intake and Discharge Doors: Install doors at heights and locations indicated. Provide anchorages, wall/chute interfaces, self- closing operation, self-latching and similar features of installation to comply with labeling and fire-resistive requirements for fire-resistive door construction. Interface door units with throat sections of chutes in a manner which will ensure safe, snag-proof, sanitary depositing of materials in chutes by users.

Sanitizer Unit: Install sanitizer unit where indicated, cutting and patching chute wall only to extent necessary for installation; maintain fire-resistive construction. Interconnect sanitizer control with door interlock system.

Interlock System Wiring: Install electrical wiring for operation and control of door interlock system; comply with applicable NECA standards and recommendations.

TESTING, ADJUSTING, CLEANING:

Test operate components of chute system upon completion of installation; demonstrate use and safety features to Owner's personnel. Operate doors, locks and interlock system to demonstrate that hardware is adjusted and electrical wiring is connected correctly. Where possible, complete test operations prior to installation of shaft enclosures.

Provide heat/smoke test to demonstrate that heat/smoke sensing devices and sprinkler heads are operable.

Operate sanitizing equipment through one complete cycle of use and cleanup, and demonstrate replenishment of chemicals or cleaning fluids in containers of unit.

Cleaning: Following completion of enclosure walls and ceilings, clean exposed surfaces of finished metal components of chute system. Remove foreign substances and repair imperfections in finishes, but do not remove UL labels.

END OF SECTION 14560

SECTION 15010 - GENERAL PROVISION FOR MECHANICAL WORK

PART 1 - GENERAL

Work Included Herein

Furnish everything necessary for and incidental to satisfactory completion of an operating air conditioning, heating and ventilating system including, but not necessarily limited to:

* Packaged "ground mount", "roof top" and/or "split system type" air conditioning units with low pressure duct distribution system and "through-the-wall" heat pump units.
* Grilles, registers, diffusers, extractors, controls and related items required within a complete and satisfactory system.

Perform required operations in strict compliance with applicable laws, codes and ordinances and manufacturer's instructions and specifications.

The drawings are generally diagrammatic and do not show all necessary offsets and bends that may be required. The location of all piping, ducts, conduit, equipment and related items shall be verified in the field.

Obtain and pay for permits, fees, tests and inspections required in connection with this work.

Related Work

* Openings for ducts, grilles, and registers.
* Finish painting.
* Domestic water piping.
* Electric wiring.

Quality Assurance

Everything necessary for and incidental to satisfactory completion of Heating, Ventilating and Air Conditioning Work shall conform, in every respect, to applicable laws, codes and ordinances and the following:

ASME (American Society of Mechanical Engineers)
ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers)
UMC (Uniform Mechanical Code, latest adopted edition)
BFU (National Board of Fire Underwriters)
NFPA (National Fire Protection Association)
NEMA (National Electrical Manufacturer's Association)
ASTM (American Society for Testing and Materials)
AGA (American Gas Association)
ANSI (American National Standards Institute)
NEC (National Electrical Code, latest adapted edition)
FS (Federal Specifications)
FM (Factory Mutual)

The Owner shall furnish appliances and labor for tests and shall meet expenses of the tests. Tests shall be made before the rough work is covered. System may be tested in parts, if authorized by the Architect and/or Engineer.

SUBMITTALS

Submit a complete list of major items of equipment and materials within thirty consecutive calendar days AFTER award of Contract. Bind product data on submitted items in three-ring, hard-back binder, then submit at one time in a neat and orderly manner. Partial lists and attendant data are prohibited.

Submittals shall include at least the following, but are not necessarily limited thereto:

* Manufacturer's specifications and maintenance and operation (if applicable) instructions. Parts lists when applicable.
* Ratings of equipment and performance data including applicable performance curbs.
* Certified performance curves for ALL pumps.
* Physical properties and dimension. Shipping and performance weights.

Where the equipment or system submitted required more space (either horizontally or vertically, or both) than is shown or indicated as available for said submittal, submit large-scale drawings accompanying such equipment submittal(s) showing floor and room volume space required and service clearances necessary prior to ordering affected equipment of materials. Confirm receipt of Architect's review of such evidence PRIOR TO ORDERING.

Prior to completion of the job, the Contractor shall compile a complete equipment list and maintenance manual. The equipment list shall include the following items for every piece of material, equipment and systems supplied under this Section:

* Name, Model and Manufacturer
* Complete Parts Drawings and List
* Local Supply for Parts and Replacement and Telephone Number
* Local Service Organization for Equipment and Telephone Number
* Tags, Inspection Slips, Instruction Packages, Removed from Equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from
* Submit maintenance manuals in accordance with Section 01700.

Upon completion of the work, prepare Record Drawings in accordance with Section 01700.

Substitutions

In accordance with Section 01631.

PART 2 - PRODUCTS

Acceptable Manufacturers

The following is a list of manufacturers whose equipment is acceptable as to manufacturer, subject to conformance with contract documents. Verify that the equipment will meet all capacities, requirements, space allocations and that the weights will not exceed structural design loads.

* Manual Quadrants: Farr, Vent Fabrics, Duro Dyne, Elgen
* Flexible Duct Connections: Vent Fabrics, Duro Dyne, Elgen
* Access Door Latches: Vent Fabrics, Duro Dyne, Young
* Duct Turns: Tuttle & Bailey, Duro Dyne, Barber-Colman
* Manual Dampers: Honeywell, Air Stream, Krueger, Ruskin
* Fire Dampers: Ruskin, Phillips, Air Balance, Air Stream, Dowco
* Grilles, Registers and Diffusers: Tuttle & Bailey, Titus, Barber-Colman, Krueger, Anemostat, Carnes. Supply

in colors to match adjacent wall finishes.

* Duct and Pipe Insulation: Ownes-Corning Fiberglas, Certain Teed, Knauf, Manvile, PPG, Carey, Dow Chemical Company
* Exhaust Fans: Greenheck, Peerless, Barry, ILG, Loren Cook, Penn Ventilator, Broan
* Louvers: Air Stream, Aero-Lite, Titus, Krueger, Ruskin
* Motors: General Electric, Westinghouse, Century, Sterling, U.S. Electric, Louis-Allis Co., Electro Dynamics Co., Allis-Chalmers
* Motor Starters: Allen Bradley, Square D, Cutler-Hammer
* Flexible Duct: Thermaflex, Owens-Corning Fiberglass
* Access Doors: Milcor, Ventgab, American Warming, Potter-Roemer
* Through-the-Wall Air Conditioning Units: General Electric, Amana, Carrier
* Air Conditioning Roof or Ground-Mounted Package and Split System; McQuay, Trane, Carrier, Payne, York, Day & Night, Lennox. Condensate lines are to be piped.

Materials

Ductwork:

* Galvanized Ductwork: Galvanized prime-grade, lock-forming quality steel (LFQ) having a galvanized coating of 1 1/4 ounces total for both sides of one square foot of a sheet. Cross-break all side of duct. All ductwork shall be galvanized steel. Plenums, housings, etc., shall be galvanized steel.
* Turning Vanes: Double thickness hollow vane type, of galvanized sheet steel equal to Tuttle & Bailey or Duro Dyne. Shop fabricated duct turns must be submitted for acceptance prior to any work on project.
* Flexible Connections: 30 ounce closely woven, neoprene coated glass fabric, fire retardant, waterproof, airtight, and minimum 6" wide.
* Flexible Duct: Flexible pre-insulated vinyl coated fiberglass with corrosion resistant steel spiral reinforcing. "Thermaflex" Type MK-E.
* Manual Quadrants: On all low pressure manual dampers, Farr Trim Lok #100 in insulated ducts or inaccessible ducts, and #109 in uninsulated ducts.
* Manual Dampers: Minimum 16 gauge galvanized steel, maximum 8" blade, opposed blade type, with manual locking quadrant.

Access doors in ductwork installed with reinforced angel frames, and made with airtight felt strips. Latches: Ventlock No. 260, as manufactured by Vent-Fabrics, Inc. Access panels and access openings in ducts shall be two gauges heavier than the duct and provided with a rolled steel metal edge. Sealed airtight to the duct with felt edges. Access doors in insulated ducts fabricated of two sheets of sheet metal (double the metal thickness of the duct) sandwiched around a blanket of insulation.

Fire dampers with access panels furnished and installed as described herein to meet the requirements of the UMC and UL. All fire dampers constructed in accordance with NBFU No.90A and local code requirements. Dampers manufactured shall be of the type with the open damper out of the air stream for 100% free area.

All insulation, coverings, vapor barriers, and adhesives shall have a flame spread classifications not to exceed 25 and a smoke developed rating of nor more than 50, and shall comply with NBFU 90A.

Supports shall be specified herein.

Cooling Coil Condensate and Drain Piping: Type 'M' hard drawn copper pipe with wrought copper fittings. Joints in copper pipe prohibited under slabs-on-grade.

Pipe Solder: 95-5 silver solder.

Refrigerant Piping: Type 'L' hard drawn copper tubing with wrought copper fittings. Solder shall be silver solder with a 1050 degrees F, or higher melting point.

Acoustical Insulation: Shall be not less than 2 lbs. density duct liner coated to a smooth finish with a NBFU 90A approved vinyl mat faced glass or neoprene coating which will withstand velocities up to 4000 FPM. Insulation shall be 1/2" thick on supply and return ducts inside building. 1" thick on all ducts on exterior of building, and 1/2' thick on all plenums. Sound absorption of 1/2" thickness shall not be less than .50 at 250 CPS and .60 at 1000 CPS. Minimum K of .28 at 75 degrees F, mean temperature. Duct liner shall meet with erosion test method described in UL Publication No. 181.

Refrigerant Pipe Insulation: 1/2' thick flexible foamed plastic closed cell pipe insulation. Insulation shall have a 'K' factor of not more than .25 at 70 degrees F., and a water vapor transmission rate of 0.1 per-inch or less in conformance with ASTM C177 and ASTM C355 water method.

Vibration Isolators:

Suspended fan-coil or split system A/C units, suspended exhaust fans, etc.: Mason Industries type HD double deflection neoprene hanger with a minimum of 0.40" static deflection.

Equipment

Furnish and install foundations, saddle supports, and bases under al equipment, (except concrete bases provided under Section 03310). Supports shall be as noted. Where suitable supports are not detailed they shall be in accordance with manufacturer's recommendations. Vibrations eliminators shall be provided under all equipment (fans, blowers, air conditioning units) with moving parts.

Mason Industries vibration eliminators shall be properly loaded per the manufacturer's recommendations to eliminate transfer of vibration to the building structure.

Power drive equipment shall be quiet in operation and shall be free of vibration. Metal partitions, ducts, sheet metal housings, etc., shall be constructed and braced to eliminate vibration or rattling when the system is in operation. Connections to equipment shall be so designed and constructed that noise and vibration will not reach the conditioned area through ducts, piping, sheet metal construction or the building construction. Power drive equipment suspended from the structure shall be provided with spring type isolation.

Grilles, Registers and Diffusers: As indicated

Provide the dampers painted flat black.

Provide extractors behind all supply grilles, registers and ceiling diffusers.

Units shall be factory prime finished and field painted in color selected by the Architect or as otherwise indicated.

Provide neoprene gasket around inside of frame.

Exhaust Fans: As indicated.

Provide all 1/2HP and smaller motors with flush type manual motor starters (except with built-in motor protection. Provide magnetic across-the-line starters for all motors 3/4 HP and larger complete with all control devices, such as start-stop pushbuttons.

Split System Type Air Conditioning Units: As indicated.

Each unit shall be complete with indoor and outdoor sections with necessary filters, refrigerant piping, insulation, controls, interlocks, relays and connections as required.

Indoor section to be completed with centrifugal type blower, belt or direct connected to a single speed, inherently protected motor, factory built cooling coil with insulated drain pan and remote auxiliary resistance heating, starter, controls, relays.

Filters for each unit shall be external to unit. Provide one set of throwaway filters for use during the construction period. Prior to balancing the system install one set of "farr" 30/30/ throwaway final filters complete with frame, mounting hardware and accessories.

Outdoor section to be complete with weatherproofing housing, insulated compressor, air-cooled condenser, condenser fan or blower, inherently protected blower motor, automatic control panel with starters and relays in a weathertight insulated casing suitable for outdoor installation.

Each system shall be complete in every respect. Furnish controls with provisions for automatic change-over from heating to cooling and from cooling to heating. Factory wire each unit completely for terminal connections of thermostat with a fan "ON-AUTO" switch and a system "HEAT-OFF-AUTO-COOL" switch. Install each unit in strict accordance with manufacturer's recommendations, complete with all accessories, including all control interlocks. Thermostat shall be Honeywell TB74G with Q674S sub-base and locking cover plates.

Through-The-Wall Air Conditioning Units:

Verify electrical requirements prior to ordering.

Wall units shall be 230/208 Volt complete with internal disconnect switch. Refer to drawings for further information.

Contractor shall verify condensate requirements of selected unit and provide drain in wall to daylight if required. Submit shop drawings of selected unit complete with grille color sample options to the architect for review.

Exhaust Fans:

General Building Exhausts

Furnish and install all exhaust fans as noted on the drawings. Fans shall be complete with intake grilles, ductwork and discharge ducts, as shown on the drawings. Ducts passing through wall so roof must be property flashed. Each exhaust fan to be of the type, size and capacity indicated completed with backdraft dampers, and bird screen on discharge. Provide all exhaust fans with approved vibration isolators. All belt drive exhaust fans shall have adjustable motor pulleys for fan speed control. All fans (except toilet exhaust fans 150 cfm and below) must be AMCA certified and approved.

Motors: As indicated, scheduled or required.

Motors shall be type required for service intended and size required for their location. The maximum RPM shall be 1750, except where otherwise specified.

One-half horsepower and smaller motors shall be 120 volt, single phase, 60 cycle, with flush type manual motor starters.

Three-quarter horsepower and larger motors shall have magnetic across-the-line starters and shall be designed for 208, 230 or 460 volts (as noted on the drawings), 3 phase or single phase, 60 cycle current except as may be noted. Contractor shall verify voltage and phase before ordering any equipment.

