Copy 3 of 4

Invitation to Bid

DeKalb County
Contract No. 06-900472

06-100022-ITB

Brook Run Skate Park

for

Parks & Recreation

DeKalb County, Georgia

Bid Date & Time:	**July 27, 2006; 3:00 pm**
Location:	**Department of Purchasing and Contracting** **The Maloof Center** **1300 Commerce Drive, Room 202** **Decatur, GA 30030**
Contract Administrator:	**James Stamps, Jr.** **jstamps@co.dekalb.ga.us**

J.M.
WILKERSON
CONSTRUCTION

November 8, 2006

Mr. Doyle Shaw
Director, Purchasing and Contracting
DEKALB COUNTY GOVERNMENT
The Maloof Center, Room 202
1300 Commerce Drive
Decatur, GA 30030

RE: Brook Run Skate Park

Dear Mr. Shaw:

Per our conversation with Mr. Stamps, please understand that J.M. Wilkerson Construction Co., Inc. recognizes that there is a $1,000.00 deductible with respect to the Builder's Risk Insurance coverage and J.M. Wilkerson Construction Co., Inc. gives the assurance that their firm has the financial wherewithal to cover the cost of this deductible should claims arise.

As always, we appreciate the opportunity to serve the citizens of DeKalb County. If you should have any questions or comments, please call us at your convenience.

Sincerely,

J.M. WILKERSON CONSTRUCTION CO., INC.

Rae A. McIntire

Rae A. McInitire
Controller

RAM/kb

Cc: PF 2611

Building for Generations

1734 Sands Place • Marietta, Georgia 30067
Office (770) [illegible]

J.M. WILKERSON CONSTRUCTION

2006 NOV -7 AM 9: 13

RECEIVED
DEKALB COUNTY
PURCHASING & CONTRACTING

Jones
11/7/06

RECEIVED
NOV 07 [illegible]
CONTRACTS DIVISION

November 3, 2006

Mr. Doyle Shaw
Director, Purchasing and Contracting
DEKALB COUNTY GOVERNMENT
The Maloof Center, Room 202
1300 Commerce Drive
Decatur, GA 30030

RE: Brook Run Skate Park

Dear Mr. Shaw:

Per our conversation with Mr. Stamps, please understand that J.M. Wilkerson Construction Co., Inc. recognizes that there is a $25,000.00 deductible with respect to the Professional Liability Insurance coverage and J.M. Wilkerson Construction Co., Inc. gives the assurance that their firm has the financial wherewithal to cover the cost of this deductible should claims arise.

As always, we appreciate the opportunity to serve the citizens of DeKalb County. If you should have any questions or comments, please call us at your convenience.

Sincerely,

J.M. WILKERSON CONSTRUCTION CO., INC.

Rae A. McIntire

Rae A. McInitire
Controller

RAM/kb

Cc: PF 2611

Building for Generations

1734 Sands Place • Marietta, Georgia [illegible]
Office (770) [illegible] • Fax [illegible]

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 10/23/2006

PRODUCER (678)424-6500 FAX (678)424-6501
Sterling Risk Advisors, Inc.
P.O. Box 724137
Atlanta, GA 31139

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED J. M. Wilkerson Construction Co., Inc.
1734 Sands Place
Marietta, GA 30067

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: The Hartford	
INSURER B:	
INSURER C:	
INSURER D:	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHS ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS O POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
		GENERAL LIABILITY				EACH OCCURRENCE	$
		☐ COMMERCIAL GENERAL LIABILITY				DAMAGE TO RENTED PREMISES (Ea occurrence)	$
		☐ ☐ CLAIMS MADE ☐ OCCUR				MED EXP (Any one person)	$
						PERSONAL & ADV INJURY	$
						GENERAL AGGREGATE	$
		GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$
		☐ POLICY ☐ PRO-JECT ☐ LOC					
		AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$
		☐ ANY AUTO				BODILY INJURY (Per person)	$
		☐ ALL OWNED AUTOS				BODILY INJURY (Per accident)	$
		☐ SCHEDULED AUTOS				PROPERTY DAMAGE (Per accident)	$
		☐ HIRED AUTOS					
		☐ NON-OWNED AUTOS					
		GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
		☐ ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
						AGG	$
		EXCESS/UMBRELLA LIABILITY				EACH OCCURRENCE	$
		☐ OCCUR ☐ CLAIMS MADE				AGGREGATE	$
							$
		☐ DEDUCTIBLE					$
		☐ RETENTION $					$
A		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY	20WEQT1458	01/01/2006	01/01/2007	X WC STATU-TORY LIMITS ☐ OTH-ER	
		ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED?				E.L. EACH ACCIDENT	$ 1,000,000
		If yes, describe under SPECIAL PROVISIONS below				E.L. DISEASE - EA EMPLOYEE	$ 1,000,000
						E.L. DISEASE - POLICY LIMIT	$ 1,000,000
		OTHER					

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS
Project: Brook Run Skate Park/ Invitation No.: 06-100022

CERTIFICATE HOLDER

Dekalb County, Georgia
The Maloof Center, Room 202
1300 Commerce Drive
Decatur, GA 30030

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE
Doug Rieder/SARA
Douglas L Rieder

ACORD™ CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY) 11/2/2006

PRODUCER (404) 633-4321
Yates Insurance Agency
4 Executive Park East, NE Suite 200
P. O. Drawer 95806
Atlanta, GA 30347

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED
J M Wilkerson Construction Company Inc
Attn: Rae McIntire
1734 Sands Place SE
Marietta, GA 30067

INSURERS AFFORDING COVERAGE	NAIC #
INSURER A: Westfield Insurance Co	
INSURER B: The Insurance Company of the State of Pe	
INSURER C: American International Specialty Lines	
INSURER D: Ace Fire Underwriters Insurance Company	
INSURER E:	

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	ADD'L INSRD	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
A		GENERAL LIABILITY [X] COMMERCIAL GENERAL LIABILITY [ ] CLAIMS MADE [X] OCCUR [X] Contractual included GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC	CMM3783219	3/31/2006	3/31/2007	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG	$ 1,000,000 $ 150,000 $ 10,000 $ 1,000,000 $ 2,000,000 $ 2,000,000
A		AUTOMOBILE LIABILITY [X] ANY AUTO [X] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [X] HIRED AUTOS [ ] NON-OWNED AUTOS	CMM3783219	3/31/2006	3/31/2007	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
		GARAGE LIABILITY [ ] ANY AUTO				AUTO ONLY - EA ACCIDENT OTHER THAN AUTO ONLY: EA ACC AGG	$ $ $
B		EXCESS/UMBRELLA LIABILITY [X] OCCUR [ ] CLAIMS MADE [ ] DEDUCTIBLE [ ] RETENTION $	8766805	3/31/2006	3/31/2007	EACH OCCURRENCE AGGREGATE	$ 5,000,000 $ 5,000,000
		WORKERS COMPENSATION AND EMPLOYERS' LIABILITY ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? If yes, describe under SPECIAL PROVISIONS below				[ ] WC STATU-TORY LIMITS [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ $ $
		OTHER					
C		Pollution Liability	CPL1671380	2/1/2006	2/1/2007	Pollution Liability	$1,000,000/$25,000 ded
D		Builders Risk	I2099423A001	12/1/2006	12/1/2007	Builders Risk	See Below

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES / EXCLUSIONS ADDED BY ENDORSEMENT / SPECIAL PROVISIONS

See attached page.

CERTIFICATE HOLDER

DeKalb County, Georgia, Director of
Purchasing & Contracting
The Maloof Center, Room 202
1300 Commerce Drive
Decatur, GA 30030-

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

DESCRIPTION OF OPERATIONS -

M Wilkerson Construction Company Inc Attn: Rae McIntire 1734 Sands Place SE Marietta GA 30067	DeKalb County, Georgia, Director of Purchasing & Contracting The Maloof Center, Room 202 1300 Commerce Drive Decatur GA 30030-

Builders Risk-Completed Value form limit is $2,174,586 with $1,000 ded. Sublimits of $100,000 on covered property in transit & covered property at temporary location.

Project: Brook Run Skate Park/Invitation No.: 06-100022
DeKalb County, GA is Named Insured and Loss Payee.
*Certificateholder will receive 30 days prior written notice of cancellation, except 10 days for non-payment.
NAIC as follows:
Westfield Insurance Co. - 24112
The Insurance Co. of the State of PA - 19429
American International Specialty Lines - 26883
Ace Fire Underwriters Insurance Co. - 20702

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

IMPORTANT

If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

DISCLAIMER

The Certificate of Insurance on the reverse side of this form does not constitute a contract between the issuing insurer(s), authorized representative or producer, and the certificate holder, nor does it affirmatively or negatively amend, extend or alter the coverage afforded by the policies listed thereon.

DEPARTMENT
OF
PURCHASING & CONTRACTING

OFFICE
OF
DIRECTOR

DeKalb County Government
Room 202 Maloof Center, 1300 Commerce Drive, Decatur, Georgia 30030

July 25, 2006

TO: **ALL BIDDERS UNDER INVITATION NO. 06-100022-ITB**
Project: Brook Run Skate Park

FROM: Purchasing and Contracting Department, DeKalb County, Georgia

ADDENDUM NO. 2

Invitation No. 06-100022-ITB is hereby amended as follows:

1. The following listed questions and answers are provided for your information:

   A. **Question:** On sheet 7.0, cross section AP calls out 8" graded aggregate compacted to 100% modified proctor. Should this note read,".....compacted to 100% standard proctor"?

   Answer: On Drawings Sheet C-7.0, the note for Asphalt Paving is changed to read ".....compacted to 100% **standard** proctor per ASTM D-1557 (2000).

   B. **Question:** On sheet SP 0.0, note 2.24 does the aggregate base course need to be limestone?

   Answer: On Drawings Sheet SP-0.0, general construction note 2.24, the base course does not have to be limestone. Just as long as the base course includes 1" aggregate, the earth and base course are compacted to 95% compaction and the base course material isn't in conflict with the geotechnical soil analysis, we will be in conformance with the plans and specs.

C. **Question:** Spec section SC-1, note 02 reads " Contractor may be required by the county to provide and maintain a suitable office for his own use and for the use of representatives of the county." Is an office required as outlined in spec section 01500?

Answer: Yes. A field office is required per Page SC-1, Section 02 entitled "Use of Temporary Facilities," of the Supplementary Conditions and as outlined in Section 01500 of the Technical Specifications.

2. **Please note that the graphic scale for Drawings Sheet L-1.0 is 1" = 20'.**

3. All other conditions remain in full force and effect

4. If a proposal has been submitted and anything in this Addendum causes the bidder to change the item offered or to increase or decrease the bid price, the new price and/or changes will be inserted below:

_____

_____

_____

5. All bidders under this Invitation to Bid are kindly requested to acknowledge receipt of this Addendum in original only.

Doyle Shaw, Director
Purchasing and Contracting

1

ACKNOWLEDGMENT

Date: 7/26/06

The above Addendum is hereby acknowledged:

J. M. Wilkerson Const. Co, Inc.
(NAME OF BIDDER)

Austin Pruitt — Estimator
(Signature) (Title)

DEPARTMENT
OF
PURCHASING & CONTRACTING

OFFICE
OF
DIRECTOR

DeKalb County Government
Room 202 Maloof Center, 1300 Commerce Drive, Decatur, Georgia 30030

July 17, 2006

TO: **ALL BIDDERS UNDER INVITATION NO. 06-100022-ITB**
Project: Brook Run Skate Park

FROM: Purchasing and Contracting Department, DeKalb County, Georgia

ADDENDUM NO. 1

Invitation No. 06-100022-ITB is hereby amended as follows:

1. **Bid opening date has been extended to August 9, 2006 at 3:00 PM.**

2. The Pre-Bid Conference and Site Visit were held on Wednesday, July 12, 2006 at approximately 9:30 AM at Brook Run Park, 4770 North Peachtree Road, Dunwoody, Georgia 30338. The purpose of and the agenda for the conference and site visit were explained. Prospective bidders were provided with information on deadlines for bid submittal, insurance and bonding requirements, the LSBE program along with other pertinent project information. The meeting also included a tour of the proposed worksite. All attendees were advised that questions concerning the project must be received, in writing, by the Director of Purchasing and Contracting, no later than Tuesday, July 18, 2006 at 5:00 PM. Questions received after this date will not receive a response. Please note that all responses in this Addendum override any verbal responses at the conference.

3. Attached is a list of attendees for the above meeting, consisting of three (3) pages.

4. The following listed questions and answers are provided for your information:

   A. **Question:** Who will pay for water and sewer tap fees?

      Answer: Contractor will pay for water and sewer tap fees.

B. **Question:** We are requesting a 2 week delay for the bid Submittal deadline. We can have a bid ready August 10. I am very excited about building a "Signature" skate park for DeKalb Co., however the subcontractors involved and specialty materials that are required for this project will require a little more time than you have allowed.

Answer: Please see Item 1. above.

C. **Question:** Is there a Geotechnical Report available to bidders for this project?

Answer: A copy of Subsurface Exploration at Brook Run Skate Park dated February 7, 2005 is attached (13 pages).

5. All other conditions remain in full force and effect.

6. If a proposal has been submitted and anything in this Addendum causes the bidder to change the item offered or to increase or decrease the bid price, the new price and/or changes will be inserted below:

_____

_____

_____

6. All bidders under this Invitation to Bid are kindly requested to acknowledge receipt of this Addendum in original only.