Motor starters shall be furnished with each motor. Starters and accessories on equipment exposed to weather shall be in a NEMA 3 Raintight Enclosure.

The final alignment of all motors shall be included as part of the work under which the motor is furnished.

V-Belts, Pulleys and Guards: As indicated, scheduled or required.

Belt Drives shall use V-Belts. Multiple Belt Drives shall be matched sets and be so marked at the factory. The V-Belts shall be designed for 150% capacity.

Motors larger than 5 horsepower and drives with more than 2 belts shall be provided with non-adjustable sheaves, providing the specified RPM required for the fan.

Belt guards for belt drives and guard hoods for drive couplings shall be provided. These guards shall be factory-built and furnished with the equipment.

Wiring: In accordance with Section 16100.

Relays, Electrical Controls, Control Switches, Starters and Related Start-Stop Switches: As indicated, scheduled or required.

Access Doors: In accordance with Section 08305.

Fabrication

Ductwork:

Rectangular Duct Construction: Shall conform to the latest edition of the SMACNA Duct Manual for low velocity systems.

Longitudinal seams to be Pittsburgh Lock Groove, hammered flat. Tape all transverse joints of supply, return and exhaust ducts with arabol and canvas.

Provide supplemental stiffening as required to prevent drumming and provide a structurally sound assembly.

Construct all fittings, elbows and transitions to provide a minimum of noise and resistance. Where space permits, construct elbows with a minimum radius of 1 1/2 times the width (or depth), and transitions with a change not to exceed 1" in 4". When structural conditions necessitate (or as otherwise indicated), make fittings and elbows as sharply as required, but with double thickness turning vanes. Heel elbows shall be prohibited.

Provide double thickness turning vanes in all 90 degree square elbows and in all elbows which have a radius less than 1 1/2 times the width (or depth) of the duct.

Paint all ductwork, turning vanes, insulation, etc., visible through grilles, registers, or ceiling diffusers, flat black.

Tape all cross joints in sheet metal ductwork with arabol and canvas.

Make all ductwork exposed to elements weathertight.

Duct size shown are to the inside of acoustical linings. Increase the size of al sheet metal ducts as required to accommodate insulation.

Before fabrication, check all ductwork with the building construction for dimensions, locations, clearance, etc. Make up ducts with any necessary variations to conform to the details of the construction of the buildings, to suit the space available and to fit the equipment furnished. The entire duct system must be substantially constructed, rigidly erected and free of any duct vibration and noises.

PART 3 - EXECUTION

Preparation

Cut existing work as necessary to properly install work. Structural members including floor slabs above grade shall not be cut without written consent.

Cutting of walls, floors, ceilings, and roof to accommodate ductwork, piping, conduit, or other items shall be done by the Contractor. The exact location and size of each opening required to accommodate the equipment shall be determined by the Contractor who shall furnish sleeves, caps, or flashings required to fill or close the openings. Provide final grouting and concrete fill, if required. Saw cut floor slab, where required, to full depth of slab. Core drill openings for piping installed AFTER concrete and/or masonry is completed.

Jackhammers or equipment producing excessive noise shall not be used. Other means shall be at the Contractor's option.

Installation

No valves, traps, controls, or unions, shall be placed in any pipe line at a location that will be inaccessible after the system is completed.

Any dampers, controls, valves, piping controls, expansion joints or other apparatus which must be located in an inaccessible location shall be provided with suitable access doors (fitted in a framed hole) which will permit proper operation and servicing of the apparatus.

Install foundation and vibration isolation supports and bases under all equipment. Provide vibration isolation under all equipment such as blowers, air handling units and exhaust fans that have moving parts.

Install factory fabricated air conditioning units as shown.

Locate indoor units of split-system type air conditioners to provide proper clearance on access side of unit.

Install coil condensate and drain piping as shown. Support piping as required. Support optional plastic piping at a maximum of 5'-0" on center and all changes in direction. Provide Ptraps on all drain piping connections to equipment.

Install refrigerant piping between condensing units and evaporator units as indicated; include final connection. Provide refrigerant flexible connections at all equipment. Cut all copper piping smooth and square. Clean all fittings before installation. Dirty or oily pipes shall be thoroughly swabbed out with clean waste and carbon tetrachloride. All piping shall be thoroughly tested for leaks and proved tight before charging. Tests shall include not less than 20 inch vacuum held for 24 hours. Final test shall be a halide torch test at all joints after charging and before insulation is applied.

Insulate all refrigerant suction piping with pipe insulation. Install insulation by slitting tubular sections and applying over piping. Fabricate covers for fittings from insulation in conformance with manufacturer's recommendations. Seal joints; but ends, and miters with fire-retardant, waterproof adhesive (Armstrong 520). Taped joints prohibited. Finish all pipe insulation exposed to exterior with two coats of Armaflex finish for closed cell formed plastic insulation.

Duct Installation: Install ductwork using skilled mechanics in strict conformance with the latest SMACNA Manual for low velocity ductwork.

Support ducts from hanger straps or hanger rods per "SMACNA Manual for Low Velocity Duct Construction", latest edition. Ducts with a maximum dimension of 60" shall be supported on not lighter than 1" wide, 16 gauge galvanized steel strap or 3/8" diameter steel rods, a maximum of 8 foot on center. Support duct 61" to 120" with 2' x 1/4" thick galvanized steel angle trapeze and 3/8" diameter steel rods. Support ducts 121" to 240" maximum dimensions with 2

1/2" x 2 1/2" x 3/16" thick galvanized steel angles and 3/8" diameter steel rod supports.

Duct Insulation: Insulation shall be applied by a licensed insulation contractor. Where observation of the work being installed indicates that the specification is not being complied with, the entire section of the insulation shall be removed and re-installed as specified.

Supply ducts, return air ducts and elsewhere as indicated shall be acoustically lined, for a minimum distance of 10 feet from the air conditioning unit or as otherwise indicated.

Piping: Furnish and install all piping systems complete as indicated with valves, pipe fittings and connections. Provide dialetric unions between ferrous and non-ferrous piping connections. Lines shall be laid to drain and shall be free from sags or traps. Provide drain cocks at low points and air vents at high points. Support horizontal piping with hangers or brackets. Do not use perforated metal tape.

Apply and hold 120 psi hydrostatic test for 4 hours with no drop in pressure for all pumped systems. Gravity drain piping shall be filled and the joints observed for leaks. Repair and retest as required.

Grilles, Registers and Diffusers: Install grilles, registers, ceiling diffusers where indicated. Size and model as indicated. Grilles, registers and ceiling diffusers must be set flush and true to the wall or ceiling to prevent air leakage around the edges.

Exhaust Fans: Install exhaust fans complete with bases, speed switches, and duct connections as indicated.

Wiring:

* Refer to Section 16000 for mounting of all magnetic starters and motor speed control apparatus with connections from starters to motors.
* Relays, electrical controls, control switches, etc., shall be furnished and delivered together with identification and instructions. Line voltage exterior wiring will be performed under Section 16000. Wiring not shown and required to properly connect equipment, including connections to special safety or control apparatus not shown shall be a part of this Contract.
* Starters and related start-stop pushbutton switches shall be furnishes and installed. Starters furnishes with equipment (i.e., package units) are to be furnished under the Section specifying the prime equipment, and connected under Section 16000.

Adjusting and Cleaning

Balance the air systems for the core areas as herein specified. Work shall be performed by qualified personnel listed with NEBB or by an independent balancing agency listed with AABC. Results shall be tabulated on approved forms and submitted for review before closeout of the project. Balance work shall be performed with approved, accurately calibrated instruments, maintained and in good working order. Include an extended warranty of 90 days after completion of balance work, during which time the engineer at his discretion may request a recheck or resetting of any quantity. Provide technicians to assist the engineer in making any adjustments he may require during this period of time.

Adjust all fan speeds to provide the required capacity. Balance for uniform temperatures throughout. Advise the Contractor of, and be responsible for the installation of any additional opposed blade volume dampers (with locking quadrants) necessary to properly balance the system without increasing noise levels in occupied spaces.

Record the following data:
* Supply and return air quantities and static pressure at each outlet and at each fan.
* Fan and motor RPM.
* Motor nameplate and actual operating amperage, volts, phase and hertz.

Adjust all temperature controls for proper operation.

Verify that power is properly supplied to all electric motors and that all electric controls are properly hooked up and operating at the control circuits. Furnish a list of the voltage and current readings taken under load of all motors.

Check all work and see that all controls are in good working order and properly adjusted. After the equipment has been properly checked and adjusted. Contractor shall start up and run all the equipment to determine that the controls and equipment are all operating properly and that the installation is complete. When the tests or inspections show that the work is in any way defective or at variance with the specifications, immediately make all changes necessary to correct the work and remedy defects; defective material and equipment shall be removed from the premises.

After the tests have been performed on the air conditioning and air handling systems, make without costs, not more than two changes in the size of the nonadjustable sheaves to obtain air quantities.

At the completion of the work, exposed heating, air conditioning and other equipment, piping, apparatus, walls, floors, ceilings, and material shall be thoroughly cleaned of oil, grease, dirt, rust, cement, and plaster. Exposed surfaces shall be cleaned of oil and grease spots and left smooth and clean. Cracks and corners shall be scraped out clean. Finished surfaces shall be cleaned and polished.

Damage to glass, finish or structure of adjacent work shall be properly repaired or replaced. Unused construction materials in or about the buildings and construction area and dirt and rubbish caused by the work under this Section shall be removed from the site. The premises shall be left in a neat, clean and usable condition.

END OF SECTION 15010

SECTION 15400 - GENERAL PROVISIONS FOR PLUMBING WORK

PART 1 - GENERAL

Work Included

Everything necessary for and incidental to satisfactory completion of Plumbing Work shall conform, in every respect, to all local applicable laws, codes and ordinances. This work includes, but is not necessarily limited to:

* The installation of complete sanitary plumbing, waste and vent systems with connections to plumbing fixtures equipment and sewer lines. (Vents to exit through roof on rear of building.)
* The installation of domestic water piping with services to fixtures and equipment using same, including valves, controls and related items.
* The installation of special equipment furnished under other sections within this Specification.
* The installation of insulation specified herein for domestic hot water piping.
* Supervision of erection, balancing and adjustments and instructions for proper operations and maintenance.
* Furnishing and installation of plumbing fixtures.
* Sterilization of potable water system.
* Obtain and pay for meter permits, fees, tests, and inspections required in connection with work.

Quality Assurance

Everything necessary for and incidental to satisfactory completion of Plumbing work shall conform, in every respect, to applicable laws, codes and ordinances and the following:

ASME (American Society of Mechanical Engineers)
ASHRAE (American Society of Heating, Refrigeration and Air Conditioning Engineers)
UPC (Uniform Plumbing Code, latest adopted edition)
NBFU (National Board of Fire Underwriters)
AWWA (American Waterworks Association)
AGA (American Gas Association)
ASTM (American Society for Testing and Materials)
ANSI (American National Standards Institute)
FS (Federal Specifications)
NFPA (National Fire Protection Association)
FM (Factory Mutual)
NEMA (National Electrical Manufacturer's Association)

Pressure vessels shall be ASME Code constructed and stamped.

The drawings are generally diagrammatic and do not show all necessary offsets and bends that may be required. The location of all ducts, conduit, equipment, and related items shall be verified in the field.

Test soil, waste, vent, water, gas piping, and obtain approval of the Owner. Furnish equipment required for tests.

Drainage System

Water Test: Plug ALL openings throughout the entire drainage and venting system. Fill the entire system with water in sections 12 to 14 feet in height. The system must hold water for minimum 4 hours without showing a drop greater than 4". Conduct the test in a portion of the system in the same manner as described for the entire system, except that a vertical stack 10 feet above the highest horizontal line tested may be installed and filled with water to maintain sufficient pressure.

Water System: Upon completion of the roughing-in and before setting fixtures, test the entire hot and cold water piping systems at a hydrostatic pressure of not less than 100 pounds per square inch gauge, and proved tight at this pressure for not less than 4 hours in order to permit the inspection of joints. Where a portion of the water piping system is to be concealed before completion, test this portion separately in the same manner as described for the entire system.

Gas System: Air pressure test, not less than 50 psig for one hour.

Defective Work: If inspection or test shows defects, replace such defective work or material and repeat inspection and tests. Make repairs to piping with new material. Caulking of screwed joints or holes prohibited.

Submittals

Submit a complete list of major items of equipment and materials within thirty consecutive calendar days AFTER award of Contract. Bind product data on submitted items in three-ring, hard-back binder, then submit at one time in a neat and orderly manner. Partial lists and attendant data are prohibited. Submittals shall include at least the following but are not necessarily limited thereto:

1. Manufacturer's specifications and maintenance and operation (if applicable) instructions. Parts lists when applicable.
2. Ratings of equipment and performance data including applicable performance curves.
3. Certified performance curves for ALL pumps.
4. Physical properties and dimensions.
5. Shipping and performance weights.

Where submittal data describes items in addition to that (those) items(s) specified or being proposed for the work, the item being submitted shall be clearly and concisely marked on the submittal sheet(s) and superfluous data shall be crossed out or otherwise noted as "not applicable".

Where the equipment or system submitted requires more space (either horizontally or vertically, or both) than is shown or indicated as available for said submittal, submit large-scale drawings accompanying such equipment submittal(s) showing floor and room volume space required and service clearances necessary prior to ordering affected equipment or materials. Confirm receipt of Architect's review of such evidence PRIOR TO ORDERING.

Prior to completion of the job, compile a complete equipment list and maintenance manual. Include the following items for every piece of material equipment furnished hereunder:

* Name, model and manufacturer.
* Complete parts drawing and list.
* Local supply for parts and replacement and telephone number.
* Local service organization for equipment and telephone number.
* Tags, inspection Slips, Instruction Packages, removed from equipment as shipped from the factory, properly identified as to the piece of equipment it was taken from

Prior to final payment, prepare Record Drawings in accordance with Section 01700.

Submit certifying data that ACP pipe and fittings have been tested in the United States to ASTM Specifications.

Substitutions

In accordance with Section 01600.

PART 2 - PRODUCTS

Acceptable Manufacturers

The following is a list of manufacturers whose equipment is acceptable as to manufacturer, subject to conformance with contract documents. Verify that the equipment will meet all capacities, requirements, space allocations and that the weights will not exceed structural design loads.

* Plumbing Fixtures: Plumbing fixtures and drains shall be as scheduled.
* Drinking Fountains: As manufactured by Halsey Taylor. Fountain shall have upfront and side hand-operated controls.
* Water Heaters: State, A.O. Smith.
* Circulating Pumps: Armstrong, B&B, Thrush, Paco, Taco.
* Water Softeners: Servi-soft, Water Refining, Bruner, Culligan.
* Plumbing Trim: Standard, Eljer, Crane, Chicago, or as indicated elsewhere.
* Fixture Supports: J.R. Smith, Wade, Josam and Zurn.
* Cleanouts: Zurn, Wade, Josam, J.R. Smith.
* Floor Drains and Floor Sinks: Zurn, Smith, Josam.

Materials

Sanitary and Rainwater Pipe: Cast iron standard weight, mechanical joint. (Exception: IAMPO approved ABS or PVC may be utilized under structure if approved by local authorities.) Pipe to be sound insulated with 1 1/2" mineral wool pipe wrap.

Drainage Fittings: Cast iron standard weight, mechanical joint. (Exception: IAMPO approved ABS or PVC may be utilized under structure if approved by local authorities.)

Gas Supply Piping System:

Gas: (Buried) Schedule 40 PVC, marked for gas use, buried 18" below grade with 14 gauge copper tracer wire. Riser to 9" above grade shall be made with an approved, anodeless steel riser and transition. (Above Grade) Standard weight steel, with threaded joints. Use black pipe indoors, galvanized outdoors.

Domestic Water Piping System:

Above Ground: Copper Type 'L' hard drawn ASTM B-88.

Below Ground: (Set in concrete or under concrete) Copper Type 'L' soft drawn ASTM B-88.

Below Ground: (Not in or under concrete or inside building and as indicated) Use type 'L' copper or asbestos cement pipe (ACP) ASTM C-296 equal to Manville Class 150.

Wrapping Tape: 20 mil polyethylene tape.

Fittings:

Copper: Wrought copper, conforming to ANSI B16.2, use 95-5 silver solder.

Indirect Waste, Relief Valve and Miscellaneous Drains: Copper, Type M, hard drawn.

Identification (Copper) Color identifying pipe with size, manufacturer's trade mark, and conform to the following schedule:

Type 'L' Copper - blue

Gate Valves: "Milwaukee" #1502 ball valve, 125 psi, all bronze solder type. Full port area.

Check Valves: "Milwaukee" #1509, 125 psi, bronze body, bronze disc, solder type horizontal swing check.

Pipe drains to consist of 1/2" glove valves with renewable discs and 3/4" hose nipples.

Sterilizing Solution: Sodium hypochlorite solution conforming to FS-O-8-441, Grade D.

Piping Insulation: Fiberglass premolded insulation with all service jackets, minimum density of 3.5 PCF thermal conductivity ('K' factor) of .24 at a mean temperature of 85 degrees F. Provide an additional 8 oz. canvas jacket with arabol finish around all exposed pipe insulation. Thickness as specified herein.

Cleanout Materials: Iron body with extra heavy bronze plugs screwed into caulking ferrules.

Flashing: Sheet lead weighing no less than 3 lbs. per square foot.

Pipe Hangers: Kin-line No. 450F. Hangers shall permit adjustments of vertical heights without disassembly or removal from pipe.

Solder: 1050 degree F. Eutectic silver solder.

Valve Tags: Bronze, 1 1/2" minimum square for plumbing work. Imprint tag with the name of Contractor and valve number preceded with "P" (Plumbing).

Equipment

Fixtures: As specified, scheduled or indicated.

Support wall hung fixtures with Zurn "Monolithic" supports of appropriate pattern.

Water Softener: Furnish, install and place in operation automatic water softening equipment as indicated and specified:

Continuous Sequence Electro-Selector programmable 100% solid state electronic control for volume initiated regeneration of 2 individual tanks. The control will be used with a single-compatible totalizing meter. The control will be capable of regenerating successive tanks in the system as required by total water flow through the system. The control will have the ability to place regenerated tanks back into service immediately, or to place them on standby until the next regeneration is called for and the method shall be programmable by the user.

The number of tanks shall be selectable from the face on the control. The control will be provided with a switch to allow the user to take any tank of service, upon which the control will cycle among the remaining components of the system to continue providing softened water.

The control will have provisions for individual adjustment of backwash, brine/rinse, and brine refill time cycles. Each step will be adjustable from 0 to 255 minutes in length, in one-minute increments. The control will be capable of indicating (1) system capacity remaining before the next regeneration, (2)

which softener or group of softeners, (3) steps of the softeners is to be regenerated next, and (5) capacity overload to indicate usage beyond system capacity.

The control will be housed in a NEMA 4X industrial enclosure. The control will include a transformer for operation on 24 volts or less, with a back-up self charging battery.

The softener tank shall be made of butt-welded industrial grade steel, designed for a working pressure of 30 to 125 psig dynamic with minimum burst pressure of 325 psig. Tank will be provided with a monolithic lining of inert, nonleachable virgin polyethylene material at least 30 mils thick, permanently bonded to the tank interior by heat fusion. The tank exterior will be coated with a polyurethane finish of three coats: (1) sprayed-on smooth primer sealer, (2)
sprayed-on smooth intermediate coat, and (3) sprayed-on textured finish coating for chip resistance. Resin tanks and brine tank will be warranted against failure caused by faulty material or workmanship for a period of five years.

A combination salt storage tank with cover, and brine tank well shall be supplied as part of the system. The tank shall be sufficient size to hold salt for at least 8 regenerations between refills. The tank shall be made of corrosion-free one-piece molded polyethylene or fiberglass reinforced plastic material.

Resin tanks, brine tank, and valve sections will be warranted against failure caused by faulty material or workmanship, defective parts, for a period of five years.

The 5-cycle main control valve shall be constructed of corrosion-free inert thermoset reinforced phenolic polymer that complies with the regulations of the Food and Drug Administration. The valve will be completely hydraulic in operation, with no electric motors, and shall have built-in educators. All valve seals will be static O-rings; no sliding seals shall be allowed. The manufacturer of the control valve shall be the same as the manufacturer of the system. The valve shall be serviceable with ordinary hand tools, and designed in such a way that service can be performed without disassembly of exterior valving and without disconnecting existing inlet and outlet plumbing connections.

The 5-cycle control valve shall be warranted against failure caused by faulty material or workmanship for a period of five years.

A complete set of instruction for installation and operation of the softener system will be included. Start-up service shall be available from a local distributor or representative, as well as from the manufacturer. A complete water test kit for conducting soap hardness tests shall be included.

Water Heater: Furnish, install and place in operation a natural gas fired water heating system complete in every respect and ready for use by Owner without special effort or knowledge.

Water Heating System: AGA approved, storage type with glasslined tank. Fiberglass insulation with decorative metal jacket, designed and constructed for indoor used as a domestic water heater. ASME pressure relief valve with full-size discharge line to grade or to an approved receptor. Integral controls, including flow switch wiring, and transformer. Gas pressure insulator, shut off and gas piping for all valves. Verify if natural or propane gas is available prior to any construction.

Drains:

* Provide cast iron body with lacquer finish and inside caulk outlet. Where installed in surfaces having waterproofing membrane, provide drains with non-puncturing flashing clamp device and anchoring flange. Type of grate to be furnished on floor sinks as indicated.
* Equipment Rooms and Unfinished Areas: Zurn Z-547 with Duco coated east iron strainer and shallow type bucket strainer.
* Toilet Rooms and Finished Areas: Zurn AZ-415 with Type "y" nickel-bronze strainer 6" x 6", and combination membrane flashing clamp and anchoring flange.

* Finished Areas: Zurn-1806, CIAR enameled floor sink with bottom dome strainer, and combination membrane flashing clamp and anchoring flange.
* Roof Drain: Zurn Z-100 ERC with extension sleeve, roof sump receiver and underdeck clamp.

Cleanouts:

* Concrete and Tile Floors: "Zurn" Z1400-s with scoriated nickel-bronze top.
* Interior Unfinished Floors: "Zurn" Z1450-7 Cast Iron cleanout raised head bronze plug.
* Interior Finished Walls: "Zurn" Z1445-1.
* Trap Primers: "Zurn" Z1022, 1/2" automatic trap primer with solder unions.
* Wiring and Controls: In accordance Section 16000 and as specified herein.
* Access Doors: In accordance with Section 08305.

PART 3 - EXECUTION

Preparation

Cut existing work under direct supervision of Project Superintendent as may be necessary to properly install work. Structural members shall not be cut without the written consent of the Architect or Engineer.

Cutting of walls, floors, ceilings, and roof to accommodate piping, etc., will be done by the Contractor. The exact locations and size of each required shall be determined by the Contractor. The Contractor shall furnish sleeves, caps and flashings, required to fill or close the openings. Provide final grouting and concrete fill, if required. Core drill openings for piping.

Jackhammers or equipment producing excessive noise shall not be used. Other means shall be at Contractor's option.

Perform necessary excavation, shoring, and backfilling required for the proper laying of pipes inside the building, and outside as otherwise directed by the Architect.

Excavate trenches open cut, keep trench banks as nearly vertical as practicable. Excavate trenches true to line and make bottoms not less than 18" wide but no wider than necessary to provide ample work room. Grade trench bottoms accurately. Machines grade only to the top line of the pipes, doing the balance by hand. Do not cut any trench near or under footings without first consulting the Architect.

Backfill in accordance with Section 02200.

Pipe Sleeves: Provide pipe sleeves for piping through floors and walls. Fit pipe passing through masonry or concrete walls with the steel or cast iron pipe sleeves. Fit pipe passing through concrete floors with steel pipe sleeves.

Sleeves to have a minimum of 1/4" clearance between sleeve and service pipe or be not less than two sized larger than the service pipe (Exception: ground floor).

Installation

General:

* No valves, traps, controls or unions shall be placed in any pipe line at a location that will be inaccessible after the system is completed.
* Controls, trap primers, valves and piping controls, expansion joints or other apparatus which must be located in an inaccessible location shall be provided with suitable access doors (fitted in a framed hole) which will permit proper operation and servicing of the apparatus.
* Make required connections of plumbing services to the equipment furnished under other sections of the work or by Owner, including condensate drain piping.

* Heating and Air Conditioning: Provide required water and natural gas, including shut-off valve, backflow prevention devices and final connections, as required.
* Special Equipment, i.e. Ice Machines, etc.: Make rough and final connections to special equipment, including piping, stop valves, fittings, etc. Exposed piping shall be chrome plated brass.

Fixtures:

* Install each fixture, control value, or other plumbing item at the exact height and location shown or in accordance with the manufacturer's rough-in drawings.
* Set fixture supplies, trap and trap arm squarely with wall, in line with fixture outlet, without any offsets, angles or bends.
* Properly align fixture connections to prevent any undue strain on equipment or fixtures. "Cocking" or other misalignment of fixtures or trim is specifically prohibited.
* Set each fixture level and in continuous contact with floor or wall. Align fixtures in batteries and equally spaced to present a uniform appearance.
* Grout joint between fixture and walls or floor with Medusa Cement, forming a smooth, even, watertight joint. Porcelain plaster caps to be securely cemented into place over floor flange bolts, entirely covering washer and bolt hole.
* Seal waste outlet from water closets with asbestos or felt gasket furnished by the fixture manufacturer.
* Place exposed plated, polished or enameled connections from fixtures with special care, showing no tool marks or threads.

Domestic Water Piping:

Installation: Extend the water piping to fixtures, outlets and equipment. Wrap piping below floors or concrete with wrapping tape with 1/2 overlap. No fittings shall be allowed below concrete slabs-on-grade.

ACP installation shall conform to IAPMO Standard IS-15.

Provide all branch lines with shut-off valves as shown.

Install the water system with fall toward the drain valves. Cap or plug outlets as indicated, or as required, and leave ready for future connections. Provide connections between copper and steel pipe with non-metallic connectors to prevent electrolysis.

Install main, branches and runout piping as indicated. Cut pipe accurately to measurements established at the building and work into place without springing or forcing. Take care not to weaken the structural portions of the building. Run piping above ground parallel with the lines of the building unless otherwise shown or noted. Keep service pipe, valves, and fittings at a sufficient distance from the work to permit finished covering not less than 1/2" from other such work and not less than 1/2" between finished covering on the different services. Do not bury water piping in floors unless specifically indicated or approved. Make changes in pipe sizes with reducing fittings. The use of bushings shall not be permitted. Install additional drains at low points on the hot water and cold water piping, and grade piping toward drains.

Expansion and Contraction of Piping: Make allowance throughout for expansion and contraction or pipe. Make branch connections with ample swing or offset to avoid undue strain on fittings or short pipe lengths. Anchor horizontal runs of pipe over 50 feet in length to the wall or the supporting construction about midway on the run to force expansion, evenly divided, toward the ends, unless otherwise indicated.

Air Vents: Install as indicated or required to remove air from piping system.

Fixtures and equipment requiring water supplies shall be provided with stop valves.

Stop valves shall have wheel handles unless otherwise noted.

Sterilize the entire water distribution thoroughly with a solution containing not less than 50 parts per million of available chlorine. Allow the sterilizing solution to remain in the system for a period of eight hours, during which time valves and faucets shall be opened and closed several times. After sterilization, flush the solution from the system with clean water until the residual chlorine content is not greater than 0.2 parts per million, unless otherwise indicated.

Sterilization shall be under the supervision of a competent chemist or chemical engineer. The chemist shall make all analysis and shall deliver 6 copies of the analysis results to the Owner.