Doyle Shaw, Director
Purchasing and Contracting

1

ACKNOWLEDGMENT

Date: 7/17/06

The above Addendum is hereby acknowledged:

J. M. Wilkerson Const. Co, Inc.
(NAME OF BIDDER)

Curtis Pruitt — Estimator
(Signature) (Title)

Invitation Number: 06-100022-ITB
Project: Brook Run Skate Park 30338
4770 North Peachtree Road, Dunwoody, Georgia ~~30030~~
Pre-Bid Conference and Site Visit, Wednesday, July 12, 2006; 9:30 AM

	NAME	COMPANY	ADDRESS	PHONE NUMBER	EMAIL	FAX NUMBER
1.	JAMES STAMPS	DEKALB COUNTY PURCHASING + CONTRACTING	THE MALOOF CENTER 1300 COMMERCE DR. ROOM 208 DECATUR, GA 30030	404-371-6378	JSTAMPS@CO.DEKALB.GA.US	404-371-6377
2.	JEFF & GINA FLEMING SR	SUPERB CONNECTION, Inc	5241 Golf Valley Way STONE MTN, GA	770) 241-8902 770) 241-~~8936~~ OFF-770) 879-3611	Superbcf@Comcast.NET	770 498-5879
3.	Mark Massmann	MassAna Construction LLC	934 Glenwood Ave #200 Atlanta GA 30316	678 758 3587 404 635 0669	MASSMANN@MASSANADESIGN.COM	404 635 0291
4.	TIM HUMPHREYS	STILES CONST. SERVICES	267 CAMBRIDGE AV DECATUR, GA 30030	404-310-8747	TSHUMPHREYS@YAHOO.COM	—
5.	NIKOLAI SAMARIN	CALIFORNIA SKATEPARKS	273 N. BENSON UPLAND, CA 91786	909 949 1601	NICK.SAMARIN@CALLANDSCAPE.COM	909 949-2851
6.	HOWARD ROSE	LEVITATION CONSTRUCTION	151 BELLS FERRY LN. MARIETTA, GA. 30066	7/426-6667 4/717-1703 CELL	howard@lewellenconstruction.com	7/423-9411
7.	DAISY WONG	SILVERMAN CONSTRUCTION PROGRAM MANAGEMENT	1075 ZONOLITE RD SUITE 5, ATLANTA	4/969-4313	dwong@silvermancpm.com	4/892 0022
8.	DAWN ANDERSON	〃	〃	4/969-4304	danderson@silvermancpm.com	

Invitation Number: 06-100022-ITB
Project: Brook Run Skate Park 30338
4770 North Peachtree Road, Dunwoody, Georgia
Pre-Bid Conference and Site Visit, Wednesday, July 12, 2006; 9:30 AM

NAME	COMPANY	ADDRESS	PHONE NUMBER	EMAIL	FAX NUMBER
1. Marti Watts	Altamira Design	591 N. Highland Atlanta, GA 30307	4/688-4451 X 26	martiwe altamiradesign.com	404 688 3159
2. David Beavers	Hensler & Beavers	3380-13 Stewart Rd Dunwoody GA	7/452 6700		7/452 0771
3. Shane Hornbuckle	Van Winkle & Co.	1731 Commerce Dr. Ste. 110 Atl 30318	4/605-8975	shane@vanwinkleco.com	4/351-1409
4. Gary Dalton	Parks & Rec	3601 Chestnut St Scottdale, GA.	(404) 501-9468	gdalton@co.dekalb.ga.us	
5. Marvin Billups	Parks & Rec	1300 Commerce Dr Decatur, GA	4/371-4925	mfbillups@co.dekalb.ga.us	
6. Austin Pruitt	J.M. Wilkerson Cons	1734 Sands Pl Marietta, GA 30067	7-953-2651	apruitt@jmwilkerson.com	7-933-9665
7. John Kars	Woody's Halfpipe	6135 Peachtree Pkwy #603 Norcross, GA 30092	7704161475	John@woodyshalfpipe.com	
8. Nick Scott	Nixstix	841 Moreland dr. Atlanta, Ga. 30316	404-627-4147	nick@nixstix.com	

Invitation Number: 06-100022-ITB
Project: Brook Run Skate Park
4770 North Peachtree Road, Dunwoody, Georgia ~~30338~~ 30338
Pre-Bid Conference and Site Visit, Wednesday, July 12, 2006; 9:30 AM

	NAME	COMPANY	ADDRESS	PHONE NUMBER	EMAIL	FAX NUMBER
1.	HILLMAN LEWIS	LEWIS CONSTRUCTION & CONSULTING, INC.	1582 BARRINGTON VIEW STONE MOUNTAIN, GA ~~30087~~ 30338	770-8791687	LEWISCO@BELLSOUTH.NET	770-8791689
2.						
3.						
4.						
5.						
6.						
7.						
8.						

SUBSURFACE EXPLORATION

AT

BROOK RUN SKATE PARK
4770 North Peachtree Road
DeKalb County, Georgia

Submitted to

DeKalb County Parks and Recreation Department
3681 Scottdale Road
Scottdale, Georgia 30079

PROJECT NUMBER: MEG 97141-172
February 2005

MATRIX ENGINEERING GROUP, INC.
Geotechnical, Environmental, and Construction Materials Consultants

MATRIX
ENGINEERING
GROUP, INC.

February 7, 2005

Ms. Dylan Curtis
DeKalb County Parks and Recreation
3681 Chestnut Street
Scottdale, Georgia 30079

Re: ***Subsurface Exploration and Engineering Recommendations***
Proposed Brook Run Skate Park, DeKalb County, Georgia
Matrix Engineering Group Project No. 97171.172

Dear Ms. Curtis:

Matrix Engineering Group, Inc. is pleased to submit this report of our findings and recommendations for the proposed Brook Run Skate Park facility in DeKalb County, Georgia. The objective of this exploration was to investigate the subsurface conditions, determine the stabilized groundwater elevation, and provide recommendations for the design of the proposed skate park facility.

1.0 INTRODUCTION

Based on the drawings that were provided to us, we understand that the project will consist of the construction of a skating area, entrance plaza and viewing area, as well as the renovation of the existing building. Based on discussions with Ms. Dylan Curtis with the DeKalb County Parks and Recreation Department, we understand that the investigated area will be excavated to a maximum of 15 feet below the existing grade in order to reach the designed elevations for the skate area. Three soil test borings were performed at the proposed skate area and extended up to 20 feet below the existing grades. Figure 1 shows the approximate location of the test borings.

6298 Oakwood Circle
Norcross, GA. 30093
Tel. 770•448•3124
Fax. 770•448•5324

2.0 EXPLORATION AND TESTING PROGRAM

2.1 Field Exploration

The field exploration was performed in general accordance with ASTM D 1586-83 standards. Borings were advanced by augering through soils with continuous flights of hollow-stem augers. The augers also act as a casing for the borehole to prevent collapse. The collection of soil samples was not in the scope of this project. However, soil descriptions were noted during the drilling operation and are presented on the Test Boring Records presented in Appendix A of this report.

3.0 GENERAL SUBSURFACE CONDITIONS

The subsurface conditions were characterized by visual examination of the auger cutting during the drilling operation. Based on our observations and test boring records, the conditions at the subject site can be are characterized as follows:

3.1 Topsoil and Surface Cover

The ground surface was covered with grass followed by a layer of topsoil. The topsoil layer at the test locations primarily consisted of dark brown silty clay with roots within the top 4 to 6 inches.

3.2 Man-Made Fill

Beneath the topsoil, disturbed soils (possible man-made fill) were encountered at all of the test borings. The disturbed soils ranged in depth from 3 feet test boring B1 to approximately 7 feet at test boring B3. The fill was generally free of organics and appeared to have been placed during the construction of the existing improvements in the area.

3.3 Residual Material

Residual soils are those which have weathered in place from the parent rock. Beneath the disturbed soil, the residual soils consisted of silty, medium to fine sand with varying degrees of mica.

4.4 Partially Weathered Rock and Bedrock

Neither partially weathered rock nor bedrock was encountered at any of the soil test borings within the drilled depths of 20 feet below the existing grades.

4.6 Groundwater

Groundwater measurements were taken during the drilling operation and after 72 hours of the drilling. The test borings were backfilled at the conclusion of the field work prior to leaving the site due to safety concern. Groundwater was not encountered within the drilled depth at the time of drilling. Groundwater after 72-hours was found at test borings B1 and B2 and depths of 18 feet and 19 feet, respectively. No groundwater was encountered at test boring B3.

Groundwater levels tend to fluctuate with seasonal and longer-term climatic conditions. Fluctuation on the order of 4 to 8 feet is common in the Atlanta area.

5.0 FINDINGS AND RECOMMENDATIONS

The following recommendations are based on the information furnished to us, the data obtained from the subsurface exploration, and our past experience with similar projects. They were prepared in general accordance with established and accepted professional geotechnical engineering practice in this region. Our recommendations do not reflect any variations that would likely exist between the pre-designated borings or unexplored areas. No other warranty is expressed or implied. Matrix Engineering Group, Inc. is not responsible for conclusions, opinions, or recommendations made by others based on this report.

5.1 Subgrade Preparation

The designed elevations were not provided to us at the time of this report; however we understand that the maximum proposed excavation will be 15 feet below the existing elevations.

The excavation within this project may include the existing fills, where the existing improvements are located, underground utilities, and residual materials. Our experience indicates that the fill and residual soils can generally be removed with conventional earth moving equipment, provided that proper groundwater control is maintained. Groundwater was encountered at test locations B1 and B2 at depths lower than 15 feet below the surface. There fore, we do not anticipate that special groundwater measures would be required within the explored areas. Underground utility lines or other items that may be encountered should be treated on an individual basis. Prior to excavation all utility companies should be contacted in order to allow for realignment of any active lines.

Groundwater elevations were encountered at 18 feet and 19 feet below the existing surface at test borings B1 and B2. It is possible that groundwater rises in wet seasons. We recommend that groundwater elevation is a minimum of 3 feet below the bottom of the excavation at all times in order to minimize softening of the residual soils. Should groundwater elevations rises within three feet below the bottom of the excavation, sump and pump system should be used to lower the groundwater at the excavation area.

After the unsuitable materials are removed, the suitability of the exposed subgrades in all areas should be confirmed by proofrolling. The proofrolling should be performed by a loaded tandem-wheeled dump truck with an approximate weight of 20 tons. Any material that deflects excessively or ruts under the loaded truck should be densified or removed and replaced with well-compacted materials. The proofrolling should be observed by a geotechnical engineer. Structural Fill procedures are provided in Section 5.1 of this report.

Upon preparing the subgrade soils satisfactorily, concrete grade slabs may be soil supported. Slab reinforcement and joint spacing should be carefully considered to control random cracking due to slab shrinkage. Beneath slab-on-grade areas, a minimum of 4 inches of open graded, No. 57 stone meeting the Georgia DOT specifications or granular material is recommended to facilitate fine grading and provide a capillary cut-off.

6.0 CONSTRUCTION RECOMMENDATIONS

6.1 Structural Fill

Structural fill, if necessary, should be compacted in accordance with the following criteria:

1. Adequate laboratory proctor density tests should be performed on representative samples of the proposed fill materials to provide data necessary for the quality control. The moisture content at the time of compaction should be within 3 percentage points of the optimum moisture content.
2. Suitable fill material should be placed in thin lifts (lift thickness depends on type of equipment used, but generally lifts of 8 inches loose measurement are recommended). The soils should be compacted by mechanical means such as sheepsfoot rollers.

3. We recommend that the fill be compacted to a minimum of 95% of the Standard Proctor Maximum Dry Density (ASTM Specifications D 698). The top two feet under pavements should be compacted to a minimum of 98% of the Standard Proctor Test.

4. An experienced soil engineering inspector should take adequate density tests throughout the fill placement operation to ensure that the specified compaction is being achieved.

6.2 Construction Inspection and Testing

During construction, it is advisable that Matrix Engineering Group inspect the site preparation and foundation construction work in order to ensure that construction of the foundations are performed in accordance with the design drawings and specifications.

Matrix Engineering Group, Inc. looks forward to working with you on this project. If you have any questions, or need further information, please do not hesitate to call.

Very truly yours,

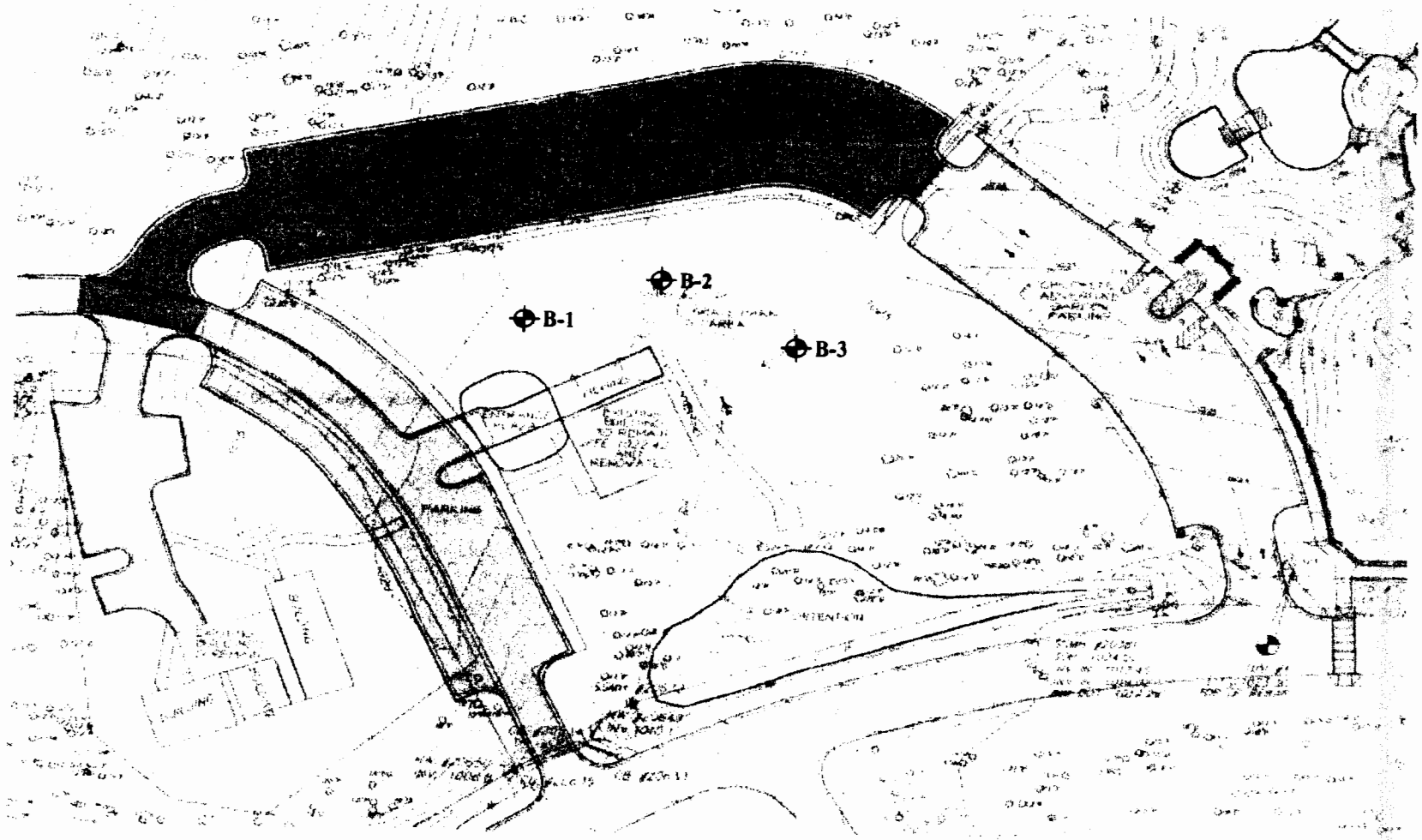
MATRIX ENGINEERING GROUP, INC.

Sam Alyateem, PE
Senior Geotechnical Engineer
Principal

M:\1.MATRIX PROJECTS FOLDER\2. DEKALB COUNTY CONTRACT\Brook Run Skate Park\Geotech\Geotech Report.doc

APPENDIX

TEST BORING LOCATIONS PLAN
TEST BORING RECORDS



MATRIX ENGINEERING GROUP, INC.