Pipe Insulation:

Apply insulation after piping has been installed, tested, approved, dry and in a clean condition. Cover fittings and valves (except unions) with insulation cement worked on in two applications to a smooth, hard surface, flush with pipe covering. Provide 8" long, 20 gauge galvanized iron insulation guards at locations of hanger rods and supports. Insulation wall thickness shall conform to the following schedule:

* Cold water piping outside of building insulation (not below ground) and hot water supply and return:
* Mains and horizontal branches: 1" thickness
* Drops in walls and partitions: 1/2" thickness
* Hot water piping: As indicated.

Piping:

Inspect each section of pipe, fittings, special traps, and valves; carefully and thoroughly clean inside before installing. Lay pipe according to the sizes specified or shown on the drawings and proceed up to grade. Cut special lengths of pipe accurately to measurements established at the site and work into place without forcing. Ream cut sections of pipe to remove all burrs. Run exposed pipe where practical parallel or at right angles with the line of the building or other exposed pipes, care being taken to avoid windows, doors or other openings and electric or other outlets, and not to weaken structural portions of the building.

Make changes in direction with fittings, as bending of pipe is prohibited. Use reducing fittings exclusively. Reducing bushings are prohibited. Take care to ensure unrestricted circulation and eliminate noise or vibration. Install unions at final connections to fixtures or equipment, the trimming of which does not permit their convenient removal.

* Screwed Joints:
    * Cut square; remove burrs.
* Soldered Joints:
    * Thoroughly clean outside of male fitting and slightly farther than depth of fitting to a bright finish.
* Use sandpaper, sandcloth, wire brush or steel wool for cleaning.
* Coat tubing and fitting with solder flux, applied with brush.
* Make joint per manufacturer's instructions for solder type required. Solder all joints.
* Remove the internal parts of solder valves prior to soldering. Cast iron mechanical joint piping installed in accordance with manufacturer's recommendations.

Drainage Pipes and Vent Piping: Grade horizontal soil, waste and roof drain pipes at 1/4" per foot where possible, but in no case less than 1/8" per foot. Where an end or circuit vent pipe from any fixture or line of fixtures is connected to a vent line serving other fixtures, locate the connection at least 4 feet above the floor on which the fixtures are located.

Installation of AC shall conform to IAPMO Standard IS-6.

Fittings: Make changes in pipe size on soil, waste and drain lines with reducing fittings or recessed reducers. Make changes in direction with appropriate use of 45 degrees WYES, Half WYES, long sweep 1/4 bends, 1/6,

1/8 or 1/16 bends, except that sanitary tees may be used in soil and waste lines where the change in direction of low is from the horizontal to the vertical, and on the discharge from water closets. Where is becomes necessary because of space conditions to use short radius fittings in any other locations, obtain written authority therefor from Architect or Engineer.

Clean-Outs:

* Make clean-outs accessible by one of the following means:
* Extending to floor or grade above.
* Location in wall with removable plate.
* Size to be same as pipe on which clean-out is installed.
* Covers shall be set flush with finish wall, floor or grade and to be securely anchored by means of integral lugs or bolts. Where surfacing materials, such as resilient floor covering or ceramic tile is used, verify thickness being used. Install clean-out with top so that finished surface will be smooth and flush.

Fixture Supports:

Hang fixtures and supports or set with 1/4" bolts or screws of sufficient length to securely fasten the fixture to the backing, wall or closet ring.

Secure fixture hangerset against concrete or masonry walls with 5/16" bolts into "Tamp-In" type anchors, or 2 unit cinch anchors.

Wood plugs are prohibited.

For fixture hangers set against metal stud walls secure to a metal backing plate at the time the rough piping is installed. Use a steel plate 1/4" thick and not less than 4" wide. Attach the plate to a stud at each end of the plate by bolting with two 1/4" U- Bolts per stud. Fit the bolts through the plate and around the flange of the stud. (Alternate system: use a 1/8" fillet weld across the full width of the flange at top and bottom of the plate.)

Equipment Connections:

Cold water make-ups and gas supply lines, where required, shall be brought to equipment locations and valved off. Make final water and gas extension and connection to all equipment requiring same.

Valves installed on project shall be appropriately tagged. Valve tag shall be secured to piping adjacent to the valve with 12 gauge copper wire. Provide index of valves showing valve number, location and purpose. Index shall be included as a part of the operating and maintenance manual for the project.

Flashing:
Refer to Section 07600 for flashings for piping passing through roof for installation with the roofing.

Pipe Hangers and Supports:
Support vertical pipes more than 10 feet long at the bottom by means of a hanger on the horizontal branch within 3" of the fitting at the base or by means of a base fitting adequately supported or by a suitable riser clamp. Fit hangers on insulated lines around outside of insulation and allow for sheet metal shield.

Wiring: In accordance with Section 16000.

Include mounting of control apparatus with connections to the equipment being controlled. Relays, electric controls, control switches, and related items together with identification and complete instructions shall be furnished. Wiring shall be performed under the Electrical Section of the Specifications. Provide required conductors, conduit, wiring devices and hook-up, whether or not ALL conditions are indicated or specified.

Adjusting and Cleaning

Check out and test operate equipment installed.

Test work and verify that controls are in good working order and properly adjusted. After the equipment has been properly checked and adjusted, start up and operate the equipment to determine controls and equipment are operating properly and the installation is complete and satisfactorily installed.

Pipe lines shall be filled, flushed, drained and then refilled with clear water.

When the tests or inspections show that the work is in any way defective or at variance with the Specification requirements, the Contractor shall immediately make changes necessary to correct the work and remedy the defects to the satisfaction of the Architect. Defective material or equipment shall be removed front he premises.

At the completion of the work, exposed plumbing fixtures, and other equipment, piping, apparatus, walls, floors, ceilings, and material shall be thoroughly cleaned of oil, grease, dirt, rust, cement and plaster. Exposed surfaces shall be cleaned of oil and grease spots and left smooth and clean. Cracks and corners shall be scraped out clean. Finished surface shall be cleaned of oil and grease spots and left smooth an clean.

Damage to glass, finish, or structure of adjacent work shall be properly repaired or replaced. Unused construction materials in or about the building and construction area and dirt and rubbish caused by the work shall be removed. The premises shall be left neat, clean, and usable by the Owner without special effort or knowledge.

END OF SECTION 15400

SECTION 15550 - FIRE PROTECTION SPRINKLER SYSTEM

GENERAL

General Description: This section describes labor, materials and installation requirements necessary to install automatic fire sprinkler system as specified. Work in this section includes, but is not limited to, the following principal items:

The layout and installation of a complete automatic fire sprinkler system as required by national and local codes that meets the requirements of the authority having jurisdiction.

Prepare Working Plans and Shop Drawings: Show all piping, sprinklers, hangers, earthquake bracing, roof construction and occupancy of each area, including ceiling and roof heights as required by NFPA 13, Section 1-9. Indicated the sections to be shop welded and the type of weld fittings to be used. Submit Shop Drawings to the office having jurisdiction for certification. Certified Shop Drawings shall then be submitted to the Architect for review.

Securing and payment for all necessary permits and inspections.

Field verification of all dimensions. No extra charges or compensation will be allowed for any differences between actual dimensions and measurements indicated.

Install outside yard piping as indicated on the drawings complete, including connection to fire line.

Provide a letter of acceptance from the Owner's fire protection insurer and complete printed instructions on operation of system to the Owner.

Provide six complete sets of approved shop drawings stamped by the fire protection authority submitted to the Architect prior to fabrication or installed of sprinkler systems.

Furnishing miscellaneous materials such as brackets, hangers, steel supports for equipment, expansion joints, inspector's test connection, etc.

Provide alarm valves, zone valves, fire department pumper connection, alarm gong, and miscellaneous equipment as required.

QUALITY ASSURANCE:

Provide a Contractor's material and test certificate to the Architect stating that the system has been designed and installed according to national standards, state and local codes.

Prior to connecting the overhead sprinkler piping, flush underground main in the presence of representatives of the regulatory agencies and Owner and meet with their approval.

After completion of the installation, test entire system for acceptance by the authority having jurisdiction.

SUBMITTALS:

Conformance Certificate: Submit a letter of conformance for fire sprinkler system in accordance with National Fire Codes published by National Fire Protection Association (NFPA).

Design Reference Standards: Provide automatic sprinkler system in accordance with the following NFPA Standards.

* NFPA, Chapter 13, entitled, "Sprinkler Systems, Installation."
* NFPA, Chapter 13A, entitled, "Sprinkler Systems, Care and Maintenance."
* NFPA, Chapter 1963, entitled, "Fire Hose Connections."

* NFPA, Chapter 14, entitled, "Standpipe and Hose Systems."
* NFPA, Chapter 24, entitled, "Private Fire Service Mains."

Refer to other chapters of the NFPA that are applicable.

PRODUCTS

Supply Connections: Sprinkler Contractor shall coordinate with Plumbing Contractor on final locations and connection to water mains serving sprinkler system.

Outside Piping: Install outside yard piping as indicated on the drawings complete.

Underground Piping: Shall conform with NFPA Standard 24 (Standard for Installation of Private Fire Mains). Every pipe and all fittings shall be cleaned of all debris, stone and dirt and inspected for cracks and holes before being laid. All underground piping shall be thoroughly flushed in accordance with the requirements of NFPA 13 and 24. The test must be witnessed by a proper authority.

Interior Piping: Shall be pipe conforming to NFPA 13 standards.

Sprinkler Heads: Provide sprinkler heads using approved upright, pendent, spray type, regular bronze, of proper degree ratings as required, installed where indicated and in conformity to NFPA. Pendent sprinkler heads shall be chrome-plated with plated escutcheons. Where flush sprinkler heads are specified, use Grunau Liquidator LD or equal by Grinell, Automatic, Reliable, Viking, or Star, temperature ratings in accordance with NFPA 13.

Fire Department Connection: Provide polished chrome-plated, exposed wall Siamese complete including double clapper checks, plugs and chains. Provide chrome-plated rough brass wall plate lettered, "Auto Spkr.".

Provide floor, wall and ceiling escutcheon flanges on all exposed places where pipe runs through walls, ceiling or floor. Use metal flanges at sprinkler heads, painted to match ceiling.

EXECUTION

Install sprinklers in accordance with above referenced standards, latest edition. After completion of the installation the entire system shall be tested for acceptance by the authority having jurisdiction. Provide suitable receptacle cabinet with extra sprinkler heads with same rating as those installed and one sprinkler wrench, all of which shall be installed at location approved by authority having jurisdiction.

Provide excavation and backfilling necessary for installation of underground piping in conformance with Division 2.

After work has been installed, carefully fit around, close up, repair, patch and paint all chases, holes or openings as directed, to the entire satisfaction of the Owner and Architect.

Acceptance: Provide letter of guarantee stating compliance with the required national standards, state and local codes.

Owners Instructions:

Provide next to the sprinkler rise main a printed sheet, protected by glass or transparent plastic cover, giving brief instructions regarding control, emergency procedures and other data as deemed necessary.

After completion of installation and tests and prior to the building's final acceptance, instruct the Owner or is designated representative in the operation of the sprinkler system.

END OF SECTION 15550

SECTION 16010 – ELECTRICAL GENERAL PROVISIONS

GENERAL

1. This Section valid only when considered in total with other Contract Documents. Cross references are for the convenience of the reader and their inclusion in or omission from any section in no way limits scope of intent of any Contract Document.

2. Definitions:

   "Wiring" includes in addition to conductors, all raceways, conduit, fittings, boxes, switches, hangers, and other accessories related to such wiring.

   "Concealed" means hidden from sight in chases, furred spaces, shafts, hung ceilings, or embedded in construction.

   "Exposed" means not installed underground or "concealed" as defined above.

   "Regulating authorities" means all governmental, utility, and fire protection authorities having jurisdiction.

   "Provide" means to supply, erect, install, and connect up complete, in readiness for regular operation, the particular work referred to.

   "Furnish" means to supply and deliver to the job.

   "As accepted of accepted" means by equipment or materials, which in the opinion of the Engineer, is equal in quantity, durability, appearance, strength, design and performance to the equipment or material specified and will function adequately in accordance with the general design.

3. Singular Numbers

   Where any device or part of equipment is herein referred to in the singular number, such reference shall be deemed to apply to as many such devices as are required to complete the installation or as shown.

4. Intent

   It is the intention of the Specifications and Drawings to call for finished work, tested and ready for operation. Any apparatus, appliance, material or work not shown on Drawings, but mentioned in the Specifications or vice versa, or any incidental accessories necessary to make the work complete and ready for operation, even if not particularly specified, shall be provided. Should there appear to be discrepancies or questions or intent in the Contract Documents, refer the matter to the Architect for his decision, before ordering any materials or equipment or before the start of any related work. The decision of the Architect shall be final, conclusive and binding.

5. Drawings and Data

   If so directed by the Architect, without extra charge, make reasonable modifications in layout as needed to prevent conflict with work or other trades or for proper execution of work.

   Include minor details not usually shown or specified, but necessary for proper installation and operation of a system or piece of equipment in work and in bid price, the same as if specified or shown.

6. Materials and Equipment

Materials and equipment shall be standard products of a reputable manufacturer regularly engaged in the manufacture of the specified item. Where more than one unit is required or any item, furnish by the same manufacturer, except where specified otherwise. Install materials and equipment in accordance with manufacturer's recommendations. Should variance between plans and specifications occur with these, contact the Architect immediately so that variations in installation can be known by all parties concerned.

Deliver materials and equipment to the Project in the manufacturer's original, unopened, labeled containers, and adequately protect against moisture, tampering or damage from improper handling or storage. Do not deliver materials to the job before they are ready for installation, unless adequate security is provided.

The Owner's representative may require removal from the premises of such material or work as in his opinion is not in accordance with the Specifications; he will also require substitution, without delay, and satisfactory work or material. The Architect has the authority to stop work whenever such stoppage may be necessary to insure proper execution of the Contract.

7. Shop Drawings and Samples

Provide shop drawings consisting of manufacturer's certified scale drawings, cuts, catalogs, or descriptive literature with complete certified characteristics of equipment, dimensions, capacity, code requirements, etc.

In addition to the general contractor's review prior to submittal, installer to check shop drawings thoroughly to ascertain that they comply in detail with plans and specifications; electrical characteristics are correct for available service; and that dimensions are shown and checked to fit available space. Clearly note any deviations from plans and specifications on certified shop drawings. Include reference to appropriate Section, Page, and Line numbers of the Specifications. Installer to stamp drawings with his firm's name, date, and approval indicating that above has been complied with. Shop drawings received without this stamp will be rejected without further explanation.

Submit for review, with such promptness as to cause no delay in work, all sample requested, checked by and stamped with the approval of subcontractor, and identified clearly as to material, manufacturer, and pertinent catalog numbers, and use for which intended.

Review will be only for conformance with design concept of project and compliance with information given in Contract Documents. Review of a separated item will not indicate review of assembly in which item functions. Direct specific attention in writing on resubmitted shop drawings to revisions other than corrections called for on previous submissions.

Commence no work requiring a shop drawing or sample until submission has been reviewed. Review of shop drawings or samples does not relieve subcontractor from responsibility for any deviations from requirements of Contract Documents unless subcontractor has, in writing, called attention to such deviations at time of submission and received written permission for specific deviation. Review does not relieve Contractor from responsibility for errors or omissions in shop drawings.

Submit layouts of equipment rooms or areas, with sections, where other than designed or scheduled equipment is proposed to be furnished, showing configuration and adequate space.

8. Record Drawings

Maintain at site a set of record drawings, which clearly indicated (by shading, coloring, or some other acceptable method) the day-by-day extent or work installed.

9. Codes, Ordinances, Certificates, Permits and Fees

Give necessary notices, obtain permits, and pay taxes, fees and other costs in connection with work, file necessary pans, prepare documents, and obtain necessary approvals of regulating authorities having jurisdiction; obtain all required certificates of inspections for work and deliver to the Architect before request for acceptance and final payment of work.

Include in work, labor, materials, services, apparatus, drawings (in addition to Contract Drawings and Documents) required to comply with applicable laws, ordinances, rules and regulations.

Drawings and Specifications take precedence when they are more stringent than codes, ordinances, standards and statutes. Codes, ordinances, standards and statutes take precedence where they are more stringent or conflict with drawings and specifications. The following industry standards, specifications, and codes are minimum requirements:

9.1 Applicable City, County, and State mechanical, electrical, gas, plumbing, health and sanitary code, laws, and ordinances.

9.2 City or other applicable building code.

9.3 National Electrical Safety Code.

9.4 Underwriters Laboratories, Inc., Standards

9.5 National Fire Protection Association Standards

10. Coordination of Trades

Schedule and coordinate work with that of other Divisions and Sections to execute the contract expeditiously and avoid unnecessary delays.

Examine fully specifications and drawings for other trades, to become familiar with all conditions affecting work, and consult and cooperate with other Divisions and Sections for determining space requirements and adequate clearances with respect to other equipment in the building. The Architect reserves the right to determine space priority in the event of interference between piping, conduit and equipment of various trades.

If the work is installed without coordinating with other trades, and such installation interferes with their installation, make any changes necessary to correct the conditions, without extra charge.

Provide fabrication drawings of critical areas if so directed by the Architect.

11. Temporary Openings.

Provide temporary openings required for admission of apparatus. Notify and coordinate with the general contractor accordingly.

12. Sleeves

Furnish and set sleeves in locations where conduit pass through floors, walls, partitions, concrete beams, and roof. Assume cost for cutting, patching, finishing, etc. resulting from failure to accomplish this requirement. Openings not to impair strength, function, or aesthetics or work cut.

Provide conduits passing through floors, walls, partitions, roofs or concrete beams with sleeves having internal diameter 1 inch larger than outside diameter of conduit.

In sleeves passing through fire walls or floors, or lightproof or soundproof walls, floors and partitions, pack space between sleeve and pipe with non-shrink grout (Chase-tec brand or Engineer approved equal), neoprene coated asbestos rope, or other approved sealant materials. UL listed pre-fabricated assemblies are acceptable.

13. Excavation and Backfill

Perform necessary excavation, shoring, and backfilling required for the proper laying of pipes and conduits inside the building and premises, and outside as may be necessary. Remove excavated materials as directed.

14. Scaffolding, Rigging and Hoisting

Provide scaffolding, rigging, hoisting, and services necessary for erection and delivery of equipment and materials provided under this Division. Remove same from premises when no longer required.

15. Hangers, Inserts, Supports, and Bases

Provide required structural members, hangers, supports, and inserts to keep piping and conduit in proper alignment and prevent transmission of injurious thrusts and vibrations. "Tie wire" is not an approved support method.

16. Cutting and Patching

Cut complete construction work only if sleeves, openings, chases, etc., were inadvertently omitted, and only wit specific permission of the Architect. In no case shall reinforcing steel be cut without specific written permission of the Owner's representative.

Provide sleeves, caps, plates, escutcheons, flashings, etc., required to fill or close the openings. Provide final grouting, concrete, asphalt, masonry, painting, and other materials as required. Make repairs in like and kind for exact matching of surfaces and finishes.

Where cutting and patching occurs in street, sidewalks, alleys, and the like, cooperate fully with Owner and municipal authorities to maintain safe and required traffic flows. No extras will be allowed for traffic patrolmen and overtime work if such is required by City, County, or State officials. Patching is to meet requirements of municipal or other government bodies.

17. Cleaning

Includes removing tools, scaffolding, surplus materials, barricades, temporary walks, debris, and rubbish from the Project promptly upon completion of that portion of the work. Leave the area of operations completely clean and free of these items.

During the course of construction, cap all equipment and electrical conduit in an approved manner to insure adequate protection against entrance of foreign substances.

18. Guarantee

Each complete system shall be guaranteed by the Contractor for a period of one year from the date of acceptance of work by Owner in writing, to be free of defects of materials and workmanship, and to perform satisfactorily under all conditions of load or service. The guarantees provides that any additional controls, protective devices, or equipment be provided as necessary to make the system of equipment operate satisfactorily, and that any faulty materials or workmanship be replaced or repaired. On failure of guarantor to do the above after written notice from the Owner, the Owner may have the work done at the cost of the guarantor.

For additional requirements refer to paragraph on guarantees in each individual Section.

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

END OF SECTION 16010

SECTION 16100 – BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1. General

This Section valid only when considered in total with all other Contract Documents. Cross references where noted are for convenience and their inclusion or omission from any particular Section in no way limits scope of particular Section or intent of any Contract Documents.

Provide acceptable complete raceway systems for all electrical conductors including conductors for telephone, signal, special systems, control and other systems required by applicable codes, rules, and regulations. Raceways shall be sized according to National Electric Code unless shown larger than required by N.E.C. Where acceptable by local code ordinances it shall be permissible to use type NM and NMC wiring for branch circuit within the guestrooms. The electrical contractor shall indicate specifically on the bid form the type wiring methods to be used. Outlet boxes shall be plastic when type NM and NMC wiring methods are utilized. Also, where acceptable by local code, MN cable or ENT may be used for branch circuit wiring within the guest rooms.

Other Sections of this Division valid only when considered in conjunction with these General Provisions.

PART 2 - MATERIALS

2.1 Conduits, Fittings, and Boxes

Conduit: Conduit manufactured by National, Republic, Triangle, Allied. All conduit shall be furnished by one manufacturer with exception of non-metallic, PVC coated and flexible conduit, and shall be Underwriter Laboratory listed and approved for the installation in which it is used.

All raceways shall be GRC for entire installation except as noted or shown. Rigid steel conduit, elbows, standard couplings shall be hot dipped galvanized rigid steel. If partitions of walls are filled with solid concrete grout, and where subject to injury or damage, e.g. consider area up to 4' above floor level subject to injury. Verify these areas prior to installation.

Rigid Conduit: Rigid steel, hot dipped, galvanized, or sherardized with baked enamel coating, zinc coated threads and protective caps.

Thinwall Conduit: Electro galvanized "Electrical metallic Tubing" of cold rolled steel, electrically welded. Baked clear plastic enamel coating.

Flexible Conduit: National "Flexsteel" flexible steel conduit, formed of one continuous length of electro galvanized spirally wound steep grip.

Liquid-Tight Flexible Conduit: Anacondra "Sealtite" liquid-tight flexible steel conduit, formed of one continuous length of electro galvanized spirally wound steel strip with neoprene jacket.

Non-Metallic Type 40 PVC Plastic Duct: Carlon PV-Duit Plus, as manufactured per NEMA TC-2, and UL-651 Standards and UL listed for underground uses.

Intermediate Metal Conduit: Conduit shall be hot-dipped galvanized intermediate metal conduit manufactured in accordance with UL #1242.

PVC-Coated Rigid Conduit: Robroy Plasti-bond as manufactured per NEMA RNI-1974 (Type A) and galvanized conduit prior to plastic coating per Federal Spec. WWC-581d, ASIS C801-1966.

2.2 Conduit Fittings:

Conduit fittings manufactured by Thomas and Betts, Raco, O.Z. Gedney, or Appleton. All fittings shall be by one manufactured and shall be UL approved.

Rigid Conduit Fittings: Threaded type, galvanized steel, or malleable iron, water, and concrete tight. All connectors at cabinets, boxes, outlets, gutters, panelboards, etc., shall be nylon insulated, metallic bushings with double locknuts.

Thinwall Conduit Fittings: Compression or set-screw type, galvanized steel, rain, and concrete tight. All connectors shall be nylon insulated. Indentor or set screw type fittings will not be allowed.

Flexible Conduit Fittings: Squeeze or screw type, galvanized malleable iron or steel, with nylon insulated throats.

Liquid-Tight Flexible Conduit Fittings: Galvanized steel or malleable iron liquid-tight with neoprene gaskets, "O" ring and retainer, nylon insulated throats.

Non-Metallic Type 40 PVC Duct: Joints of the ducts assembled together with approved couplings to make a water tight joint. Provide expansion fittings on all non-metallic duct per manufacturer's recommendations.

IMC Fittings: All rigid fittings specified under Paragraph 2.2.1, or UL approved compression IMC fittings.

PVC-Coated Ridig Fittings: Robroy Plast-Bond 2 as required for all PVC coated rigid conduit installation.

Condulets: R&S, Appleton, Efcor, Gedney or Killark, cast feraloy types with sheet steel covers, provide neoprene gaskets for all locations.

2.3 Conduit Size and Type:

Conduit size and type to be used for various applications, as follows (unless shown otherwise on Contract Drawings):

Rigid Conduit: All conduit, regardless of size, installed under poured concrete floor slabs and in walls unless otherwise noted. Rigid conduit in earth shall be PVC coated rigid conduit, or concrete encased.

Thinwall Conduit (EMT): Installed in partitions, above suspended ceiling and where exposed above 6'-0" in dry interior locations where not subject to mechanical stress. EMT larger than 3 1/2" diameter shall not be used.

Flexible Conduit: Connections to suspended unit heaters, fans, and similar small equipment subject to vibration not exposed to rain or water drip. Connections from junction box to lighting fixtures in accessible ceilings. Connection from junction boxes to switch for narrow switches in hollow metal jamb posts (mullions).

Liquid-Tight Flexible Conduit: Final connections to all motor operated equipment. Provide green ground wire except as otherwise permitted by Article 351-9 of the N.E.C.

Non-Metallic Type 40 PVC Plastic Duct: Minimum 3/4" trade size. Conduit in earth under building slabs shall be permitted and installed per N.E.C. requirements. Conduits in earth not under building

slabs shall be routed 24" below finish grade, or as shown on Contract Drawings.

Intermediate Metal Conduit: Installed in all corrosive locations, or in earth unless otherwise noted. All risers and elbows from all underground conduit installations and as shown on Contract Documents.

2.4 Outlet Boxes:

Wireways: Wireways and fittings, screw and/or hinged cover as shown shall be constructed of code gauge enameled sheet metal.

Wireways and fittings installed on exterior and where subject to water or similar conditions shall be raintight type construction without knockouts, constructed from galvanized sheet steel.

Approved manufacturers are Square-D Company, Alwalt or Gibbons.

Outlet boxes and accessories used in the conduit systems as manufactured by Appleton, Raco, Steel City, or Bowers. All boxes electro-galvanized or zinc plated steel.

Location: Approximate location of outlets is shown on Plans, but each outlet location shall be checked before installation. Refer to electrical notes on Drawings and Specification Sections covering systems and equipment for types of boxes required and mounting instructions. Coordinate installation of boxes and conduit stubs with equipment supplier and Architect.

2.5 Type of Boxes:

Flush masonry wall outlets: Masonry box, 2 1/2", 3 1/2" deep, with concentric K.O.'s (single or multi-ganged as required).

Wood or Metal Stud Wall Outlets: 4" square box - 1 1/2" or 2 1/8" deep with conduit K.O.'s (plastic rings) and required square extension rings and/or device corners.

Wood or Metal Stud Wall Outlets (Multi-Gang): Same as masonry outlets with required supports (no single gang boxes allowed).

Outlets in Plaster or Gypboard Ceilings: 4" octagon box, 2 1/8" deep, with conduit K.O.'s and required extension rings and/or covers. Fixtures not provided with prewired junctions shall have 4" octagon box above accessible ceiling with flexible conduit connection to fixture box of wiring channel.

Where surface wall outlet boxes are allowed they shall be the following types:

2 gang 4" square box, 2 1/8" deep

Multi-gang solid gang masonry box, 2 1/2" deep

All boxes with 1/2" raised steel cover and approved mounting accessories.

Where outlet boxes are mounted on conduit stubs on roof or other areas as indicated, boxes shall be Type FS or FD malleable iron, cadmium finish.

Floor Boxes and Fittings: Russel-Stoll, Fullman, Steel City and comparable to as follows:

Power: LEW #632SE-DFB and with #DCF-1, carpet flange in carpeted areas.

Telephone and Low Voltage Signal: LEW #532SE with 2" #538 brass kick ring and DF-1, carpet flange in carpeted areas.

Use deep boxes for all floor boxes where feasible.

Outlets in Concrete: Concrete boxes - depth as required with conduit K.O.'s and mounting lugs designed to mount on forms without rocking.

Outlets for W.P. Receptacles: Boxes shall be type FS or FD cast steel.