NORCROSS, GEORGIA

CLIENT
DeKalb County Parks and Recreation

TITLE

Test Boring Locations Plan
Proposed Brook Run Skate Park
DeKalb County, Georgia

DRAWN	REVIEWED	DATE	SCALE	PROJECT NUMBER	FIGURE
-	SA	2/3/2005	-	MEG 97141.172	1

CORRELATION OF STANDARD PENETRATION RESISTANCE WITH RELATIVE COMPACTNESS AND CONSISTENCY

SAND & GRAVEL

NO. OF BLOWS, N	RELATIVE COMPACTNESS
0 - 4	Very Loose
5 - 10	Loose
11 - 30	Medium Dense
31 - 50	Dense
Over 50	Very Dense

SILT & CLAY

NO. OF BLOWS, N	RELATIVE COMPACTNESS
0 - 1	Very Soft
2 - 4	Soft
5 - 8	Firm
9 - 15	Stiff
16 - 30	Very Stiff
31 - 50	Hard
Over 50	Very Hard

DRILLING SYMBOLS


Water Table Level after 24 Hours


Water Table Level at the Time of Drilling


Standard Penetration Test


Rock Core


Undisturbed Sample

50/2" Number of Blows (50) to Drive the Spoon a Number of Inches (2")

DRILLING PROCEDURES

SOIL SAMPLING AND STANDARD PENETRATION TESTING ARE PERFORMED IN ACCORDANCE WITH ASTM D1586-84 (RE-APPROVED IN 1992). THE STANDARD PENETRATION RESISTANCE (N) REPRESENTS THE NUMBER OF BLOWS OF A 140-LB HAMMER FALLING 30 INCHES ON A 2.0 INCH O.D. 1.4 INCH I.D. SPLIT SPOON SAMPLER TO DRIVE IT ONE FOOT. THE SAMPLES OBTAINED FROM THE SPLIT SPOON SAMPLER ARE CLASSIFIED IN THE FIELD IN ACCORDANCE WITH ASTM D2488-93 (VISUAL MANUAL PROCEDURE FOR DESCRIPTION OF SOILS).

MATRIX ENGINEERING GROUP, INC.

MATRIX ENGINEERING GROUP, INC.

Geotechnical, Environmental, and Construction Materials Consultants

DRILL HOLE LOG

BORING NO. B1

File: Brook Run Skate Park Date Printed: 2/8/2005

PROJECT: Brook Run Skate Park PROJECT NO.: 97141.172
CLIENT: DeKalb County Parks and Recreation DATE: 2/04/2005
LOCATION: Refer to Figure 1 ELEVATION: 1021
DRILLER: Kilman Brothers LOGGED BY: Eric Taylor
DRILLING METHOD: ASTM D1586
DEPTH TO - WATER> INITIAL: ▼ None AFTER 24 Hours: ▼ 18.5 CAVING> ℄

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

ELEVATION (feet)	DEPTH (feet)	Description	SOIL TYPE	SOIL SYMBOL	SAMPLERS	TEST RESULTS: Natural Moisture Content (%) - ▲ Penetration - ● 10 20 30 40 50	N-Value
	0						
		Grass with topsoil.					
1020		Possible Fill, Orange Clayey SILT.	ML				
	2.5						
		Residual, Light Brown, Micaceous Silty Medium to Fine SAND.	SM				
	5						
1015	7.5						
	10						
1010	12.5						
	15						
1005	17.5	Soil becomes moist and changes to tan in color.					
	20						
1000		Boring terminated at 20 feet B.G.S.					
	22.5						
	25						
995	27.5						
	30						
990	32.5						

No samples were collected during the drilling of this boring.

MATRIX ENGINEERING GROUP, INC.

Geotechnical, Environmental, and Construction Materials Consultants

DRILL HOLE LOG

BORING NO. B2

File: Brook Run Skate Park Date Printed: 2/8/2005

PROJECT: Brook Run Skate Park PROJECT NO.: 97141.172
CLIENT: DeKalb County Parks and Recreation DATE: 2/04/2005
LOCATION: Refer to Figure 1 ELEVATION: 1022
DRILLER: Kilman Brothers LOGGED BY: Eric Taylor
DRILLING METHOD: ASTM D1586
DEPTH TO - WATER> INITIAL: ▼ None AFTER 24 Hours: ▼ 19 feet CAVING> ℄

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

ELEVATION (feet)	DEPTH (feet)	Description	SOIL TYPE	SOIL SYMBOL	SAMPLERS	TEST RESULTS: Natural Moisture Content (%) - ▲ Penetration - ● (10 20 30 40 50)	N-Value
	0						
		Grass with topsoil.					
		Possible Fill, Orange, Clayey SILT.	ML				
1020	2.5						
	5						
1015	7.5						
		Residual, Light Brown, Micaceous, Silty Medium to Fine SAND.	SM				
	10						
1010	12.5						
	15						
		Soil becomes moist and changes to tan in color.					
1005	17.5						
	20 ▼						
		Boring terminated at 20 feet B.G.S.					
1000	22.5						
	25						
995	27.5						
	30						
990	32.5						

No samples were collected during the drilling of this boring.

MATRIX ENGINEERING GROUP, INC.

Geotechnical, Environmental, and Construction Materials Consultants

DRILL HOLE LOG

BORING NO. B3

File: Brook Run Skate Park Date Printed: 2/8/2005

PROJECT: Brook Run Skate Park
CLIENT: DeKalb County Parks and Recreation
LOCATION: Refer to Figure 1
DRILLER: Kilman Brothers
DRILLING METHOD: ASTM D1586
DEPTH TO - WATER> INITIAL: None AFTER 24 Hours: None CAVING>

PROJECT NO.: 97141.172
DATE: 2/04/2005
ELEVATION: 1022
LOGGED BY: Eric Taylor

ELEVATION (feet)	DEPTH (feet)	Description	SOIL TYPE	SOIL SYMBOL	SAMPLERS	TEST RESULTS: Natural Moisture Content (%) - ▲ Penetration - ● (10 20 30 40 50)	N-Value
	0						
		Grass with topsoil.					
1020	2.5	Possible Fill, Orange, Clayey SILT.	ML				
	5	Residual, Light Brown, Micaceous, Silty Medium to Fine SAND.	SM				
1015	7.5						
	10						
1010	12.5						
	15						
		Soil changes to tan in color.					
1005	17.5						
	20						
		Boring terminated at 20 feet B.G.S.					
1000	22.5						
	25						
995	27.5						
	30						
990	32.5						

No samples were collected during the drilling of this boring.

This information pertains only to this boring and should not be interpreted as being indicitive of the site.

TABLE OF CONTENTS

Advertisement for Bids

ADVERTISEMENT FOR BIDS

DEKALB COUNTY, GEORGIA

INVITATION NUMBER 06-100022-ITB

Sealed proposals will be received by DeKalb County, Georgia, in the Department of Purchasing and Contracting, The Maloof Center, Second Floor - Room 202, 1300 Commerce Drive, Decatur, Georgia 30030, until 3:00 p.m. on the 27th day of July, 2006, at which time and place they will be publicly opened and read aloud, for furnishing all labor, materials, equipment, and all things necessary pursuant to Drawings, Specifications, conditions, etc., for construction of Brook Run Skate Park, including site and clearing, grading/drainage, erosion control, utilities, asphalt parking, curb/gutter, concrete paving, building construction, concrete walks/steps, landscaping and field engineering and "as-built" surveys.

Contract Documents, Drawings, and Specifications for this Work are on file and open for inspection at AGC Builders Exchange, 1940 The Exchange SE, Suite 300, Atlanta, Georgia 30339; F. W. Dodge Plan Room, 4170 Ashford Dunwoody Road, Suite 200, Atlanta, Georgia 30319; Reed Construction Data, Document Processing Center, 30 Technology Parkway South, Suite 500, Norcross, Georgia 30092-2912; Georgia Minority Supplier Development Council, The United Way Building, 100 Edgewood Avenue, NE, Suite 1610, Atlanta, Georgia 30303; National Association of Minority Contractors, 659 Auburn Avenue, NE, Suite 269, Atlanta, Georgia 30312; Altamira Design and Common Sense, Inc., 591 N. Highland Avenue, NE, Atlanta, Georgia 30307; and the Department of Purchasing and Contracting, The Maloof Center, Second Floor - Room 202, 1300 Commerce Drive, Decatur, Georgia 30030. A complete set of documents may be obtained from Altamira Design and Common Sense, Inc., 591 N. Highland Avenue, NE, Atlanta, Georgia 30307.

A non-refundable payment of $225.00 is required for a complete set of said bid documents. Proposals will be considered only from experienced and well-equipped contractors.

BID BOND

Bids must be accompanied by an official bank check or Bid Bond in an amount of not less than twenty percent (20%) of the amount bid. Prior to beginning of construction, the successful Bidder will file with the County a Contract Performance Bond and a Payment Bond, each equal to 100% of the Contract Price, with the terms and surety to be approved by the County; and furnish satisfactory proof of carriage of the insurance required.

PRE-BID CONFERENCE AND SITE VISIT

A pre-bid conference and site visit will be held at 9:30 a.m. on the 12th day of July, 2006 at 4770 North Peachtree Road, Dunwoody, Georgia. Bidders are strongly encouraged to attend and participate in the pre-bid conference and site visit. Failure to attend the pre-bid conference can be cause for rejection of their bid. For information regarding the pre-bid conference and site visit, please contact Gary Dalton at 404-501-9468.

QUESTIONS

All questions concerning the project shall be submitted to the Director of Purchasing and Contracting, The Maloof Center, Room 202, 1300 Commerce Drive, Decatur, Georgia 30030, in writing no later than close of business on July 18, 2006. Questions received by the Director of Purchasing and Contracting after this date will not receive a response.

LOCAL SMALL BUSINESS ENTERPRISE, MINORITY BUSINESS ENTERPRISE, WOMEN BUSINESS ENTERPRISE OPPORTUNITY TRACKING FORM

It is the objective of the Chief Executive Officer and Board of Commissioners of DeKalb County to provide maximum practicable opportunity for all businesses to participate in the performance of government contracts, including local small business enterprises, minority business enterprises and women business enterprises. The County's *Local Small Business Enterprise, Minority Business Enterprise, Women Business Enterprise (LSBE/MBE/WBE)Opportunity Tracking Form* is included in the Invitation to Bid. The current DeKalb County List of Certified Vendors is included as Exhibit B to the LSBE/MBE/WBE Opportunity Tracking Form of the Invitation to Bid. For details relative to DeKalb County's LSBE/MBE/WBE Opportunity, contact the Contract Compliance Office at 404-371-4795.

PROPOSALS MUST BE SUBMITTED TO DEKALB COUNTY DEPARTMENT OF PURCHASING AND CONTRACTING, THE MALOOF CENTER, SECOND FLOOR - ROOM 202, 1300 COMMERCE DRIVE, DECATUR, GEORGIA 30030. No bid may be revoked or withdrawn until sixty (60) days after the time set for opening the bids.

Construction must begin within ten (10) calendar days from the date of receipt of the Notice to Proceed, as evidenced by official receipt of certified mail or acknowledgment of personal delivery, and must be completed within 180 calendar days from and including the date of receipt of such notice.

THE COUNTY RESERVES THE RIGHT TO REJECT ANY AND ALL BIDS, TO WAIVE INFORMALITIES IN BIDDING, AND TO READVERTISE.

This 22nd day of June, 2006.

DEKALB COUNTY, GEORGIA

By: _____

Doyle Shaw, Director
Purchasing and Contracting

Instructions to Bidders

INSTRUCTIONS TO BIDDERS

GENERAL

Sealed proposals will be received by DeKalb County, Georgia, in the Department of Purchasing and Contracting, The Maloof Center, Second Floor - Room 202, 1300 Commerce Drive, Decatur, Georgia 30030, until 3:00 p.m. on the 27th day of July, 2006, for the construction of the Brook Run Skate Park, including site and clearing, grading/drainage, erosion control, utilities, asphalt parking, curb/gutter, concrete paving, building construction, concrete walks/steps, landscaping and field engineering and "as-built" surveys according to the Drawings and Specifications entitled Brook Run Skate Park on file at Altamira Design and Common Sense, Inc., 591 N. Highland Avenue, NE, Atlanta, Georgia 30307 and the Department of Purchasing and Contracting, The Maloof Center, Second Floor - Room 202, 1300 Commerce Drive, Decatur, Georgia 30030. Drawings, specifications and proposal forms may be obtained from Altamira Design and Common Sense, Inc., 591 N. Highland Avenue, NE, Atlanta, Georgia 30307 upon a non-refundable payment of $225.00, for a complete set of said Drawings and Specifications. Proposals will be considered only from experienced and well-equipped contractors. Prior to beginning of construction, the successful Bidder will file with the County a Contract Performance Bond and a Payment Bond, each equal to 100% of the Contract Price, with the terms and surety to be approved by the County; and furnish satisfactory proof of carriage of the insurance required.

Construction must begin within ten (10) calendar days from the date of receipt of the Notice to Proceed, as evidenced by official receipt of certified mail or acknowledgment of personal delivery and must be completed within 180 calendar days from and including the date of receipt of such notice.

SUBMITTING BIDS

Bids are to be submitted on the proper form furnished by the County and shall be addressed to the DeKalb County Department of Purchasing and Contracting, The Maloof Center, Second Floor - Room 202, 1300 Commerce Drive, Decatur, Georgia 30030, sealed, dated and enclosed in an envelope appropriately marked on the outside Brook Run Skate Park; Invitation No. 06-100022-ITB, marked with the name of the Bidder, and date and hour of opening.

BIDDERS RESPONDING TO THIS INVITATION TO BID MUST WRITE THEIR LICENSE NUMBER ON THE FACE OF THE BID ENVELOPE.

ADDENDA AND INTERPRETATION

No interpretation of the meaning of the Contract Documents will be made orally to any Bidder. Every request for such interpretation should be in writing addressed to the Director of the Department of Purchasing and Contracting, The Maloof Center, Room 202, 1300 Commerce

Drive, Decatur, GA 30030. Each such interpretation shall be given in writing, separately numbered and dated, and furnished to each interested Bidder in sufficient time that all interested parties can be notified, the County to be the sole determiner of time. Any request not received in time to accomplish such interpretation and distribution shall not be accepted.

ACKNOWLEDGMENT OF ADDENDA

Addenda may be issued in response to changes in the Invitation to Bid. Addenda must be acknowledged either in a cover letter or by signing and returning the Addendum form. Acknowledgments must be received no later than the bid opening time and date. Failure to properly acknowledge any addendum may result in a declaration of non-responsiveness by the County.

All addendums issued for this project may be found on DeKalb County's website, http://www.co.dekalb.ga.us/purchasing/index.htm .

AUTHORITY TO SIGN

If a proposal is made by an individual, the name and mailing address must be shown. If made by a firm or partnership, the name and mailing address of each member of the firm or partnership must be shown. If made by a corporation, the Certificate of Corporate Bidder must be executed. A post office box is not acceptable to DeKalb County as a mailing address.

The Bidder should ensure that the legal and proper name of his proprietorship, firm, partnership, or corporation is printed or typed in the space provided on the proposal form.

GUARANTEE TO ACCOMPANY PROPOSAL

Bids must be accompanied by an official bank check or acceptable Bid Bond in an amount of not less than twenty percent (20%) of the amount bid.

RIGHTS RESERVED

The County reserves the right to reject any or all bids, to waive informalities and to readvertise. It is understood, and all bids are made subject to this agreement, that the County reserves the right to decide which bid be deemed lowest and best, and in arriving at this decision, full consideration will be given to the reputation of the Bidder, his financial responsibility, and work of this type successfully completed.

For consideration as a responsible bidder, the proposed bidder shall have been the general contractor engaged in construction of facilities of similar character for at least two years. Bidder may be required to submit evidence setting forth qualifications which entitle him to consideration as a responsible bidder. A list of work of similar character successfully

completed within the last two years may be required giving the location, size, and listing equipment available for use on this Work.

Any unauthorized additions, conditions, limitations, or provisions attached to the Proposal shall render it informal, and may be cause for rejection. The County reserves the right to waive informalities.

No Bid may be revoked or withdrawn until sixty (60) days after the time set for opening the bids.

AWARD OF CONTRACT

The Contract, if awarded, will be awarded to that responsible bidder whose bid will be most advantageous to the County, price and other factors considered. The County is to make the determination in its sole discretion.

The Contract between the County and the Contractor shall be executed on the form attached, will be subject to all requirements of the Contract Documents, and shall form a binding contract between the contracting parties.

A Contract Performance Bond and a Payment Bond, each equal to 100% of the Contract Price with a surety company satisfactory to the County, must be provided by the successful Bidder by a surety company listed in the Federal Register and licensed to write surety insurance in the State of Georgia. Bonds given shall meet the requirements of the law of the State of Georgia including, but not limited to, O.C.G.A. §13-10-1 and §36-91-21 et seq.

The Contractor shall be required to furnish the County with satisfactory proof of coverage of the insurance specified in the General Conditions.

FAILURE TO EXECUTE CONTRACT

If the successful Bidder, after having been notified of the acceptance of his Bid, fails to provide within ten (10) days the required Payment and Performance Bonds, Certificates of Insurance, and to sign the Contract, the amount of the Bid Bond shall be paid over to the County as liquidated damages as costs of the bidding procedure. The acceptance of the payment of the Bid Bond shall not operate to bar any claim the County might otherwise have against the Bidder and the County shall be authorized to pursue any claim against the Bidder for failure to consummate the Contract as may be authorized by law.

TIME AND LIQUIDATED DAMAGES

The Contract Time for completion of the Work for this Contract shall be as stated herein. For failure to complete the Work within this period, the Contractor shall pay the County liquidated damages in the amount of Five Hundred Dollars ($500.00) for each calendar day in excess of the Contract Time unless an extension of the Contract Time has been obtained prior to the expiration date of the Contract.

LOCATIONS AND SITE

The site of the proposed Work is at the stated location(s) within DeKalb County, Georgia.

The Contractor shall accept the site in its present condition and carry out all Work in accordance with the requirements of the Specifications and as shown on the Drawings.

The Bidder shall, before submitting his Bid, visit the site and acquaint himself with the actual conditions and the location of any or all obstructions that may exist on the site.

The Contract Documents contain the provisions required for the completion of the Work to be performed pursuant to this Contract. Information obtained from an officer, agent, or employee of the County, or any other person, shall not affect the risks or obligations assumed by the Contractor or relieve him from fulfilling any of the conditions of the Contract. Each Bidder, prior to submitting his bid, is responsible for inspecting the site and for reading and being thoroughly familiar with the Contract Documents. The failure or omission of any Bidder to so familiarize himself shall in no way relieve any Bidder from any obligation in respect to his Bid.

The Contractor shall inspect all easements and rights-of-way to insure that the County has obtained all land and rights-of-way necessary for completion of the Work to be performed pursuant to the Contract Documents. The Contractor shall comply with all stipulations contained in easements acquired by the County. All easements and rights-of-way documents are available for inspection in the office of the DeKalb County Clerk of the Superior Court, Real Estate Records, Ground Floor of the Courthouse Annex, 556 N. McDonough Street, Decatur, Georgia 30030.

The Contractor agrees not to file any claim against the County, its officials or employees and agrees that the Contractor shall not be entitled to damages of any kind for the failure of the County to obtain rights-of-way. The Contractor shall accurately locate above and below ground utilities and structures which may be affected by the Work using whatever means may be appropriate.

LOCAL SMALL BUSINESS ENTERPRISE, MINORITY BUSINESS ENTERPRISE, WOMEN BUSINESS ENTERPRISE OPPORTUNITY TRACKING FORM

It is the objective of the Chief Executive Officer and Board of Commissioners of DeKalb County to provide maximum practicable opportunity for all businesses to participate in the performance of government contracts, including local small business enterprises, minority business enterprises and women business enterprises. The County's *Local Small Business Enterprise, Minority Business Enterprise, Women Business Enterprise (LSBE/MBE/WBE) Opportunity Tracking Form* is included in the Invitation to Bid.

In order for a Bid to be considered, it is **mandatory** the LSBE/MBE/WBE Opportunity Tracking Form be completed and submitted with bidder's bid.

The current DeKalb County List of Certified Vendors is included as Exhibit B to the LSBE/MBE/WBE Opportunity Tracking Form of this Invitation to Bid.

For details relative to DeKalb County's LSBE/MBE/WBE Opportunity, contact the Contract Compliance Office at 404-371-4795.

GEORGIA OPEN RECORDS ACT

Without regard to any designation made by the person or entity making a submission, DeKalb County considers all information submitted in response to this invitation or request to be a public record that will be disclosed upon request pursuant to the Georgia Open Records Act, O.C.G.A. §50-18-70 et seq., without consulting or contacting the person or entity making the submission, unless a court order is presented with the submission. You may wish to consult an attorney or obtain legal advice prior to making a submission.

Proposal

Invitation No. 06-100022-ITB

PROPOSAL

(1)

TO: The Board of Commissioners

of DeKalb County, Georgia

The undersigned, as Bidder, declares that he has carefully examined an annexed proposed form of Contract, the Specifications therein contained, and the Drawings therein referred to, and that he proposes and agrees that if his Proposal is accepted, to provide the necessary machinery, tools, apparatus, and other means of construction, and will furnish all materials and labor specified in the Contract, or called for by the Drawings, or necessary to complete the Work in the manner therein specified within the time specified, as therein set forth for the following lump sum amount which sum is hereinafter referred to as the "Base Bid."

Item No.	Description of Work	Unit	Approx. Quantity	Unit Price	Amount
1.01	Mobilization	LS	LS	LS	$7,840.00
1.02	Insurance	LS	LS	LS	$25,815.00
1.03	Performance and Payment Bond	LS	LS	LS	$19,453.00
1.04	General Conditions	LS	LS	LS	$51,981.00
1.05	Construction Staking	LS	LS	LS	$35,761.00
1.06	Supervision	LS	LS	LS	$56,656.00
1.07	Temporary Facilities	LS	LS	LS	$27,476.00
Site Work					
2.01	Demolition	LS	LS	LS	$17,305.00
2.02	Clearing	AC	LS	LS	$14,373.00
2.03	Erosion Control Measures	LS	LS	LS	$26,590.00
2.04	Erosion Control Maintenance	LS	LS	LS	$13,913.00
2.05	Earthwork	LS	LS	LS	$125,748.00
2.06	Termite Control	LS	LS	LS	$325.00
2.07	Site Water System	LS	LS	LS	$19,758.00
2.08	Sanitary Sewer	LF	LS	LS	$6,899.00
2.09	Storm Drainage	LF	LS	LS	$110,820.00
2.10	Asphalt Paving	SY	LS	LS	$99,504.00
2.12	Concrete Walks, Curbs and Gutters	SY	LS	LS	$51,616.00
2.13	Irrigation System	LS	LS	LS	$5,227.00
2.14	Sod and Hydroseed	SF	LS	LS	$18,880.00
2.15	Landscaping	LS	LS	LS	$35,162.00
16.01	Lighting Fixtures and Poles	LS	LS	LS	$47,561.00
16.02	Sound System	LS	LS	LS	$31,359.00

Skatepark					
2.01	Earthwork	LS	LS	LS	$35,195.00
2.02	Sub-Grade Prep and Base Material	LS	LS	LS	$17,996.00
2.03	Storm Drains	Ea.	LS	LS	$2,281.00
3.01	Concrete	SY	LS	LS	$127,999.00
3.03	Cast-In-Place	SY	LS	LS	$206,463.00
3.04	Shotcrete	SY	LS	LS	$312,352.00
5.01	Metal Fabrication	SF	LS	LS	$83,038.00
5.02	Ornamental Metals	LF	LS	LS	$117,107.00
9.01	Painting	LS	LS	LS	$17,841.00
Building					
3.01	Concrete	SY	LS	LS	$81,442.00
5.01	Structural Steel	LS	LS	LS	$39,789.00
5.02	Metal Fabrication	SF	LS	LS	$6,252.00
6.01	Rough Carpentry	SF	LS	LS	$28,934.00
6.02	Pre-Fabricated Wood Trusses	EA	LS	LS	$16,507.00
6.03	Finish Carpentry	LS	LS	LS	$2,425.00
7.01	Thermal and Moisture Protection	LS	LS	LS	$10,581.00
7.02	Roofing and Siding	LS	LS	LS	$32,133.00
8.01	Doors and Frames	LS	LS	LS	$4,970.00
8.02	Counter Shutters	EA	LS	LS	$19,477.00
8.03	Finish Hardware	LS	LS	LS	$7,750.00
8.04	Glass	LS	LS	LS	$18,789.00
9.01	Finishes	LS	LS	LS	$16,516.00
10.01	Toilet Partitions and Accessories	LS	LS	LS	$7,795.00
10.02	Metal Lockers	EA	LS	LS	$0.00
10.03	Fire Extinguishers / Cabinets	LS	LS	LS	$287.00
Drawings	Mechanical	LS	LS	LS	$17,718.00
Drawings	Electrical	LS	LS	LS	$67,840.00
Drawings	Plumbing	LS	LS	LS	$25,087.00

Two Million One Hundred Seventy Four Thousand Five Hundred ($2,174,586.00)

(State amount in writing on this line) Eighty Six Dollars (In figures)

In addition, a Unit Price for each of the following items is to be included should the County decide to add them to the "Base Bid."

Unit Prices are applicable as determined by the Landscape Architect. Unit Prices are to include charges for fee, layout, supervision, general expenses, taxes, insurance, overhead and profit.

	Unit	Unit Price
Alternate No. 1: Add to the Base Bid the following: Rock Removal, Mass	(CY)	Add -- $ 50.00
Alternate No. 2: Add to the Base Bid the following: Rock removal Trench	(CY)	Add -- $ 90.00
Alternate No. 3: Add to the Base Bid the following: Excavation for unsatisfactory materials & Replacement w/ suitable soil material	(CY)	Add -- $ 28.00
Alternate No. 4: Add to the Base Bid the following: Excavation for unsatisfactory materials & Replacement w/ crushed stone	(CY)	Add -- $ 50.00

Bidder has examined the site of the proposed work and all documents comprising the Contract Documents, and is satisfied as to the conditions to be encountered in performing the work and as to the requirements of the Contract Documents.

No bid may be revoked or withdrawn until sixty (60) days after the time set for opening the bids.

Attached hereto is Bid Bond made by Westfield Insurance Company _____, a surety company listed in the Federal Register and licensed to write surety insurance in the State of Georgia, payable to DeKalb County, Georgia (or an official bank check), in the amount of twenty percent of the above Bid, to-wit.

If this Proposal shall be accepted by DeKalb County and the undersigned shall fail to execute a satisfactory contract in the form of said proposed Contract, give satisfactory Performance and Payment Bonds, and furnish satisfactory proof of the insurance required, as stated in the Instructions to Bidders attached hereto within ten days from the Notice of Award of the Contract, then the County may at its option, determine that the undersigned abandoned the Contract and thereupon this Proposal shall be null and void, and the sum stipulated in the attached Bid Bond (or an official bank check) shall be forfeited to the County as liquidated damages.

Bidder declares his intent to subcontract the portion of work as below stated. Bidder understands and agrees that the use of any subcontractor not listed below shall be strictly prohibited without prior written approval from the County.

CMC Landscaping & Aesthetic Environments - Landscaping / Irrigation

GA Paving - Asphalt

Carolyn's Hauling-Stone & Materials

California Landscape & Design, Inc. - Slotcrete - Skate Park Elements

C.O.D., Inc. - Sidewalks & Site Concrete

Anasteel - Supply of Reinforcing Materials

L & L Industries - Structural Steel

Midsouth Metals - Roofing & Siding Pierre Construction Group - Roof & Wall Panels

GSI - Glassream - Storefront Atlanta Professional Door - Overhead Doors & Shutters

Mac's Painting - Painting Prime Mechanical - HVAC M&G Plumbing - Plumbing.

Krecl Electric - Electric

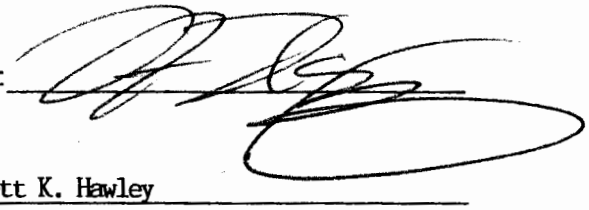
Bidder further declares that the full name and residence address of all persons and parties interested in the foregoing Bid as principals, are as follows:

James M. Wilkerson - President 1723 Tappahonnock Tr., Marietta, GA 30062

Brett K. Hawley - Executive Vice President 4924 Gaskin Walk, Marietta, GA 30068

Signed, sealed, and dated this 9th day of August, 2006.

J.M. Wilkerson Construction Co., Inc. (Seal)
Bidder

By: 

Brett K. Hawley
Name (Typed or Printed)

Executive Vice President
Title

1734 Sands Place, Marietta, GA 30067
Bidder's Mailing Address

770.953.2659
Phone Number

770.933.9665
Fax Number

bhawley@jmwilkerson.com
E-Mail Address

LSBE
Tracking Form

1

LOCAL SMALL BUSINESS ENTERPRISE, MINORITY BUSINESS ENTERPRISE, WOMEN BUSINESS ENTERPRISE OPPORTUNITY TRACKING FORM

It is the objective of the Chief Executive Officer and Board of Commissioners of DeKalb County to provide maximum practicable opportunity for all businesses to participate in the performance of government contracts, including local small business enterprises, minority business enterprises and women business enterprises. To achieve this purpose, the County would like to track and record with whom it does business. The form attached, "Exhibit A," records who performs work and renders services to the County. Participation is defined as prime contractor, subcontractor, or supplier to contractors performing work or rendering services to the County. Contractors are requested to indicate whether they are a Local Small Business Enterprise, Minority Business Enterprise or Women Business Enterprises and if not, contractors are requested to make a good faith effort to utilize Local Small Business Enterprises, Minority Business Enterprises and Women Business Enterprises (hereafter named as LS/M/WBE) as subcontractors on their projects.