For exposed wiring on the exterior of building and on interior of building where subject to water use case feraloy type boxes with weatherproof covers, and neoprene gaskets, and for other exposed wiring on the interior of building, use code gauge 4" square or larger galvanized boxes and 1/2" raised steel cover plate.

2.6 Pull and Junction Boxes and Wireways:

Provide pull boxes, junction boxes, and auxiliary wiring gutters where indicated and where required to facilitate installation of the wiring. Such boxes and gutters shall meet all requirements of Articles 362, 370, and 374 of NEC.

For concealed conduit, install flush with ceiling or wall with covers accessible and easily removable. Where flush boxes are installed in finish ceiling and walls, provide cover to match material and finish specified for devices which shall exceed the box face dimensions by a sufficient amount to allow no gap between box and finished material.

Pull and junction boxes not specifically described in other Sections or on the Drawings, shall be fabricated o code gauge galvanized steel with screw covers, brass hardware, and baked enamel finish, equal to Circle AW.

Pull and junction boxes installed in poured concrete floors: Flush type cast iron with watertight gasketed covers, gray metallic finish. Where boxes are installed in floors with tile or carpet floor covering, covers shall be of the recessed type to accommodate the floor covering. Cast iron boxes as manufactured by Lew Electric Fittings Company.

2.7 Wire and Cable

Materials listed in this Section are products of Anaconda Wire, General Cable, and General Electric. All wire required for this Project furnished by one manufacturer, unless otherwise noted or specifically approved. Submit for review, prior to placing orders, a complete schedule of wire, cable, and connectors to be installed.

In no case shall a conductor a size less than No. 12 AWG be used for lighting or receptacle circuits. Where home-run conductors are specifically indicated to be larger than #12 (i.e., three #10-3/4"C), it shall be understood that the increase in conductor size shall extend the entire length of the circuit. Conductors for line voltage control shall be minimum #16 AWG.

All wire and cable is to be new and unused, manufactured within a six month period preceding the delivery to the job site. Submit UL label with date (for all wire coils).

All branch circuit wire to be delivered to the job unbroken or spools.

Wire and Cable: NEC grades insulated to 600 volts by ASTM Standards unless otherwise indicated.

2.8 Wire and Cable Types

Type THHN or XHHW (90 degree C) shall be used where lighting branch circuit conductors are routed through fluorescent fixture channels, for panel and equipment feeders, and where exterior exposure of raceways is encountered. May be used for motors in mechanical equipment rooms, and for similar

circuits in other high ambient temperature areas. All wiring to motor or equipment subject to vibration shall be stranded.

Type AF (150 degree C): Minimum size No. 14 stranded, use for filed tap-off connections to incandescent fixture sockets, and other high operating temperature equipment connection where operating temperature exceeds 90 degree C.

Type MTW or Type T (60 degree C): Minimum size No. 14 solid or stranded, coded, multi-conductor, individually insulated with an overall jacket. Use for low voltage signal and control circuits operating at 25 volts or less.

Portable cords: Type SJO, 300 volt constant service and type SJ, 600 volt constant service shall be used as shown and required.

2.9 Connectors

Splices for Conductors No. 10 and Smaller: Made with Ideal, Wing-Nut insulated, solderless, screw-on connectors (size as recommended by manufacturer).

Connectors for Conductors No. 8 and Larger: To be compression or split bolt types; T & B, O.Z. Gedney, Blackburn, or Burndy mechanical connector. Fill connector voids with electrical insulation putty, follow with 3M Scotch Tape #50 so insulation is equivalent to or greater than insulation of conductor.

Control wiring and all other stranded wiring to screw connections shall be provided with T & B "STA-KON" terminals, or as noted on contract Drawings.

Install approved expansion joint type fittings in raceway systems crossing building expansion joints and as recommended by raceway manufacturer where expansion is caused by temperature changes or similar type conditions. Expansion fittings to maintain approved raceway system (provide bonding jumpers as required).

2.10 Identification and Tagging:

Wire and Cable for Feeders, Sub-Feeders, Control, and Branch Conductors identified as follows:

Switch legs for local wall switches to be distinctive color such as purple.

Colors: Assigned to each conductor as described and carried throughout all main and branch circuit distribution.

Electrical system color codes, main and branch conductors identified as follows:

	120/208V
A Phase	Black
B Phase	Red
C Phase	Blue
Neutral	White
Ground	Green

Conductor Insulation: Colored in sizes up through No. 8; conductors No. 6 and larger: May have black insulation but phase color coded with 1/2" brand or colored tape at all junctions and terminations.

Main and feeder cables tagged in all pull boxes, wireways and wiring gutters of panels. Tags to be of fireproof materials as manufactured by "Brady" or approved equal.

Mark underground stubouts with concrete monuments (8" x 8" x 8") installed 1" below finish grade,

over but not in contact with capped ends. Identify capped empty raceway with linen tags located inside of raceway ends. Pitch all conduits uniformly to manholes to eliminate pockets. All joints shall be watertight.

Numbered bands to identify each wire or cable at panelboards and/or piece of equipment served.

2.11 Access Panels

Provide access panels in building construction where required for access to concealed junction boxes, pull boxes, etc.

Access panels shall be of the flush steel panel type of ample size to permit inspection and servicing of the concealed item. Panels shall be Milcor Style B for plaster walls and ceiling, style M for masonry walls and ceilings.

2.12 Wiring Devices and Device Plates

Provide the following devices where indicated on the drawings. Devices shall be ivory in color in the guest rooms, public spaces and office areas. Types of devices other than those listed below shall be of the same standard or quality. The catalog numbers and manufacturers listed are intended to indicate the type and quality. Specification grade devices and places shall be as manufactured by Leviton or as accepted. Devices shall have screw type terminals.

Receptacles: Where special receptacles are required, verify the exact type required to mate with equipment cord caps before ordering. Receptacles and plug configurations shall conform with NEMA Standards for amperage and voltage classification and shall comply with NEMA WD-1 and UL 20 tests.

A. Grounding type duplex throughout: Leviton 16242 Decora Series.

B. Duplex weatherproof receptacle shall have integral ground-fault protection Leviton 6598I with 6196-V cover.

C. Duplex receptacle with integral ground-fault protection Leviton 6598.

Switches: Switches, unless noted, shall be the a-c tumbler, quiet type; 20A. Leviton 5611 Decora series with lighted handle in the off position or as accepted. Switches shall be fully rated for either inductive or incandescent loads and shall comply with Federal Specification W-C-596D as verified by UL, using NEMA tests WD-1, 3.02 through 3.10 and UL test 49B. Key switches shall be Leviton 1121L series.

Device Plates: Provide a device plate for each outlet to suit the device installed and blank plates or covers for junction boxes or empty outlets. Flush device plates shall be high abuse nylon, Leviton Decora Series, color to match device. Acceptable alternate: Lutron or approved equal.

A. Device plates shall be one-piece type and a shape suitable for the devices and outlets installed. Sectional device plates will not be permitted. Where exposed wiring is permitted, device plates shall be galvanized.

b. Telephone plates shall have bushed center or telephone jack opening. Color of jack and plate shall match Leviton Decora Series.

PART 3 - INSTALLATIONS

3.1 Conduit Installation

Conduit Systems: Installed for all wiring, lighting, power, signal, control communications, etc. Install conduit below or above concrete at floors or roof slabs.

Minimum size conduit 1/2" trade size. Where specific size is not called for on Drawings or in the Specifications, select size required from Chapter 9 of the N.E.C. Where specified sizes required by Drawings or Specifications are larger than code requires, the larger size shall be installed. All empty conduits shall be equipped with 200 lb. nylon pull cord.

All conduit concealed, except in crawl spaces, unfinished equipment, and storage rooms, equipment bays, etc., as shown on Plans, mechanical equipment rooms, and at connections to surface panels and free standing equipment.

Where exposed raceways are permitted by the Owners' representative in finished areas, paint as directed by Owner's representative and use approved escutcheons where entering or leaving finished areas.

All conduit routed in lines parallel or perpendicular to building construction. No conduit installed less than 6" from any piping installed by other trades. Exposed conduit fittings (condulet type) for all sharp corners, tees, etc.

Conduit system mechanically and electrically continuous from outlet and to all cabinets, junction, or pull boxes. Conduit shall enter and be secured to all cabinets and boxes in such a manner that all parts of the system will have electrical continuity.

Conduit: Securely fastened at intervals as follows: 8 foot spacing up through 1" and N.E.C. scheduled spacing for sizes over 1".

Fasteners: Two-hold malleable straps, minerlac hangers, or split pipe hangers. Multiple runs of conduit uniformly spaced and supported on unistrut channels independently from building structure. Standard anchorage by Phillips self-drilling anchors and bolts, or concrete inserts. Any form of strap iron or wire hangers will not be allowed. Do not support raceways from other crafts, pipe, pipe supports, ducts, or other related equipment. Wire or perforated strapping shall not be used for hanging conduit.

Vertical runs of raceways shall be supported on heavy steel clamps. Clamps shall be bolted tightly around the conduit and shall rest securely on the building structure without blocking. Clamps shall be placed below couplings.

Underground Conduits: All risers and elbows from all underground conduit installations shall be PVC-coated galvanized rigid steel long radius elbows with steel up to connection above floor. Double half-lapped GRC elbows with 10 mil PVC tape are acceptable in lieu of PVC-coated.

Apply thoroughly, Permacel 412 Ribbon Dope Thread Sealant or comparable material to male threaded ends of metallic raceways installed, below grade, in concrete or mortar or in wet type locations. Running threads shall not be used.

Ground Wire: A separate, code sized, copper grounding conductor shall be provided for the entire length of all raceways.

Conduit runs from outlet to outlet and from outlets and junction points shall contain not more than three 90 degree bends, and shall not exceed 150 feet in length. Accessible pull or junction boxes or condulet shall be installed when more than three bends are required. Each junction box shall be supported independent of the conduit.

When installing conduit, all cuts shall be smooth and square with the run and with inside and outside

burrs removed. Conduit joints in concrete or in the earth shall be made watertight with compound seal.

Unless otherwise indicated where conduit raceways enter or leave the top of a concrete slab, it shall be accomplished with an approved hot dipped galvanized rigid steel (heavy wall) coupling installed flush to 1/4" below finish floor level. Extend conduit raceways from flush coupling as required to complete run.

Raceways installed below grade shall be installed a minimum of 24" below finish grade, or a minimum of 3" from surface of raceway to bottom side of 4" thick or greater concrete slabs poured on grade.

Conduit raceways shall not be installed where they will be subject to injury or damage, e.g. sharp rocks in bottom of trench or backfill. Provide approved materials for backfill and install without damaging the raceways.

Underground conduit runs or banks shall be supported on preformed, non-metallic separators. Spacing between exterior surfaces of conduits generally shall be not less than the following:

Two (2) inches between telephone conduit.

Two (2) inches between conduits containing cable operating at not over 600 volts.

Six (6) inches between a telephone conduit and any power circuit in the same envelope.

Spacing in separators shall not exceed five (5) feet and be close enough to prevent sagging of conduits and breaking of coupling and watertight seals.

Raceways shall not be covered until approved by Owner.

To open ends of conduit shall be capped to keep out debris until the Project is complete.

Raceways extended through roof and similar areas shall be flashed in an approved manner (extend flashing 6" above and 4" below roofing). Verify flashing requirements with Owner's representative and comply as directed. Coordinate and schedule installation for a proper and approved installation. Pitch pockets are specifically not acceptable.

Pull a mandrill and swab through all conduit before installing conductors. Cleaning conduits with compressed air alone is not acceptable.

3.2 Conductor Installation

Where applicable, or as directed cover all exposed taps, joints and splices with approved insulating material, equal to original insulation of conductor, e.g. for 600 volt or less use sufficient self vulcanizing Okonite as accepted equal, electrical rubber tape covered with Manson, as accepted equal, electrical friction tape of highest quality, as accepted.

Make splices and taps only when required and as directed in approved location, such as junction boxes, wireways, etc.

Wiring, including fish tapes, pull wires, etc., to be installed in raceways shall not be installed until raceway system is complete, clean, dry and free of all foreign materials

Conductors sizes #8 and larger or conductors serving motors and where subject to vibration shall be stranded #8 and smaller sized stranded conductors that terminate to a screw or similar type connection shall be provided with approved crimping type terminals.

Lubricant to facilitate the installation of wire through raceway systems shall be "Polywater P".

Wall Box Installation: Wall boxes mounted flush in wall shall not be back-to-back, provide minimum 12" separation. Boxes shall have conduit openings plugged with duct seal. Install boxes plumb and square with wall face and with front of box or cover located within 1/8" of face finish wall. Boxes in masonry set with the bottom of the box tight to the masonry unit. Handy boxes and sectional switch boxes not allowed.

3.3 Wiring Devices

Install wiring devices of the types indicated on the drawings. All connections shall be made up tight and the devices set plumb. Use care in installing devices in order to prevent damage to the device and the wires in the outlet box.

Device Plates: Provide a device plate for each outlet to suit the device installed, and install blank plates or covers for junction boxes and empty outlets.

END OF SECTION 16100

SECTION 16400 – SERVICE AND DISTRIBUTION

PART 1 - GENERAL

1.1 The work specified in this Section includes but it not limited to the electrical service, grounding, panelboards, disconnect switches, transformers, and other distribution equipment as specified.

Installation of the miscellaneous electrical wiring required for all plumbing, A/C, and heating equipment, complete as shown on the mechanical and/or electrical drawings, and specified herein, including all labor, materials, equipment, accessories, services, and tests of all systems.

The following items of labor or materials related to or incidental to the installation of the electrical work will be furnished and installed under other Sections:

All motor and motor drive equipment such as pumps, etc., will be furnished and set in place by the mechanical, plumbing, and special systems contractors.

Equipment indicated as N.I.C. (Not in Contract).

PART 2 - MATERIALS

2.1 Grounding

Provide main ground connections between all apparatus and conduits and the water and/or gas piping, as required by the latest edition of the NEC, and according to the requirements of the local utility company. Grounding conductors so routed as to permit, as far as practicable, the shortest and most direct path to the ground electrode system. All ground connections will have clean contact surfaces and will be tinned and sweated while bolting. Install all ground conductors in conduit and make connections readily accessible for inspection.