(See "EXHIBIT A")

1. **Bidder Statement of Compliance**

   Bidder(s)/Proposer(s) hereby state that they have read and understand the requirement and conditions as set forth in the objectives and that reasonable efforts were made to support DeKalb County government in providing the maximum practicable opportunity for the utilization of LS/M/WBE consistent with the efficient and economical performance of this contract. The Bidder and any subcontractors shall file compliance reports at reasonable times and intervals with the County in the form and to the extent prescribed by the Director of DeKalb County Purchasing and Contracting Department. Compliance reports filed at such times as directed shall contain information as to the employment practices, policies, programs and statistics of Contractors and their subcontractors.

2. **Utilization Commitment for Use of Local Small Business, Minority, and Women Business Enterprise**

   Each Bidder/Responder is requested to submit with their Bid or Proposal the Schedule Of Local Small Business Enterprise/Minority Business Enterprise/Women Business Enterprise Participation included in this Section as "Exhibit A."

(Continued)

"EXHIBIT A"

DEKALB COUNTY SCHEDULE OF LOCAL SMALL BUSINESS ENTERPRISE/MINORITY BUSINESS ENTERPRISE/WOMEN BUSINESS ENTERPRISE OPPORTUNITY TRACKING FORM

As specified in Paragraph 2 of this Section, Bidders are to present the details of LS/M/WBE participation below:

PRIME BIDDER/PROPOSER J, M. Wilkerson Construction Co., Inc. Invitation/RFP Number 06-100022-ITB

UNIT OF WORK Brooks Run Skate Park

1. My firm, as the prime bidder on this unit of work, (is)____ (is not) X a LS/M/WBE. If answer to this question is affirmative, please indicate below the portion of work (including percentage of bid amount) that your firm will carry out directly.
N/A

2. If the prime bidder is a joint venture, please describe below the nature of the joint venture and level of work and financial participation to be provided by the LS/M/WBE joint venture firm.
N/A

3. LS/M/WBE subcontractors and/or firms (including suppliers) to be utilized in performance of this contract, if awarded. No changes can be made in subcontractors listed below without prior written approval of the County.

- Name of Subcontractor Carolyn's Hauling
  Address 5471 Fox Haven Trail
  Contact Person Derek Lewis Telephone 770.318.3085
  LSBE _____ MBE _____ WBE X
  Type of Work/Contract Item Erosion Control, Hauling Materials, Stone
  Dollar Value of Agreement $30,000

- Name of Subcontractor Anasteel
  Address 2272 Mabros Industrialk Parkway
  Contact Person Mike Patrick Telephone _____
  LSBE _____ MBE X WBE X
  Type of Work/Contract Item Reinforcing Steel
  Dollar Value of Agreement $45,000

(Please use separate page to list additional LS/M/WBE subcontractors and/or firms (including suppliers) to be utilized in performance of this contract, if awarded.)

(Continued)

1

"EXHIBIT A"

DEKALB COUNTY SCHEDULE OF LOCAL SMALL BUSINESS ENTERPRISE/MINORITY BUSINESS ENTERPRISE/WOMEN BUSINESS ENTERPRISE OPPORTUNITY TRACKING FORM

As specified in Paragraph 2 of this Section, Bidders are to present the details of LS/M/WBE participation below:

PRIME BIDDER/PROPOSER J.M. Wilkerson Construction Co., Inc. Invitation/RFP Number 06-100022-ITB

UNIT OF WORK Brook Run Skate Park

1. My firm, as the prime bidder on this unit of work, (is)____ (is not) X a LS/M/WBE. If answer to this question is affirmative, please indicate below the portion of work (including percentage of bid amount) that your firm will carry out directly.
N/A

2. If the prime bidder is a joint venture, please describe below the nature of the joint venture and level of work and financial participation to be provided by the LS/M/WBE joint venture firm.
N/A

3. LS/M/WBE subcontractors and/or firms (including suppliers) to be utilized in performance of this contract, if awarded. No changes can be made in subcontractors listed below without prior written approval of the County.

- Name of Subcontractor C.O.D. Construction

  Address 543 Julius Avenue

  Contact Person Lee Zachery Telephone 404.587.0647

  LSBE_____ MBE_____ WBE_____

  Type of Work/Contract Item sidewalks - site concrete - masonry

  Dollar Value of Agreement $40,000

- Name of Subcontractor_____

  Address_____

  Contact Person_____ Telephone_____

  LSBE_____ MBE_____ WBE_____

  Type of Work/Contract Item_____

  Dollar Value of Agreement_____

(Please use separate page to list additional LS/M/WBE subcontractors and/or firms (including suppliers) to be utilized in performance of this contract, if awarded.)

(Continued)

Rev: 8-31-05

DEKALB COUNTY
CHECKLIST FOR GOOD FAITH EFFORTS

A bidder that does not meet the owner's LS/M/WBE participation objectives is required to demonstrate that it made reasonable "good faith efforts." Please indicate whether any of these actions were taken towards this end.

	Yes	No	
1.	X	___	Advertisement for solicitation of LS/M/WBE in general circulation media, trade association publications, and minority-focus media, to provide notice of sub-contracting opportunities.
2.	X	___	Providing written notice of LS/M/WBE that their interest in subcontracting opportunities or furnishing supplies is solicited.
3.	X	___	Efforts made to divide the work for LS/M/WBE sub-contracting in areas likely to be successful.
4.	___	X	Efforts made to assist potential LS/M/WBE sub-contractors meet bonding, insurance, or other governmental contracting requirements.
5.	X	___	Utilization of services of available minority community organizations, minority community organizations, minority contractor groups and other organizations that provide assistance in the recruitment and placement of LS/M/WBE.
6.	X	___	Communication with the Division of Contract Compliance seeking assistance in identifying available LS/M/WBE.
7.	___	X	Joint venture opportunities.
8.	___	___	Other actions (specify in space below)

Reviewed the list of certified DBE contractors in an effort to obtain subcontractor participation.
Tried to make contact with these companies via fax & phone.

Please explain any no answers (by number)

This list is a guideline and by no means exhaustive. The County will review these efforts, along with other documents, towards assessing the contractor's efforts to meet the owner's goals. If you require assistance in identifying certified, bona fide LS/M/WBE, or require assistance in completing this form, please contact the Purchasing and Contracting Department Contract Compliance Division @ Phone No. 404-371-4795.

Firm Name (Please Print): J.M. Wilkerson Construction Co., Inc.

Firm's Officer: _____ Brett K. Hawley, Exec. VP

Telephone Number: 770.953.2659

(Continued)

Rev: 8-31-05

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LOCAL SMALL BUSINESS ENTERPRISE, MINORITY BUSINESS ENTERPRISE, WOMEN BUSINESS ENTERPRISE OPPORTUNITY TRACKING FORM

1. **Non-Discrimination Policy**

a. During the performance of this agreement, Contractor agrees to conform to the following Non-Discrimination Policy adopted by the County.

b. Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, national origin, or disability. The Contractor will take action to ensure that applicants are employed, and the employees are treated during employment without regard to their race, color, religion, sex, national origin, or disability. Such action shall include, but not be limited to, the following:

(1) Employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. Contractor agrees to post in conspicuous places available to employees and applicants for employment, notices to be provided setting forth provisions of this non-discrimination clause.

(2) Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, or disability.

c. Without limiting the foregoing, Contractor shall not discriminate on the basis of disability in the admission or access to, or treatment or employment in, the programs and activities, which form the subject of the contract. The Contractor will take action to ensure that applicants for participation in such programs and activities are considered without regard to disability. Such action shall include, but not be limited to, the following:

(1) Contractor agrees to post in conspicuous places available to participants in its programs and activities notices to be provided setting forth the provisions of this non-discrimination clause.

(2) Contractor shall, in all solicitations or advertisements for programs or activities, which are the subject of the contract, state that all qualified applicants will receive consideration for participation without regard to disability.

Commitment

The undersigned certifies that he/she has read, understands, and agrees to be bound by the bid specifications, including the accompanying Exhibits and other terms and conditions of the Invitation to Bid and/or Request for Proposal regarding LS/M/WBE utilization. The undersigned further certifies that he/she is legally authorized by the bidder or responder to make the statements and representations in Exhibit A and that said statements and representations are true and correct to the best of his/her knowledge and belief. The undersigned will enter into formal agreement(s) with the LS/M/WBE(s) listed in this Exhibit A, which are deemed by the Owner to be legitimate and responsible LS/M/WBE(s). Said agreement(s) shall be for the work and contract with the County. The undersigned understands and agrees that if any of the statements and representations are made by the Bidder knowing them to be false, or if there is a failure of the successful Bidder (i.e., Contractor) to implement any of the stated agreements, intentions, objectives, goals and commitments set forth herein without prior approval of the County, then in any such events the contractor's act or failure to act, as the case may be, shall constitute a material breach of contract, entitling the County to terminate the Contract for default. The right to so terminate shall be in addition to, and not in lieu of, any other rights and remedies the County may have for other defaults under the Contract. Additionally, the Contractor will be subject to the loss of any future contract awards by the County for a period of one year.

Signature _____ Brett K. Hawley Title Executive Vice President

Date August 9, 2006 Telephone Number 770.953.2659

Firm or Corporate Name J.M. Wilkerson Construction Co., Inc.

Address 1734 Sands Place, Marietta, GA 30067

List of Certified Vendors

Office of Contract Compliance
Certified Vendor Report

EXHIBIT B

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
2 M Management Group d/b/a Sandy Springs LawnScapes	1146 Davis Road SE Smyrna GA 30080	Mark Peaks 404 255-7000	Landscaping Company.	☑	☐	☐
3R Ribbon Reload & Recycle, LLC	229 Margaret Street Atlanta GA 30315	Serge Vilmar 404 888-7277	Remanufactures printer cartridges.	☑	☐	☐
A & S Paving, Inc.	2747 S. Stone Mountain-Lithonia R Lithonia GA 30058	Beverly Allen 770 482-1597	Asphalt paving, storm drain, water and sewer.	☐	☐	☑
A Blessed Cleaning Service, Inc.	349 Heathrow Drive Riverdale GA 30274	Sarah Ginyard 678 575-4637	Commerical & residential cleaning, moveout/construction clean-up.	☑	☐	☐
A Unique Cleaning Service	3830 Conley Downs Drive Decatur GA 30034	Dwanda V. Clark 678 613-5329	Cleaning service for residential, commercial and construction.	☑	☐	☑
A. Platt Company	4248 Indian Manor Drive Stone Mountain GA 30083	Anita Payne 404 292-7167	Right of way Acquisition Services.	☐	☑	☐
Accou-Wall interiors, Inc.	4840 Old National Highway College Park GA 30337	Anthony C. Tolbert 404 559-1770	Acoustical ceilings walls and doors, cleansing installation, restoration and maintenance.	☑	☐	☐

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
Accura Engineering & Consulting Services, Inc.	3342 International Park Drive Atlanta GA 30316	Subash R. Kuchikulla 404 241-8722	Geotechnical Engineering, Construction, Inspection,Testing and Quality Assurance.	☑	☐	☑
Aiken Global Group, LLC	1514 East Cleveland Avenue Suite 107 East Point GA 30344	Anthony C. Aiken 404 684-7172	Full service consulting firm federal, municipal and state agencies and organizations.	☑	☐	☐
AirTab, Inc.	3300 Marjan Dr. A-1 Atlanta GA 30340	Tina Hairston 770 454-5664	HVAC, Building Commissioning, Air Balancing, Sustainable Design, and Energy Management.	☑	☐	☑
Allain & Associates, Inc. Architects	100 Peachtree Street, NW Suite 1930 Atlanta GA 30303	Emanuel Pessima 404 688-0157	Consultants	☑	☐	☐
Allan Vigil Ford	6667 Tara Boulevard P.O. Box 547 Jonesboro GA 30237	M. Allan Virgil 770 741-7801	New & used vehicle sales, vehicle parts and service, and auto body repair.	☑	☐	☐
Allets Cleaning Service, Inc.	5573 George Rd Lithonia GA 30058	Stella Walton 770 879-6953	Janitorial Cleaning Service, specializing in tile and hardwood floor care.	☑	☑	☑
Allison Distributors	4507-J Mills Place Atlanta GA 30336	George W. Allison 404 472-1650	Small wholesale business alkaline, lantern and military batteries, Fluorescent lighting, portable generators.	☑	☐	☐
Alpha & Omega Flooring, Inc.	689 Main Street Suite E Stone Mountain GA 30083	Venita Waller 770 498-7855	Flooring installation & sales.	☑	☑	☑

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
Alternative Staffing, Inc.	3575 Koger Boulevard Suite 233 Duluth GA 30096-4958	Becky L. Martin 770 491-3397	Temporary personnel service.	☐	☐	☑
American Transmissions, Inc.	5965 Memorial Drive Stone Mountain GA 30083	Everett Holmes 404 297-8836	Automotive Transmissions: Equipment Maintenance, Trucks, Trailers, Transit Buses & Other Vehicles.	☑	☑	☐
Analytical Environmental Services, Inc.	3785 Presidential Parkway Atlanta GA 30340	Andria Yildirim 770 457-8177	Environmental Laboratory Services.	☐	☐	☑
ARS Mechanical	PO Box 82288 Conyers GA 30013	Sadat Nichols 770 760-1533	Air conditioning heating and ventilating equipment, parts & accessories, refrigeration equipment and accessories; building maintenance, construction services, equipment maintenance.	☑	☐	☐
Artis Group (The)	459 Allana Court Stone Mountain GA 30087	Sherman Artis 770 498-7727	Heavy & Marine Construction Company	☑	☑	☐
Asterix Consulting, Inc.	2251 Spencers Way Stone Mountain GA 30087	Meenu Sharma 770 270-1757	Information technology consulting service, including system integration, software development.	☑	☑	☑
Atlanta Management & Engineering Consultants	2081 Lullwater Place Lawrenceville GA 30034	Rajni Parikh 770 995-9109	Management and engineering consultants.	☑	☐	☐
B & E Jackson and Associates, Inc.	229 Peachtree Street, N.E. International Tower, Suite 300 Atlanta GA 30303	Birdel F. Jackson III 404 577-4914	Civil Engineering, Architecture, Site Development and Construction Management.	☑	☐	☐

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
B&G Environmental, Inc.	4956 Carol Lane Atlanta GA 30327	Leslie Blythe 404 256-3885	Environmental engineering and water resources consulting services.	☐	☐	☑
B.E. Guthrie Construction Co., Inc.	2490 Columbia Drive Decatur GA 30034	Bryon E. Guthrie 404 286-2277	Residential and Commercial Construction and Building.	☑	☐	☐
B2B Enterprise Applications, Inc.	200 North Point Center East Suite 200 Alpharetta GA 30022	John L. Maddox 678 597-3202	Applications, Integrations, Computer Systems Design and Related Services. ERP/ CRM/ EAI . DOT Certified Vendor Expires 2.11.07	☐	☐	☐
BAT Associates, Inc.	5151 Brook Hollow Parkway Suite 250 Norcross GA 30071	Jack R. Kuo 770 242-3908	Consultants Hazardous Waste Management & Related Services.	☑	☐	☐
Batteries Plus #124	2788 Lawrenceville Hwy. Decatur GA 30033	Jane Watts 770 414-6979	Supplies batteries for automobiles, cameras, flashlights, motorcycles, test equipment and emergency power.	☐	☐	☑
Bay Electric Company, Inc.	3435 Martin Farm Road Suwanee GA 30024	John F. Biagas 678 546-2642	Electrical and general construction contractor.	☑	☐	☐
BECAF Consulting	3485 North Desert Drive Building 2, Suite 209 Atlanta GA 30316	Benedict C. Egbuna 404 768-5454	Professional Engineering Consulting.	☑	☐	☐
BEP Industrial Lubricants	4088 Wintersweet Dr. Decatur GA 30034	Thomas L. Flowers 770 808-0919	Distributor of lubricating oils, greases, cutting fluids and hydraulic fluids.	☑	☐	☐

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
Bibsco Mortgage Arbitration	5796 Spring Mill Circle Lithonia GA 30038	Lisa Bibbs 770 808-6573	Arbitration/Loss Mitigation.	☑	☐	☑
Big Apple Tire, Inc.	749 Utica Avenue Brooklyn NY 11203	Matthew Brown 718 341-0203	Automotive repair, tires and vehicle maintenace.	☑	☐	☐
Brindley Pieters & Associates, Inc.	Suite 1430 225 Peachtree Street, NE Atlanta GA 30303	Brindley Pieters 404 224-9260	Engineering Services, Public Works and Related Services.	☑	☐	☐
Brown Design Group, Inc.	3099 Washington Road East Pooint GA 30344	Tarlee W. Brown 404 599-1805	Architecture and Engineeering.	☑	☐	☐
Budget Computer Repair, Inc.	2050 Pintail Cove Lithonia GA 30058	Alvin Enoch 404 316-3202	Computer Sales And Maintenance.	☑	☑	☐
CAD Specialist, Inc.	443 East Pharr Road Decatur GA 30030	Mary Alexander 404 377-6886	Computer aided drafting service.	☑	☑	☑
Caffrey Construction	3403 Old Due West Road Marietta GA 30064	Stella J. Caffrey 770 943-9959	Land clearing.	☐	☐	☑
Cameron and Associates	6100 Lake Forrest Drive Ste 550 Atlanta GA 30144	Carolyn Deal 404 843-3399	Counseling services; employee assistance programs, employee referral programs.	☑	☐	☐

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
Capital City Machine Shop, Inc.	P.O. Box 47938 Atlanta GA 30362	Charlotte M. Brown 770 447-9545	General machine shop: welding, machining, milling, Industrial euipment repair & manufactuing new Machinery to customer specifications.	☐	☐	☑
Cardozo Engineering, Inc.	2050 Marconi Drive Suite 300 Alpharetta GA 30005	Rosanne W. Cardozo 770 751-7077	Civil engineering firm specializing in municipal water/wastewater/stormwater projects, project management and construction management.	☐	☐	☑
CCR Environmental, Inc	3783 Presidential Parkway, Suite 12 Atlanta GA 30340	Charles Rabolli 404 458-7943	Environmental Consulting.	☐	☑	☐
Celebrity Fence Company	3736 George Washington Drive Ellenwood GA 30294	N. E. Mainer 770 507-8611	Specializing in commercial, industrial & highway fencing.	☑	☐	☐
CHL Communication, Inc.	2200 Norcross Parkway Suite 210 Norcross GA 30071	Victoria Chacon 770 277-4044	Newspaper publishing and advertising.	☑	☐	☑
Clifton Harrison, CPA, PC	1730 Mt. Vernon Rd-Suite G Dunwoody GA 30338	Clifton Harrison 770 804-1314	CPA, taxes, financial statements.	☐	☑	☐
Complete Imaging Products, Inc.	2570 Milford Lane Alpharetta GA 30004	Kathleen Quinlan 770 772-0820	Computer accessories and supplies; office machines, equipment and accessories; office supplies: carbon paper, ribbons, and general supplies.	☐	☐	☑
Comprehensive Computer Consulting	7000 Central Parkway, Suite #1000 Atlanta GA 30328	Charleen McBrayer 770 512-0100	Information Technology: Softwared development and systems analysis. provides professional staff for contracts, temporary or permanent work.	☐	☐	☑

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
Computer Intelligience 2, Inc.	1642 Power Ferry Road Atlanta GA 30067	Andrella Bayliss 770 425-2267	Computer and technology support and consultations.	☑	☐	☑
Concept 2000 Technology, Inc.	3130 Northchester Place Lithonia GA 30038	Dan D. DeBardelaben 770 808-5832	Specializes in technology solutions, hvac installation and maintenance, automated building systems, electrical systems, telecommunications, access control systems & technology consulting	☑	☑	☐
Concept III Communications, Inc.	1241-D Moreland Ave, SE Atlanta GA 30316-3183	Marion L. Jenkins 404 624-1940	Wireless push to talk radio cellular phones, inmate pay phone systems.	☑	☐	☐
Construction Control Services of Georgia, LLC	3491 Buckhead Loop Atlanta GA 30326	Rebekah J. Rohadfox 770 645-5880	Construction management services cost estimating, scheduling, value engineering, constructability/design review, quality assurance and quality control.	☑	☐	☑
Corporate Environmental Risk Management, Inc.(CERM)	2115 Monroe Drive Suite 110 Atlanta GA 30324	Albert G. Edwards 770 934-9290	Environmental engineering, construction, and management services.	☑	☐	☐
Corporate Temps	3145 Tucker-Norcross Road #206 Tucker GA 30084	Shannon Menefee 770 934-1710	Professional staffing and consultation firm.	☑	☐	☐
Costing Services Group, Inc.	1447 Peachtree Street, NE Suite 209 Atlanta GA 30309	Anita S. Greiner 404 815-9555	Prepares construction cost estimates, performs value engineering and facility evaluations.	☐	☐	☑
Courseault Commercial, Inc.	2381 John Glenn Drive Atlanta GA 30341	Le Roy Courseault 678 209-5900	General construction, site development, land surveying, real estate environmental services, and project management.	☑	☑	☐

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
Curtis Office Products, Inc.	1813 Candler Road Decatur GA 30032	Darlene Curtis 404 284-5446	Wholesale and retail sales of office products, furniture and services.	☑	☑	☑
D. Clark Harris, Inc.	225 Banks Road Fayetteville GA 30214	Dorothy C. Harris 404 218-3453	Program/project construction management consulting services for faciliy, transportation & water/wastewater design & construction. Specialized exoertise in contract administation.	☐	☐	☑
Davis & Associates, Inc	235 Peachtree Street NE Suite 400 Atlanta GA 30303	Gary Davis 404 287-2375	Construction management & general contracting.	☑	☐	☐
Decatur Capital Management Inc.	250 E. Poncd De Leon Avenue Suite 325 Decatur GA 30030	Ralph Bryant 404 289-7220	Investment &financial advisors, accountants, auditors, real estate consultants, securiti es and bonding services, tax & property mgmt services	☑	☑	☐
Dekalb Physical Therapy Associates, Inc.	1462 Montreal Road Suite 118 Tucker GA 30084	Robert L. McNeil President 770 491-1353	Physical therapy and rehabilitation services.	☑	☐	☐
Delon Hampton & Associates, Chartered	299 Peachtree Street NE International Tower, Suite 151 Atlanta GA 30303	Elijah B. Roger 404 524-8030	Consulting engineering firm specializing in program and construction management, civil and structural engineering, design services for building structures.	☑	☐	☐
DesmearSystems, Inc.	2130 Lavista Executive Park Drive Tucker GA 30084	Omotayo Idowu 770 908-2711	Engineering and construction.	☑	☐	☐
Diversified Environment Management	3339 W. Hospital Avenue Chamblee GA 30341	Mustafa Adem 770 622-2193	Environmental, consulting, demolition asbestos lead testing and abatement.	☑	☐	☐

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
DKS Program Management	659 Auburn Avenue Suite 213 Atlanta GA 30312	David K. Scott 404 524-2000	Comprehensive program management services for construction design projects.	☑	☐	☐
Dobbs, Ram & Company	1349 West Peachtree St. NE Suite 1550 Atlanta GA 30309	George W. Prothro 404 897-1033	Information systems management, consulting, arbitrage, and public financial services.	☑	☐	☐
DW & Associates	728 Joseph E Lowery Blvd SW Atlanta GA 30310	Theodore R. Williams 404 752-6464	Transportation and operations planning, organizational and management analysis.	☑	☐	☐
E-aone Mechanical Contractors, Inc.	2365 Benjamin E. Mays Drive SW Atlanta GA 30311	Whitfield Gray, Jr 770 420- 5242	Heating, ventilation, air conditoning, installation, commerical and residental.	☑	☐	☐
Ebony Glass & Mirror Company, Inc.	4251 East Side Drive Decatur GA 30034	Arthur Queen 404 288-9521	Glass and glazing, general construction, and construction management.	☑	☑	☐
Edwards Consulting Firm	2871-D North Decatur Rd Suite 171 Decatur GA 30033	Damali Edwards 404 288-8824	Human resources and executive search.	☐	☑	☐
Edwards Painting and Contracting	1106 Turnberry Place Lithonia GA 30038	Eddie Cumming 404 667-0879	Commercial and industrial painting. Interior and exterior.	☐	☑	☐
Elliot's Seating & Manufactoring, Inc.	2052 Moreland Avenue, S. E. Atlanta GA 30316	Mary Elliott-Myers 404 622-0455	Upholstery maintance and repair, headliners, pouches, rubber mats and carpet for vehicles.	☐	☐	☑

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
Energy Ace, Inc.	257 Mount Vernon Drive Decatur GA 30030	Wayne Robertson 404 277-1590	Energy consulting, energy cost reduction.	☐	☑	☐
Engineered Process Equipment, Inc.	P.O. Box 52345 Atlanta GA 30355	Thomas E. Stallworth 404 799-1053	Plumbing HVAC Equipment & Supplies.	☑	☐	☐
Engineering Design Technologies, Inc.	315 West Ponce de Leon Avenue Suite 235 Decatur GA 30030	Haywood Curry 404 403-3009	Mechanical, electrical, plumbing, structural, and civil engineering design and consulting.	☑	☐	☐
Envirohazard Consultants, Inc.	1093 To Lani Farm Road Stone Mountain GA 30083	Avis E. Williams 404 379-5561	Environmental, health, safety, and regulatory compliance consulting and inspection.	☑	☑	☑
Essex GeoScience	580 Johns Landings Way Lawrenceville GA 30045	Gabe Okoye 770 236-0710	Civil engineers, environmental consultants and construction managers.	☑	☐	☐
E-Talent Staffing, LLC	PO Box 870261 Stone Mountain GA 30087	James G. Craig 678 476- 9585	Executive search consulting services and temporary help services.	☑	☐	☐
Exalt Integrated & Technologies, LLC.	235 Peachtree Street North Tower Suite 400 Atlanta GA 30303	Dwayne Hayes 678 591-3199	Consulting and operational support service and inovative technological solutions and services.	☑	☐	☐
Express Personnel Services	4360 Chamblee Dunwoody Road Suite 113 Atlanta GA 30341	Vilas Patel 770 458-6644	Full service personnel staffing agency. Temporary and permanent staffing services.	☐	☑	☐

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
F.M. Shelton, Inc.	972 Donnelly Avenue Suite #2 Atlanta GA 30310	Fawn Shelton 404 755-9448	Mechanical and industrial supplies, gunite materials, electrical and water and sewer materials.	☑	☐	☑
Four Seasons Trucking, Inc.	3103 Wesley Bend Decatur GA 30034	Natalie Atkinson 770 482-7765	Hauling and Trucking.	☑	☐	☑
Fox Environmental	262 Forkner Drive Decatur GA 30030	Catherine Fox 404 441-7568	Environmental consulting.	☐	☑	☑
Frankie Thompson Enterprises, Inc.	3387 Bankhead Highway Lithia Springs GA 30122	Frankie Thompson 770 948-8337	Industrial supplies pipes, valves, generator motor pumps, hvac system and lighting systems.	☑	☐	☐
Fuentes Enterprise, Inc. d/b/a Interprint, Inc.	2620 Park Central Blvd. Decatur GA 30035	Monica Maldonado 770 987-7400	Printing	☑	☐	☐
Full Circle Communications, LLC	1661 Jackson Square Atlanta GA 30318	Heather Fatzinger 404 210-0253	Community & public relations, marketing, and grant writing services.	☑	☐	☑
G&D Enterprises	493 Arbor Ridge Drive Stone Mountain GA 30087	Gladys Kent Davis 770 498-6501	Janitorial and cleaning services. Residential and commerical painting.	☑	☑	☑
GC & E Systems Group d/b/a Georgia Network Cabling Corporation	5835 Peachtree Corners East Suite A Norcorss GA 30092	Diana O'Sullivan 770 448-3908	Commerical & industrial low voltage and electrical contractor.	☐	☐	☑

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GC Electrical Solutions, LLC	120 Cecil Court Fayetteville GA 30214	Eugene Carlton 770 417-3069	Electrical supply store.	☑	☐	☐
Genesis Ktisis, Inc.	6075 Chupp Way Lane Lithonia GA 30038	Tracey J. Johnson 770 987-0908	Advertising and promotional products graphic design. Logo identified merchandice.	☑	☑	☑
Genesis Testing Services, Inc.	1070 Iris Drive Suite C Conyers GA 30094	Ogbonna Jeff Akandu 678 413-9399	Engineering consulting, construction quality assurance and management geotechnical soil laboratory.	☑	☐	☐
Georgia Rehabilitation Associates, Inc.	5462 Memorial Drive, Suite 203 Stone Mountain GA 30083	Robert McNeil 770 491-1353	Rehabilitation services	☑	☐	☐
Georgia-Atlantic Contractors, Inc.	4193 Rufus Place Doraville GA 30340	Kim Bailey 770 409-0040	Building construction new building maintenance, installation & repair services, general, heavy and trade.	☐	☐	☑
Gerald Construction Company, Inc.	3189 Oxbridge Way Lithonia GA 30038	Gerald Swing 770 593-6689	Construction, concrete paving and demolition.	☑	☑	☐
Gilchrist Consulting, LLC	4370 Wesley Way Lithonia GA 30034	Ernest Gilchrist 404 561-2646	Supports business care workforce development planning, analysis & feasibility studies.	☐	☑	☐
Global Access Staffing and Recruiting, L.L.C.	3543 Cherry Ridge Drive Decatur GA 30034	Carla Doleman 404 244-4606	Technical staffing and recruiting of personnel.	☑	☑	☑