The entire grounding system will conform to Article 250 of the NEC.

Equipment grounding consists of connecting all noncurrent-carrying metal parts of the wiring system to a ground source. This includes the conduit or other steel raceway itself, boxes, and similar components, as well as the metal enclosures of panels and equipment.

Ground source to be the ground terminal of the system grounding at the main service equipment.

Branch circuit and distribution panelboards and switchboards will be grounded as shown on Contract Drawings.

Motors will be grounded by connecting a bare conductor from each motor frame to the grounding terminal on the rigid-to-flexible conduit adaptor. Ground conductor for motor equipment will be at least 50 percent of the total copper per phase of the largest feeder to the equipment grounded. Minimum size ground conductor No. 12 AWG.

Connect all step-down transformers and switchgear to the main ground with copper ground wire.

2.2 Main Switchboard (Service Entrance Section)

Provide the service entrance distribution switchboard as herein specified and shown on the associated electrical drawings. Switchboard will be designed, built, and tested in accordance with applicable portion of the latest editions to NEMA PB-2 and Underwriter's Laboratories No. UL-891.

The switchboard, NEMA-1 enclosed, factory preassembled metal-clad units, shipped in sections to facilitate handling and field assembly, consisting of an incoming service entrance pull section, metering section (when required by the local utility company), and fusible switch distribution sections. Provide equipment ground bus for the entire length of service entrance and distribution section line-up.

Provide engraved Micarta identification nameplates with 1/4" high letters for each circuit (screwed on cover of each switch), properly marked to indicate equipment served and circuit number. Nameplates will be furnished and installed by equipment manufacturer for every switch in the service entrance and distribution line-up. Provide an engraved, Micarta mimic bus showing the power distribution

All equipment rated to comply with NEMA standards for construction, capacity, and quiet operation.

All equipment compartments with hinged access doors provided with friction catches to facilitate inspection and adjustment. Live compartments secured with captive bolts.

Provide at one end of the switchgear an incoming service entrance with utility approved pull spaced. NEMA-1 construction, to match and line up with the switchgear. The Service Entrance Section will be equipped with removable front and side panels, main cross-over bussing and landing lugs, sized to accommodate service entrance feeder. Bus bars will be tin plated aluminum 750 ampere/square inch.

Acceptable manufacturers are Square "D", or as accepted by the Engineer.

2.2.1 Metering Section:

Provide in the metering section facilities for mounting Utility Company furnished and installed CT's and PT's and metering per P.U.E.S.R. and Utility Company requirements.

2.2.2 Distribution Sections:

The fusible switch distribution Sections NEMA 1 construction will consist of completely enclosed, self-supporting metal clad structures containing distribution fused switches, bus bars, supports, etc.

Enclosed Construction: The switchboard framework will be fabricated on a die-formed steel base or base assembly consisting of the formed steel and commercial channel welded or bolted together to rigidly support the entire shipping unit for moving on rollers and floor mounting. The framework is to be formed code gauge steel, rigidly welded and bolted together to support all cover plates, busing, and component devices during shipment and installation. Each switchboard section will have an open bottom and individual removal top plate for installation and termination of conduit. Top and bottom conduit areas are to be clearly shown and dimensioned on the Shop Drawings. The wireway front covers are to be hinged to permit access to the branch switch load side terminals without removing the covers. All front plates used for mounting meters, selector switches, or other front mounted devices will be hinged with all wiring installed and placed with flexibility at the hinged side. All closure plates will be screw removable and small enough for easy handling by one man. The paint finish will be gray enamel over a rust-inhibiting phosphate primer.

Bus bars will be tin plated aluminum 750 ampere per square inch. Unless otherwise indicated, bus bar bracing will be as shown on the drawings. No tapered bus will be allowed. The end section is to have bus bar provisions for future addition of a switchboard section. The provisions will include the bus bars installed to the extreme side of the switchboard and prepunched to facilitate the future bolted splice plates. The horizontal main bus bar supports, connections, and joints are to be bolted with grade 5 carriage bolts and Bellebille washers to be free of required periodic maintenance. Provide equipment ground bus.

The fusible switches will be quick-make, quick-break and suitable for use on the service as described for the sized as shown on the associated drawings. The units will be listed and approved by

Underwriter's Laboratories for general service entrance use and where applicable, will be dual horsepower rated for both standard one-time or dual-element fuses. The fusible switches will be group mounted in panel-type construction. Each switch is to be enclosed in a separate steel enclosure. The enclosure will employ a hinged cover for access to the fuses which will be interlocked with the operating handle to prevent opening the cover when the switch is in the ON position. This interlock will be constructed so that it can be released with a standard electrician's tool for testing fuses without interrupting service. The units will have padlocking provisions in the OFF position and the operating handle position will give positive switch position indication, i.e. horizontal OFF diagonal ON.

All fused switches in distribution panelboards and switchboards will accept only Class "R" type current-limiting fuses.

2.3 Branch Circuit Panelboards

NO PANELS SHALL BE LOCATED IN AREAS VISIBLE TO GUESTS

120/208 Volt, 3-Phase, 4-Wire Circuit Breaker Type: Provide circuit breaker panelboard as indicated in the panelboard schedules, and where shown on the plans. Panelboard will be of a dead-front safety type, equipped with thermal-magnetic molded case circuit breakers with frame and trip ratings as shown on the schedule. The unit will be listed, approved by UL for service entrance use and labeled at each unit. Unless otherwise indicated, bus bar bracing shall be 10,000 RMS Amperes symmetrical.

All circuit breakers will be boit-on type quick-break, quick-make, thermal-magnetic, trip indicating, have a common trip on all multiple breakers and will be UL approved for switching duty. Circuit breakers mechanism will be enclosed in molded bakelite case and sealed to prevent tampering. Tandem, twin duplex, or thin types are not acceptable. The circuit breakers will operate in any position and will be removable from the front of the panelboard without disturbing adjacent units. All breakers will have large permanent individual circuit numbers affixed to each breaker in a uniform position. The interrupting capacity (RMS Symmetrical amperes) based on NEMA test procedures. All breakers having a 225 amp frame and larger will be equipped with adjustable trips. Circuit breakers are to be mounted so that they can be removed without disturbing the bussing or other branch breakers.

Bus bar connections to the branch circuit breakers will be the "distributed phase" or "phase sequence" type. Single-phase, three-wire panelboard bussing will be such that any two-pole breakers are connected to opposite polarities in such manner that two-pole breakers can be installed in any location. Three-phase, four-wire bussing will be such that any three adjacent single-pole breakers are individually connected to each of the three different phases in such a manner that two or three-pole breakers can be installed at any location. All current-carrying parts of the bus assembly will be plated. Mains rating will be shown in the panelboard schedule on the Plans. Provide an equipment ground bus. Bus bars will be tin plated aluminum 750 amperes per square inch.

Wiring Terminals: Terminals for feeder conductors to the panelboard mains and neutral will be UL listed as suitable for the type of conductor specified. Terminals for branch circuit wiring, both breaker and neutral, will be UL listed as suitable for the type of conductor specified.

The panelboards bus assembly will be enclosed in a steel cabinet. The size of the wiring gutters and gauge of steel will be in accordance with NEMA Standard Publication No. PBI-1971 NEC Wiring and UL Standards No. 67 for panelboards. The box will be fabricated from galvanized steel or equivalent rust-resistant steel. Fronts will include doors and have flush-brushed, stainless steel, cylinder tumbler-type locks with catches and spring-loaded door pulls. The flush lock will not protrude beyond the front of the door. All panelboard locks will be keyed alike. Fronts will have adjustable indicating trim clamps which will be completely concealed steel hinges. Fronts will not be removable with door in the locked position. A circuit directory frame and card with a clear plastic covering will be provided on the inside of the door.

The directory will be typed to identify the load fed by each circuit. Fronts will be of code gauge, full finished steel with rust-inhibiting primer and baked-enamel finish. Provide one spare 3/4" conduit for each three unused poles and one spare 1" conduit in all flush mounted panelboards. Extend conduits from panelboard to an accessible point beyond the area of finished wall or ceiling construction.

Line wires of multi-wire branch circuits will be of opposite phases.

Acceptable panelboard manufacturers are Square "D", or as accepted by the Engineer.

2.4 Branch Circuits

A general layout of branch circuit wiring and routing is indicated. Generally, receptacles and appliances are on separate circuits form lighting.

No. 14 wires will be permitted only on control circuits of relays, contractors, starters, etc. No. 12 wire will be a minimum size for any lighting, motor or general branch circuits unless specifically noted otherwise.

In general, conductor sizes for major branch circuits such as large motor and equipment branch circuits are noted. Where conductor sizes for circuits are note noted, provide branch circuits with conductors sized as follows:

Conductor for individual motor branch circuits will have ampere capacity of not less than 125% of the full load running current of the motor.

Conductors for Multiple Motor Branch Circuits: Have ampere capacity of not less than 125% of the running current of the largest motor plus 100% of the running current for each additional motor connected to the circuit.

Conductor sizes for lighting, receptacles, and small motor branch circuits, with less than 20 ampere connected load, are not shown. Conductors for such circuits are sized as follows:

Conductor size for branch circuits (120/208V) 75 feet in length from branch circuit panel to center of load, not smaller than No. 12, up to 150 feet not smaller than No.10, up to 200 feet not smaller than No. 8.

Where specific conductor sizes required by the Drawings and Specifications are larger than code requires, the largest sizes are installed.

2.5 Disconnect Switches and Protective Devices

Disconnecting devices, when not included with electrically-operated equipment furnished under other Sections of the Specifications, will be provided under this Section.

Safety disconnect switches will be quick-make, quick-break, heavy duty, horsepower rated, with voltage rating as required by the system and current rating as scheduled or as required by the motor manufacturer. All switches will be furnished with a defeatable cover interlock. All disconnect switches fusible except where otherwise noted.

All fused switches will accept only Class "R" type current-limiting fuses and reject all other class and type.

Disconnect switches for 1/3 and 1/2 horsepower 120 volt motors and fractional horsepower motors

(3/4 or less) single phase motors may be a manual motor starter with pilot light. Provide thermal overload protection when not integral with motor.

Disconnect switches for fractional horsepower motors and for equipment of similar capacity will be a heavy duty industrial type fused disconnect, with solid neutral where required.

Disconnects installed indoors to have NEMA 1 enclosures. Disconnects installed outdoors or in wet locations to have NEMA 4 enclosures.

2.6 Fuses

All fuses will be non-renewable Type R, current limiting, 250 or 600 volt, with interrupting rating of 200,000 amperes RMS, as manufactured by Bussman Division of McGraw Edison Co., with current rating and type as scheduled.

Fuses protecting distribution and branch circuit panels will be Buss RK1 low-peak dual element type or as noted on Drawings.

Fuses protecting motor branch circuits will be Buss Fusetron dual-element type, sized for motor nameplate data per manufacturer's recommendation. All other fuses must be typed as noted on the Contract Drawings. Fuses furnished by Contractor and approved by Engineer different from those specified will be coordinated with each other and with circuit breakers which they are protecting. The Contractor will provide a written statement certifying that coordination verification has been performed. Provide a fuse in each fuseholder and a label inside each switch cover indicating specific type of fuse required for replacement in all fuses switches including panels, S.E.E., distribution switchboards, and disconnects.

Provide three spare fuses for each type and current rating used on work. Fuses will be mounted in fuse clips in a panel with a hinged, lockable door and installed in the mechanical room(s) as directed. Mount fuses by current rating in a manner to make sizes evident and fuses readily available. Cabinets will be as manufactured by Bussman Division of McGraw Edison.

PART 3 - INSTALLATION

All equipment will be installed in accordance with manufacturer's recommendations and applicable codes as specified elsewhere.

END OF SECTION 16400

SECTION 16500 - LIGHTING

PART 1 –FIXTURE INSTALLATION

Fixtures will be recessed in furred ceiling shall be installed so that they can be removed from below the ceiling, unless indicated otherwise.

Recessed fixtures installed with metal bar hangers for attaching to ceiling supports. Fixtures will not be supported directly from ceiling, provide galvanized steel wire as required for supporting fixture from structure. No wood or other combustible material will be used for supporting fixture.

Ascertain the type of ceiling construction for each fixture and provide suitable frame and fixture accessories to suit. Furnish substantial mounting frames or plaster rings for all recessed and semi-recessed lighting fixtures indicated or required. All frames will be made of galvanized steel with extra cross members where required to insure maintenance of proper opening dimension during installation.

Directly connected recessed fixtures in removable ceilings will be connected to the branch circuit with flexible conduit and branch conduit wire from an accessible junction box. Where fluorescent fixture housings are connected together, use 90 degree C wire for branch circuit feed through fixture channels.

Internal fixture wiring will be single conductor, stranded, asbestos covered. Type AF, of not less than 16 AWG. All stranded wires will have ends soldered before connection to screw terminals is made.

Fixtures will be grounded to the grounding system.

Prior to placing orders for recessed fluorescent fixtures. Contractor will verify the types of ceilings and suspension systems that have been approved for the project and will order fixtures with flanges as required to fit in the approved ceilings.

PART 2 – INSTALLATION OF LIGHTING FIXTURES

Installation of all lighting fixtures will be done by experienced mechanics. Lighting fixtures will not be installed where finished coat or paint has been applied to ceiling and walls until paint is thoroughly dry.

Lightings fixtures in equipment rooms will not be installed until after all piping and ductwork is in place. Lighting fixture layout shown on the Drawings is typical layout for bid purposes, but will be modified to provide adequate lighting of the equipment space according to final construction conditions. Any relocation of fixtures due to duct or piping interference will be as directed by the Architect at no expense to the Owner.

Contractor will be responsible for proper coordination of all lighting fixture locations. Provide support for all fixtures mounted on or recessed in hung ceiling. Confer with ceiling Contractor and other trades to coordinate lighting system.

Fixtures rigidly mounted to fixture stud in outlet boxes. Malleable iron hickies or extension pieces provided by Contractor where required.