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GlobalTech Financial, LLC	2839 Paces Ferry Road Suite 810 Atlanta GA 30339	Carolyn H. Byrd 678 816-2200	General management and processes.	☑	☐	☑
GNG Electrical Construction, LLC	349 Peachtree Hills Avenue-B5 Atlanta GA 30303	JaQuetta Garrison 770 593-4060	Electrical construction.	☐	☑	☐
Great Maintenace Enterprises, Inc.	1561 Virginia Avenue Suite 101-A College Park GA 30337	Ernesto Valdes 404 559-7627	Janitorial service.	☑	☐	☐
GSE Facility Services, LLC	260 Peachtree Street Suite 2200 Atlanta GA 30303	Julius Bolton 404 527-6226	Facilities operations maintenance.	☑	☐	☐
HA Office 515, Inc.	1582 Stoneleigh Hill Rd. Lithonia GA 30058	Anna Henderson 770 879-8420	Office furniture and furniture design for healthcare, laboratories, schools and equipment.	☑	☐	☑
Hayes Security Services	4632 Jackybell Trail Decatur GA 30034	Donald R. Hayes 770-981-0045	Security Guards and Protection Services	☑	☐	☐
HFJ Concrete Construction	PO Box 1164 Stone Mountain GA 30086	Hiram Hall 404 925-0414	Pouring and finishing concrete, fine grading and demolition commercial and residential.	☑	☐	☐
Horn of Plenty Hospitality, LLC	1599-A Memorial Drive Suite 127-A Atlanta GA 30317	Kevin R. McGee 404 329-4576	Provides contract food services, catering services & food service management.	☐	☑	☐

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HR Management Solutions, Inc.	3475 Lenox Road, Suite 660 Atlanta GA 30326	Gwendolyn S. Thomas 404 442-7299	Human resources management outsourcing.	☑	☐	☑
Imagann Cleaning Service, Inc.	2640 Lithonia Industrial Blvd Lithonia GA 30058	Martha Ann Wilson 770 484-8141	Janitorial Services.	☑	☑	☐
Impact Solutions Consulting, Inc.	1701 Barrett Lakes Blvd., Suite 200 Kennesaw GA 30144	Russel Forde 770 795-9525	Consulting for business intelligence, data warehousing, reporting, data moving.	☑	☐	☐
Indigo Arts, Inc.	2331 Fourth Street Suite 104 Tucker GA 30084	Teresa A. Walker 770 939-0195	Graphic design and printing.	☐	☑	☐
Integrated Office Solutions, Inc.	367 Macedonia Rd Atlanta GA 30354	Alphonzo Henderson 404 366-4110	Information technology services, integration, hardware and software sales, web development and data protection.	☑	☐	☐
Integrity Insurance Agency, Inc.	286 SW Hwy. 138 Suite E Riverdale GA 30274	Harry Riley 678 604-0018	Insurance products.	☑	☐	☐
Interprint, Inc.	2620 Park Central Blvd. Decatur GA 30035	Monica Maldonado 770 987-7400	Color Printing.	☑	☐	☑
Intouch Telecommunications, Inc.	1401 Peachtreet Street Suite 236 Atlanta GA 30309	Ron Baker 404 872-4422	Communictions technology, telecommunications, network cabling infrastructure, cctv, video surveilance.	☑	☐	☐

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J.W. Robinson & Associates, Inc.	1020 Ralph David Abernathy Boulev Atlanta GA 30310	Joseph W. Robinson, Sr. 404 753-4129	Construction design/build.	☑	☐	☐
Jackson Cleaning Services, Inc	4392 Cedar Ridge Trail Stone Mountain GA 30083-5615	Joe J. Gonyor 770 593-8668	Commerical cleaning of small and medium size office buildings.	☑	☐	☐
JAT Consulting Services, Inc.	1301 Shiloh Road, NW Suite 1430 Kennesaw GA 30144	Jo Ann Tuttle 770 975-7359	Financial & management consulting services to A/E & construction industries & governmental agencies.	☐	☐	☑
JATECH and Associates, Inc.	5026 Snapfinger Woods Drive Suite 103 Decatur GA 30035	Jimson Akinpelu 404 892-1911	General construction and environmental services.	☑	☑	☐
JLM Risk Management Group	260 Peachtree Street Suite 501 Atlanta Ga 30303	Joseph L. Moore 404 874-2929	Insurance broker.	☑	☐	☐
Johnson Concrete Company, Inc.	6830 Main Street Lithonia GA 30058	George Johnson 770 484-5141	Dealing in distributing, installing & maintaining of cement, concrete roadways and pavements.	☑	☑	☐
Jones Worley Design, Inc.	723 Piedmont Avenue, NE Atlanta GA 30308	Cynthia Jones Parks 404 876-9224	Environmental graphics, signage design and marketing communications.	☐	☐	☑
Juneau Construction Company, LLC	3715 Northside Parkway, NW Bldg 300, Suite 750 Atlanta GA 30327	Nancy C. Juneau 404 287-6000	Commercial general contractor, construction management, design/build.	☐	☐	☑

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Kemi Construction Company, Inc.	2920 Campbellton Road Atlanta GA 30311	Rufus Oladapo 404 349-8228	Heavy construction services.	☑	☐	☐
Kendall Supply, Inc.	1775 Spectrum Drive Suite 200 Lawrenceville GA 30043	Carole E. Kendall 678 377-3206	Wholesale distributor of water and sewer supplies.	☐	☐	☑
Kera Enterprises, Inc.	50 Upper Alabama Rd., Suite 160 Atlanta GA 30303	Adena Smith 404 221-1965	Wholesale manufacturer of plant & work zone safety products.	☑	☐	☑
Khafra Engineering Consultants, Inc.	230 Peachtree Street Suite 200 Atlanta GA 30303	Valentino T. Bates 404 525-2120	Full service architecture- engineering firm.	☑	☐	☐
Kun-Young Chiu & Associates, Inc.	3757 Chamblee-Dunwoody Road Atlanta GA 30341	Jeffrey S. Chiu 770 451-6776	Engineering structural, civil, transportation, construction management. LSBE expires 2.10.08	☑	☑	☐
LCW Engineering, Inc.	1950 Greensbrooke Close Stone Mountain GA 30088	Loretta C. Washington 678 860-3018	Professional engineering & design services public works infrastructure.	☑	☑	☑
Lewallen Construction Company, Inc.	151 Bells Ferry Lane Marietta GA 30066	Peggy Lewallen 770 426-6667	Concrete construction, sidewalk, bicylce path, and streetscape projects.	☐	☐	☑
Lewis Trucking & Grading, Inc.	7786 Old Covington Highway Lithonia GA 30058	Charlie B. Lewis, Jr. 770 482-4001	Grading, underground utility, demolition, contract hauling, site developmen.t	☑	☐	☐

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Logic 1 Consultants, Inc.	5375 Koweta Road College Park GA 30349	Stevie Thomas 770 969-6306	Rental or lease services of equipment office, photographic, printing, radio/television/telephone equipment.	☑	☐	☐
Logical Integrations, Inc.	1805 Old Alabama Road Suite 300 Roswell GA 30076	Clifton I. Carroll 770 641-5660	Computer solutions & training, oracle, Siebel & Web-based Forms Services, Multi-lingual Initiatives.	☑	☐	☐
Long Engineering, Inc.	2550 Heritage Court #100 Atlanta GA 30339	J. Ellen Long 770 951-2495	Land development, storm water management, utility systems, traffic and transportation,land surveying and NPDES compliance.	☐	☐	☑
Malvada Consulting Group	4165 Chapel Mill Way Decatur GA 30034	Miriam P. Cummings 770 981-1838	Marketing & communications, public/community outreach programs.	☑	☑	☑
Maristaff, Incorporated	560 West Crossville Road Sutie 201 Roswell GA 30075	Marcia Ringel 678 739-0009	Temporary help service.	☐	☐	☑
Market & Main, Inc.	1124 DeKalb Avenue Suite 22 Atlanta GA 30307	Lakey Broderius 404 310-1399	Community development and planning firm specializing in neighborhood involvement and interactive design.	☐	☐	☑
Masscom Install Tech	1044 Lonshore Cove Decatur GA 30032	Sirena Samuels 770 374-4693	Install commerical furniture, private office, cubicles, regeneration, relocation, and complete office enviroments.	☑	☑	☑
Matrix 3D, LLC	5780 Old National Highway Suite C College Park GA 30349	Wilford Ray 678 665-3489	Archectural and engineering services, project and construction management services.	☑	☐	☐

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MBR Office Solutions, Inc.	5172 Brookhollow Pkwy Suite G Norcross GA 30071	Beverly A. Bondarew 678 730-0111	Office supplies and furnitures.	☐	☐	☑
MC Precast, Inc.	145 Governor's Square Suite E Fayetteville GA 30215	Mahlon C. Rhaney, Jr. 770 632-6300	Construction of retaining walls, sound-barrier walls, cast-in-place concrete, sewer junction boxes & erection of precast concrete.	☑	☐	☐
McCall Enterprises, Inc.	7246 Wheeler Court Lithonia GA 30058	Terrell McCall 770 484-6402	Licenced electrical contractor,construction services, equipment maintenance, reconditioning, repair, and related services.	☐	☑	☐
McGee Partners, Inc.	1990 Lakeside Parkway Suite 240 Tucker GA 30084	Tommy Crochet 770 938 6400	Civil engineering and consulting, specializes in transportation.	☐	☑	☐
McKenzie MacGregor, Inc.	3455 Lawrenceville-Suwanee Road Suite A Suwanee GA 30024-6425	Linda MacGregor 678 546-9450	Environmental engineering.	☐	☐	☑
MDC Consulting	2818 Da Vinci Blvd. Decatur GA 30034	Monica Clausell 404 284-6303	Information technology and marketing services.	☑	☑	☑
MedPro Personnel, Inc.	1935 Cliff Valley Way Suite 225 Atlanta GA 30329	Marilyn Feingold 404 633-8280	Medical & professional staffing services.	☐	☐	☑
Meeting Consultants, Inc.	5591 Chamblee Dunwoody Road Bldg. 1350 – Suite 100 Atlanta GA 30038	Carol Cote 770 399-3199	Providers of conference & housing registration and managers of conference logistics.	☐	☐	☑

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Metals & Materials Engineers	1039 Industrial Court Suwanee GA 30024	Barry A. Bennett 678 730-2000	Consulting services, engineering services, sampling and sample services and testing calibration services.	☑	☐	☐
Metro Petroleum, Inc.	1465 Northside Drive, NW Building 100, Suite 112 Atlanta GA 30318	Richard Hardon 404 351-9102	Wholesale distributor of refined petroleum products- gasoline, diesel fuels, greases, oils and lubricants.	☑	☐	☐
Metro Records Management, Inc.	17 Executive Park Drive Atlanta GA 30329	Rachael Humphrey 404 321-1010	Consulting & training services.	☑	☐	☑
Micron Holdings	3433 Lionsgate Court Lithonia GA 30038	Michelle Emmanuel-Harrington 770 484-1677	Holding company for real estate, european furniture exporters, sales of art and artifacts.	☑	☐	☑
MKC Enterprises, Inc.	5856 New Peachtree Road Doraville GA 30340	Mary McConnell 770 457-1431	Hazardous waste management.	☐	☐	☑
Moonshower's Inc	99 Pheasant Drive Marietta GA 30067	Shelia T. Moonshower 770 850-1911	Right of way & easement acquisition, relocation, title research, appraisal, project management.	☐	☐	☑
Mulkey Engineers & Consultants	1255 Canton Street Suite G Roswell GA 30075	Barbara Mulkey 919 836-4800	Engineering consultant.	☐	☐	☑
Neil Engineering, Inc.	2828 Heather Row Ridge Lilburn GA 30047	Shweta S. Ghodadro 770 736-3190	Architect-engineering, water-resources, waste-water, storm water management, highway & aviation project management & construction management & facility managemen.t	☑	☐	☑

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Nevis Securities, LLC	1180 W. Peachtree Street Atlanta GA 30309	Julius Hollis 678 298-2006	Investment banking & bond underwriting, financial services and financial consulting.	☑	☐	☐
Nextant Communications, LLC	1223 Greenridge Lane Lithonia GA 30058	Edward N. Francois 678 476-0251	Mmanaged network services, staff supporting telecome, data network engineering, and operations.	☑	☑	☐
Noble & Associates Consulting, Inc.	4355 J Cobb Parkway, #217 Atlanta GA 30339	Sandra Noble 404 374-3384	Analytical consulting services, specializing in oracles & sap software implemetations.	☑	☐	☑
NXL Construction Services, Inc.	8601 Dunwoody Place, Suite 300 Atlanta GA 30350	Nicomedes De Leon 478 207-1450	Construction engineering and management.	☑	☐	☐
Oasis Construction Company	5026 Snapfinger Woods Drive #103 Decatur GA 30035	Claudia L. Zibanejadrad 770 642-2838	Construction quality assurance, landfill specialist, and construction management.	☐	☐	☑
Omni Enterprises, Inc.	4231 Turnberry Trail Roswell GA 30075	Vernell Enterprises 678 360-7697	Distributor optimal source for competitively priced specialty "Niche" Products.	☑	☐	☐
One Stop Design	4525 Glenwood Rd., Ste. G8 Decatur GA 30032	Monique Wheat 404 288-7794	Printing, graphic design and layouts.	☑	☐	☑
P. M. Marketing, Inc.	207 Village Place Marietta GA 30067	Poppy Marable 770 226-9396	Advertiving brand Loyalty Solutions, Concept Development, Graphic Design, Logos. Product Display, Exhibit, Museum Design, Illustration and Brochures.	☑	☐	☑

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Panola Enterprises, Inc.	2918 Pacific Drive Norcross Ga 30091	Abraham Mack, Jr. 770 441-8202	Mechanical contracting installation plumbing, heating and air conditioning.	☑	☐	☐
Paramount Security, Inc.	1720 Peachtree Street, NW Suite 428 Atlanta GA 30309	Reginald A. Burney 404 888-9410	Armed/Unarmed Security Guard Service, Pre-employment Screening and Digital Surveillance.	☑	☐	☐
Partitions, Inc.	911 Montreal Road Clarkston GA 30021	Diane C. Davis 404 299-0112	Commercial Contractors: Office Interiors , Demolition & Rebuilding, Partitioning, Painting & Wall Coverings, electrical Contracting & Millworking.	☐	☐	☑
Pat Mathis Construction	P.O. Box 1765 Savannah GA 31402	Patricia Mathis 912 236-0099	General Construction & Concrete Masonry.	☐	☐	☑
Peachtree Spring Water	P.O. Box 1541 Mableton GA 30126	Wesley S. Johnson 770 437-9170	Bottled Water & Water Coolers	☑	☐	☐
Peachtree Telecommunications International, LLC	5835-B Peachtree Corners East Norcross GA 30092	S. Kay Stewart 770 643-9141	Distributor of Telecommunications Products	☐	☐	☑
PerryTech, LLC	1588 Linksview Close Stone Mountain GA 30088	Lawrence Perry 770 981-7947	Heating, Refrigeration and Air Conditioning Service.	☑	☑	☐
Phoenix Solutions, Inc.	2309 Highway 81 South Suite B Loganvill GA 30052	Richard Scruggs 770 466-0466	Surveying, Mapping and Subsurface Utility Engineering.	☑	☐	☐