Provide suitable cover plate or canopy for each fixture outlet box where the fixture does not provide a suitable cover.

Fixtures located on exterior of building to be installed with cadmium-plated brass screws and gasketed.

Verify all ceiling heights and clearances. Before proceeding with fixture installation, a schedule of mounting heights for all fixtures will be submitted for approval.

Each fixture will be completely wired in an approved manner with No. 14 AWG (minimum) copper standard wire, 600 bolt, with type AF insulation, recessed lay-in fixtures furnished with 7 feet No. 14 AF wire (minimum) and 6 feet Greenfield.

Circuit wiring running through the fixtures to be No. 12 AWG, with Type XHHW or THWN/THHN insulation. No joints in the wires other than those absolutely required. Provide fixture wires of sufficient length for making approved connections at the fixture outlets and at the lampholders or ballasts.

Joints and splices within fixtures to be either; soldered and taped with plastic electrician's tape, or secured by wire nuts or indent type lug fasteners.

Protect the lighting fixtures from damage during their unloading or removal, storage, or installation, and any broken fixtures, glassware, etc., must be replaced with new parts, without any additional expense to the Owner, unless undue delay or inconvenience.

Upon completion of the installation of the lighting fixtures and lighting equipment, they must be in first class operating order and in perfect condition as to finish, etc. Check for proper operation and appearance, alignment of fixtures, and proper placement of lenses, louvers, lamps, and other light-controlling or modifying appurtenances. Where special lighting effects, flood, or spotlighting is involved, perform final adjustment under the direct supervision of the Architect.

Cleaning: Immediately prior to occupancy, damp clean all glassware, fixture trims, reflectors, clean lamps or install new lamps as directed, with glass and fixtures free of labels.

Use of Lighting Fixtures: As soon as any portion of the lighting fixture work is ready for operation, the Owner will have the right to operation the same under the supervision of the Contractor. This will in no way be interpreted to mean the acceptance of such part of the installation or relieve the Contractor or his responsibility for the complete work or any part thereof.

END OF SECTION 16500

SECTION 16700 - COMMUNICATIONS

PART 1 - GENERAL

1.1 Description of Work

This Section includes Fire Alarm System, Television Distribution System and Telephone Raceway System Raceways. A box and cover plate will be provided at each location, mud rings are not acceptable.

1.2 Submittals

Provide submittal and shop drawings containing the following information for Fire Alarm and Television Systems;

1.2.1 Complete specifications on each item of equipment proposed.

1.2.2 Complete layout drawings showing plans of all areas and the location of each item of equipment, including control panels, annunciators, detectors, manual stations and other devices. Devices shall be consecutively number-coded for easy reference.

1.2.3 Wiring diagrams showing number and size of wires and conduit size to all points of connection.

1.3 Television Distribution System
The Electrical Contractor shall provide a complete and working television distribution system as specified herein and as shown on the drawings. As directed by the Owner, the system shall be one of the following:

1.3.1 Master Antenna System

1.3.2 Cable System from Local Cable TV system

1.3.3 Satellite Dish System
Where the system source is a local cable TV system, the entire system shall be installed under the direction of the local cable TV system supplier. When a satellite dish is to be the TV source, the electrical contractor shall subcontract with a supplier licensed and bonded to perform this work,

The television distribution system shall deliver all locally available VHF television channels to outlets located as shown on plans. Minimum signal strength at any television antenna outlet shall be +3 db mv on any local channel. System shall accept UHF equipment with minimum difficult and expense.

PART 2 - MATERIALS

2.1 Fire Alarm System
Equipment: The numbers listed below are those of Simplex Time Recorder Company and constitute the type and quality of equipment to be furnished. Systems of equivalent quality and function as manufactured by Pyrotronics, Honeywell, Gamewell or Notifier will be accepted.

2.1.1 The fire alarm control panel shall be Simplex Type 2001, and shall be composed of the following solid state, plug-in modules, factory interconnected to meet the specific installation requirements.

2.1.1.1 Automatic battery charger shall be current limited with automatic combination high-rate/trickle charge. Separate LED's (light emitting diodes) shall indicate high rate charge and charger trouble. The charger meter shall indicate voltage and trickle charge current. The trickle charge current shall be variable from 10 to 220 ma.

2.1.1.2 Status changes within the system shall be reported to the status monitoring module, which will process and transmit this information to the appropriate module for disposition. It shall include, on its door insert, a system "power-on" lamp, system trouble silencer switch with ringback silencer, alarm silencer switch with resound, ground indicator, alarm reset switch and milliammeter.

2.1.1.3 The fire alarm system shall electrically supervise alarm initiating circuits. As many of these modules as necessary shall be provided to furnish the number of zones specified on the drawings. A choice of two (2) plug-in loop monitors shall permit the use of either normally open or normally closed alarm initiating contacts. The normally open loop monitor shall supervise for opens. Ground detection shall be provided with either mode. In addition, each zone shall be equipped with a single-pole double-throw contact, rated at 2 amps resistive, for auxiliary control functions such as remote annunciation. It shall be possible to test each zone individually through text buttons which simulate both "alarm" and "shorts" conditions. In addition, this module shall provide a means to disconnect each zone individually. All test and disconnect switches shall be mounted inside the fire alarm control enclosure to prevent tampering. On the door insert, provide "zone disconnected" lamps to indicate zone disconnection for each zone.

2.1.1.4 The door insert shall include supervised red alarm lamp, amber trouble lamp, a lamp test pushbutton for each alarm initiating circuit. Failure of a zone alarm shall light its corresponding zone trouble lamp and sound the system trouble signal.

2.1.1.5 The fire alarm system shall provide 24 vdc filtered and regulated energy for control functions within the control panel and for supervision of alarm initiating and indicating circuits. A maximum of one hundred fifty (150) zones may be powered by this module.

2.1.1.6 A module shall be provided to supervise and control each signal circuit. An open or a ground in the signal circuit wires shall cause the system to sound. In addition, each module shall be equipped with a trouble lamp for easy identification of faults. Signal capacity shall be twenty (20) horns for each circuit, minimum.

2.1.1.7 An alarm module shall be employed to transmit both alarm and trouble signals to a remote receiving unit via leased telephone lines. The two (2) conductors connecting the protected premises to the remote receiver shall be electrically supervised and faults at either location shall be indicated visually and audible by both control panels. The door insert of the module shall contain remote line trouble lamps, trouble buzzer and silencer switch with ringback. It shall be possible to disconnect the remote receiving unit and drill the system through the use of the door-mounted switches provided for that purpose. Both switches shall be key operated and electrically interlocked to prevent accidental remote reporting during fill.

2.1.2 End-of-Line Resistors: As required by manufacturer.

2.1.3 Automatic: Photoelectric Detectors: Simplex Type 2098-9636 automatic dual chamber photoelectric detector in lobby and corridor. Simplex Type 2098-9667 photoelectric detector with integral horn in guest rooms.

2.1.4 Strobe light/horn shall be Simplex Type 2903-9101 combination horn and lamp unit consisting of Simplex 2901-9833 horn and a Xenon strobe light with white Lexan lens, red lettered "Fire". Flash rate is 1 to 3 flashes per second; units exceeding this rate are not acceptable. These devices shall mount on Simplex Type 2975-9145 flush wall box with Simplex Type 2905-9960 trim ring.

2.1.5 Break Glass Station: Simplex 2099-9201, recess mounted. Station shall be keyed to match fire alarm panel, remote annunciator and remote lamp panels.

2.1.6 Exterior Horn/Lamp: Simplex 2903-9101/2901-9806 weather-proof, vibrating outside horn and pulsating red lamp 24 vcd combination. Mount flush. Unit shall be fully supervised, painted red.

2.1.7 Remote Annunciator: Provide a remote annunciator, flush mounted, where indicated on drawings. The annunciator shall indicate the status of all initiating circuits. Simplex 4306, backlighted. Each zone indicator shall be one-inch by three-inch (1" x 3") with two (2) lamps per zone. Engraving shall be as approved by the Architect/Engineer.

2.1.8 Fire Sprinkler OS&Y Valve Switch: The Fire Sprinkler OS&Y valve switch for monitoring status of OS&Y valve shall be provided by the fire protection system contractor.

2.2 Telephone

NOTE: Telephone equipment is and FFE item. The Owner shall purchase them. The general contractor shall be responsible for installation.

2.2.1 Provide all conduits, wiring, outlets, terminals, etc. as required by the telephone company and as shown on the drawings.

2.2.2 Wall Devices and Cover Plates to match design and color as specified in section 16100, item 2.12.

2.3 Television Antenna System Equipment

2.3.1 Antenna (when required): Winegard CH8200, 54-806, mHz, AM/FM/VHF/UHF boardband, mast mounted, equipped with outdoor antenna 300/75 ohm matching transformer and Winegard AC 9880 preamplifier with maximum noise figure: VHF 3 db, UHF 2.2 db, Gain = VHF 3 db, UHF 17.5 db.

2.3.2 Amplifier (when required): Winegard DA-8245, broadband VHF 50-890 mHz, capable of +54 db mv output per channel with a gain of 4 db. Noise figure shall be not greater than: VHF 1.5 db, UHF 5.1 db.

2.3.3 Splitters (as required): Winegard LS475C (four way) and LS-275c (two way) capable of 8-1000 mHz bandpass with an insertion loss of 7.1 db VHF (four way) and 3.5 VHF (two way).

2.3.4 Tapoffs: Winegard (SLT77blk, capable of 54-890 mHz bandpass minimum signal across; 75 ohms of 1000 mv rms color signal per channel. Winegard WH-5624 lighting arrester.

2.3.5 Cable: West Penn #841 or Belden 8228 75 ohm RG-6 foam coax installed by General Contractor.

2.3.6 Wall Devices and Cover Plates to match design and color as specified in section 16100, item 2.12.

PART 3 - INSTALLATIONS

3.1 Installation: Communication systems shall be installed by a qualified electrical contractor. All components of the same system, except where specifically indicated, shall be manufactured or furnished by the same manufacturer. Each system shall have a local manufacturer's representative and a local service organization which carrier a complete stock of parts and who shall provide maintenance for these system. Each system (including each manual station, thermal detector circuit, and each alarm system interconnected with the fire alarm system) shall be tested and checked out by the manufacturer or his authorized representative.

3.2 Fire Alarm System

3.2.1

System Operation: The activation of any approved non-coded device shall light its respective zone alarm lamp and cause the alarm signals to sound continuously throughout the building. The visual alarm indicator shall remain "locked-in" until the system has been reset. It shall be possible to silence the alarm signals; however, any subsequent zone alarm shall resound the signals. Power failures opens, grounds or any disarrangement of system wiring or components shall be indicated by a visual and audible trouble signal. The audible trouble signal may be silenced, but the trouble lamp shall remain lighted until the system has been returned to normal operating conditions, at which time the trouble signal shall resound until the trouble silence switch has been returned to the "normal" position.

3.2.2

Wiring: The Contractor shall furnish and install, in accordance with manufacturer's instruction, all wiring, conduit and outlet boxes required to complete the system as described herein and as shown on the plans. All wiring shall be in conduit and shall meet the requirements of the National, State and Local Electrical Codes. Wire size shall be as specified by the manufacturer (minimum #14 AWG). Wires shall be tagged at all junction points and shall test free from grounds or crosses between conductors. Final connections between equipment and the wiring system shall be made under the direct supervision of the manufacturer's factory-trained representative.

3.3 Telephone System

3.3.1 Maintain twelve inches (12") separation between power and telephone services and thirty-six Inches (36") minimum between service entrance terminations. Conduit runs less than one hundred feet (100'0") from point to point shall no contain more than two 90 degree, twenty four inch (24") radius bends. Conduit runs exceeding one hundred feet (100'0") from point to point, with more than one 90 degree bend, shall not contain square or oval conduit fittings ("Condulets"). All feeder conduits to telephone terminal cabinets shall enter top or bottom on the extreme right or left side of the box.

Telephone service raceway to the telephone service equipment in the building shall be extended from the telephone equipment room as shown on the drawings.

3.3.2 Provide empty conduit as indicated on the drawings. Provide pull boxes in accessible positions for every one hundred fifty feet (150'-0") of straight raceway for all telephone conduits, with screw covers, and label "Telephone". Pull boxes shall be the following sizes:

6" x 6" x 6" for 3/4" conduit runs.
6" x 4" x 36" for 1" through 2 1/2" conduit runs.
6" x 6" x 36" for 3" and larger conduit runs.

3.3.3. Provide 3/32" OD, 200-lb. strength polyethylene lines in all telephone raceways seventy-five feet (75'-0") or longer between pulling locations.

3.3.4 Provide three quarter inch (3/4") thick plywood backboards of sizes as indicated on the drawings for mounting telephone company use. Locate where three feet (3'-0") (minimum) front access space is available.

3.3.5 Telephone Equipment Room: Outlets and devices shown in the telephone equipment room drawings are intended to indicate quantities only. Contac the building and planning department at the telephone company for exact locations and make adjustments as required. Provide a one-half inch (1/2") conduit from the telephone equipment room to the nearest cold water pipe ground.

3.4 Television Antenna System

3.4.1 Signal Distribution: Television signals shall be distributed to individual television sets without any degradation of color fidelity, picture information, audio distortion, or cross channel interference

generated in the distribution system.

3.4.2 Antenna Installation (when required): Exact location of antenna shall be as directed by the Owner. Antenna shall be guyed and mounted to withstand the heaviest wind and ice conditions experienced in this location. Base shall be installed in a manner that prevents damage to the roof. Coaxial shield shall be connected to the mast without damage to the insulation. Twin lead wiring may be used only between the antenna and the mast mounted balun. Connections shall be either soldered or made with solder lugs and star-type plated lock washers. Entry of the cable to the building shall be to a weather head conduit firmly secured with no damage to the building. The mast height shall not exceed fifteen feet (15'-0") without approval of the Architect.

3.4.3 Grounding of the antenna and mast for lightning protection shall be done in accordance with the applicable codes, and minimum No. 8 AWG (copper wire bonding the mast to a known direct patch to the building grounding system).

END OF SECTION 16700