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Pinnell Brown Construction, Inc.	285 Centennial Olympic Park Dr. #7 Atlanta GA 30313	Leroy McGairty 404 593-3582	Construction services general and heavy, road and highway equipment and construction.	☑	☐	☐
Planners for Environmental Quality, Inc.	6067 Roosevelt Highway Union City GA 30291	Ms. Inga D. Kennedy 770 306-0100	Urban planning consulting comprehensive land use, transportation & environmental planning, nose abatement studies, public involvement.	☑	☐	☐
Positive Promotions LTD	2860 Washington Street Avondale Estates GA 30002	Joetta Shropshire Howard 404 296-7880	Television and video production. Full service technical production support.	☑	☑	☑
Precision Vision	862 ML King Jr. Drive, NW Atlanta GA 30314	Thomas Blair, Jr. 404 523-8012	Optical services, supplies & finishing lab.	☑	☐	☐
Premier Electric Supply, Inc.	1024 White Street Atlanta GA 30310	Samuel Obie 404 753-8900	Retail and Wholesale Supply of Electrical Cables and Wires/Electrical Equipment.	☑	☐	☐
Professional Electrical Service	369 Young James Circle Stockbridge GA 30281	David C. Bussey 404 217-2742	Electrical Contracting.	☑	☐	☐
Professsional Technology Integration	3485 Highcroft Circle Norcross GA 30092	Walter Lee Jones 678 640-9873	IT Consulting, software/database applications development; Internet and intranet environments.	☑	☐	☐
Prot'ege' Alliance Security Services, Inc.	659 Auburn Ave NE Suite 241 Atlanta GA 30312	Valencia Hudson 404 584-8576	Security guard, security patrol, services & electronics, access installation, consulting services and educational seminars.	☑	☐	☑

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PubSafe Engineering Consultants, Inc.	1524 Monarch Drive Marietta GA 30062	David Tucker 770 578-1443	Planning, engineering, environmental & construction management services.	☑	☐	☐
Q Solutions, Inc.	6617 Gunstock Lane Tucker GA 30084	Thuy-Kieu T. Chang 770 939-6500	Civil and environmental engineering database management and analysis, water & sewer hydraulic systems modeling .	☑	☐	☑
R. Powell & Associates, Inc.	1312 Killian Way Lilburn GA 30047	Roosevelt Powell 770 806-0409	Engineering & business consultants.	☑	☐	☐
R2T, Inc.	340 Park Creek Drive Alpharetta GA 3005	Kimberly Ajy 770 569-7038	Environmental & civil engineering consulting.	☑	☐	☑
Ram Tool & Supply Company, Inc.	2439 Mountain Industrial Blvd. Atlanta GA 30084	Bill Niketas 770 270-1300	Builder Supplies, Tools, Hardware, Lumber, Materials, Machines.	☐	☐	☑
Randolph & Company, Inc.	4382 Campbellton Road, SW Atlanta GA 30331	Henry S. Randolph, Jr. 404 349-2952	Contracting Underground Utilities.	☑	☐	☐
Raymond Engineering-GA, LLC	867 Commerce Drive Suite 400 Conyers GA 30094	Raymond Ramos 770 483-9592	Engineering.	☑	☐	☐
Reasonable Waterproofing	2791 Stardust Court Decatur Ga 30034	Bobby Daniel 404 284-2540	Residental and commercial waterproofing.	☑	☐	☐

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Resurgens Risk Management, Inc.	1201 Peachtree Street N.E. 400 Colony Square, Suite 173 Atlanta GA 30361	Willie H. Burks 770 484-6789	Full service insurance & financial services.	☑	☐	☐
Richard & Wittschiebe Architects	15 Simpson Street Atlanta GA 30308	Carol Richard 404 688-2200	Architecture, master planning and interior design.	☐	☐	☑
Riley Contract Solutions, LLC	2289 Amber Way Decatur GA 30032	Lee Ann Riley 404 212-0670	Consulting services for government agency, small businees, procurement services, perparation bids, and proposals.	☑	☐	☑
Rolanka International, Inc	155 Andrew Drive-Suite 100 Stockbridge GA 30281	Calista R. Santha 770 506-8211	A Supplier of natural, biodegradabel erosion & sediment control, soil bioengineering, landscapes and gardening products.	☑	☐	☑
Rossini Architecture, Inc.	2035 Manchester Street Atlanta GA 30324	Maria M. Rossini 404 888-9926	Architectural Services.	☑	☐	☑
S & R Associates, Inc.	1774 W. Nancy Creek Drive Atlanta GA 30341	Debra Lazicki 770 454-6757	Project mangement consulting & training.	☐	☑	☐
S. L. King & Associates, Inc.	225 Peachtree Street, NE South Tower, Suite 1600 Atlanta GA 30303	Stanley L. King 404 524-5800	Professional services for electrical and mechanical engineering. Plumbing, HVAC and fire protection.	☑	☐	☐
S. L. King Technologies, Inc.	225 Peachtreet Street Suite 1600 Atlanta GA 30303	Zipporah R. King 404 832-4950	Business management consulting and technology.	☑	☐	☑

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Schofield Interior Contractors	1234 Bellaire Drive Atlanta GA 30319	Ruthanna Schofield 404 262-1173	Interior contruction.	☑	☐	☐
SD & C, Inc.	6152 Windsong Way Stone Mountain GA 30087	Tony Adibe 770 935-4581	General Construction, Demolition, Grading, Earthmoving, Concrete Paving, Curbs, Gutters, Piping & Transportation Services.	☑	☑	☐
Sherril Foundation International	1470 Cedar Ridge Way Stone Mountain GA 30083	William Sherril 770 323-8303	Concrete contractor, demolition, sidewalks, curbs, and gutters.	☑	☑	☐
Sids Sewer & Drain, Inc.	1771 Campbellton Road SE Atlanta GA 30331	Sidney Roberts 404 897-1133	Plumbing, backslow testing septic installs and repairs also excavation.	☑	☐	☐
Software Paradigms International	5 Concourse Parkway Suite 600 Atlanta GA 30328	Sophie Mookerji 678 921-7654	IT consulting firm.	☑	☐	☑
Soil & Environmental Testing Services, Inc.	3300 Marjan Dr. Atlanta GA 30340	Joseph Eto 770 986-0977	Civil Engineer and Construction Management testing.	☑	☐	☐
Souder and Associates	2142 Parkview Lane Marietta GA 30318	William C. Souder, Jr 404 798-6745	Insurance and Financial Services represents several major carriers.	☑	☐	☐
Southern Crescent Personnel	7179 Jonesboro Road Suite 101 Morrow GA 30260	Krystal Pate 770 968-4602	Staffing service, professionals for medical, dental, and administrative positions.	☑	☐	☐

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Stallworth Mechanical Contractors, Inc	3105 Bankhead Highway Atlanta GA 30318	Thomas Stallworth 404 799-1053	Mechanical Contractors, HVAC, Plumbing, Tanks, Commercial & Utility Services.	☑	☐	☐
Steele Program Managers, LLC	5295 Highway 78 Suite D294 Stone Mountain GA 30087	Jacqueline H. Steele 404 379-6779	Construction program management.	☑	☑	☑
Street Smarts, Inc.	3090 Premiere Parkway Suite 200 Duluth GA 30097-4904	Marsh Anderson Bomar 770 813-0688	Transportation consulting, traffic, engineering and professional services.	☐	☐	☑
Superb Connection, Inc.	5241 Golf Valley Way Stone Mountain GA 30088	Jeffery L. Fleming 770 241-8902	Cabling and Wiring.	☑	☐	☐
Superior Products Coatings, Inc.	4426 Hugh Howell Road, Suite B32 Tucker GA 30084	Gregory Allen 770 594-0083	Chemical Products, Adhesives, Paints & Roofing.	☐	☑	☐
Sycamore Consulting, Inc.	909 Church Street Decatur GA 30030	Elizabeth L. Sanford Stepp 404 377-9147	Consulting services for transportation, land use planning, public involvement & water resources.	☐	☑	☑
Synergy America, Inc.	6340 Sugarloaf Parkway, Suite 140 Duluth GA 30097	Harshila Krishnaswamy 770 923-9300	Consulting services, data processing, computer and software services.	☑	☐	☑
T. O. Starks & Assoc.	4579 Klondike Road Lithonia GA 30038	Timothy O. Starks 770 322-9919	General construction, landscape, hardscape stone, brick, block, paver & concrete.	☑	☑	☐

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TDC Systems Integration, Inc.	2875 Springhill Parkway Smyrna GA 30080	Antonio Dozier 770 805-9300	Computer Programming Services.	☑	☐	☐
Television Electronics Co. d/b/a Atlanta Communications Company	1510 Huber Street Atlanta GA 30318	Gwen Mitchell-Beard 404 875-9316	Radio communication, telephone, and telecommunication equipment, accessories, and supplies.	☑	☐	☑
Tharp Brown & Associates, Inc. d/b/a Collectronics	544 St. Dunstans Road Lithonia GA 30058	Stanley L. Brown 770 879-7707	Consulting and debt collections services.	☑	☑	☐
The Harwen Group	3300 Highlands Parkway-Suite 120 Smyrna GA 30082	Bernice B. Franklin 770 432-5620	Insurance Brokers and Agents; Employee Benefits; Financial Planning.	☑	☐	☑
The Lions Group, Inc.	3420 Norman Berry Drive Suite 200 Atlanta GA 30354	Mulugeta Zeleke, President 404 763-3355	General Contractors.	☑	☐	☐
The One-Ness, Group, Inc.	1501 Dillard Road Stone Mountain GA 30088	Z. D. Wooten 770 469-3807	Information technology consulting, sales & services.	☑	☐	☑
The Pardigm Corporation d/b/a Middleton-House & Company	3521 Country Estate Drive Kennesaw GA 30152	Ruth Middlet House 770 422-2151	Professional services, management consulting.	☐	☐	☑
The Polote Corporation	5300 Memorial Dr., Ste. 224C Decatur GA 30083	Benjamin R. Polote, Sr. 912 232-1188	Engineering Services.	☑	☐	☐

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
Thomas HV/AC Contracting, Inc.	1418 Lilburn Stone Mountain Road Stone Mountain GA 30087	Salvestine Thomas 770 879-7476	Heating & Air Conditioning.	☐	☑	☐
Thomas S. Kisgen	1630 Johnson Road NE Atlanta GA 30306	Thomas S. Kisgen 404 817-7688	Consulting Engineering-Mechanical Design HVAC System, Investigate Problems HVAC System.	☐	☑	☐
Thor Construction Company	Crowne Office Suites, Suite 400 235 Peachtree Street, NE Atlanta GA 30303	Richard A. Copeland 763 571-2580	Construction Company.	☑	☐	☐
Tople Construction and Engineering	792 Donald Lee Hollowell Pkwy. N Atlanta GA 30318	Lucky Ehigiamusoe 404 874 1090	General construction, commerical and residential renovations and sitework, grading, concrete work, street scapes, parking lots, storm & sanitary drainage.	☑	☐	☐
Triple H Pipeline	469 Tallwood Dr. Stone Mountain GA 30083	Mary B. Holcombe 404 292-6972	Community water & sewer distribution.	☐	☐	☑
Turner Associates - Architects & Planners, Inc.	215 Peachtree Street Suite 200 Atlanta GA 30303	Oscar L. Harris 404 681-3214	Architectural Planning & Design.	☑	☐	☐
United Solutions Enterprises Inc.	5990 Unity Drive Suite F Suite F Norcross GA 30071	Steve Miller 770 409-9883	Electrical light fixtures, motor & wiring, supplies, janitorial supplies.	☑	☐	☐
UpBuild Design, LLC	973 Gazin Place Stone Mountain GA 30083	Nadine E. Levy 678 467-5608	Architect design and project management.	☑	☑	☑

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
VanRan Communications, Inc.	3427 Oakcliff Rd., Ste. 114 Doraville GA 30340	Doranne B. Satterlee 770 452-9929	Installation, sales & service of Avaya, AT&T, Bellsouth and MCI telephone systems	☐	☐	☑
Vernell Barnes, Architect	3826 Loyala Court Decatur GA 30034	Vernell E. Barnes 770 987- 9872	Full service architectural firm, design/build.	☐	☑	☐
Vernon S. Thomas Consultant	376 Bridgebrook Lane Smyrna GA 30082	Vernon S. Thomas 770 431-9126	Management consultant & training.	☑	☐	☐
Victoria Chacon Cleaning Services, Inc	2200 Norcross Pakrway Suite 210 Norcross GA 30071	Victoria Chacon 770 277-4044	Construction Clean-up & Janitorial Services.	☑	☐	☑
Victoria Chacon Temporary Labor Services, Inc.	2200 Norcross Pkwy Suite 210 Norcross GA 30071	Victoria Chacon 770 277-4044	Temporary labor services for interior construction & trash removal projects.	☑	☐	☑
Vixio Technology, LLC	1001 Jimson Drive Conyers GA 30013	Edward Ukaonu 678 413-2223	Provide information technology soultions to include WEB based solutions, ERP implementation maintenance.	☑	☐	☐
WAM Industries, Inc.	902 Mill Pond Dr. Smyrna GA 30082	Mark A. Woods 770 841-7700	General contractor for Aeronautics and Commerical Construction.	☑	☐	☐
Washington Oil Environmental Group, LLC	330 Gullwing Court Alpharetta, GA 30003	Melissa Washington 770 442-0292	Used Oil Recovery, Collection & Recycling - Supplier of Fuel Oil.	☑	☐	☑

Name of Business	*Address*	*Contact*	*Type of Business*	*Certified* MBE	LSBE	WBE
WBE Corcas, Inc.	1020 Cambridge Square Suite C Alpharetta GA 30004	Dorcas E. Hermes 770 543-0036	Water and sewer rehabilitation material and product supplier/distributor.	☐	☐	☑
William-Russell & Johnson, Inc.	771 Spring Street, NW Atlanta GA 30308	Pelham C. Williams 404 853-6800	Engineering (Civil, Structual, Electrical, Mechanical & Environmental) Architecture, Planning and Program/Construction Mgmt. Services.	☑	☐	☐
Willis Mechanical	3230 R. Peachtree Corners Circle Suite R Norcross GA 30092	Leticia Maspons Willis 678 966-0094	Mechanical engineering; Project Management.	☑	☐	☑
Willmer Engineering, Inc.	3772 Pleasantdale Road Suite 165 Atlanta GA 30340	Doris I. Willmer 770 939-0089	Engineering consulting in geotechnical engineering construction materials testing, environmental services.	☑	☐	☐
Wilmac, Inc	4854 Old National Highway Suite 144 College Park GA 30337	Wilfred Macauley 404 768-4174	Facility maintenace, construction, remodeling, building repairs, pool repairs & maintence, masonry & tile repairs, janitorial/custodial services.	☑	☐	☐
Wilson & Associates Architects, Inc.	2957 Clairmont Road Suite 120 Atlanta GA 30329	Leslie D. Wilson 404 325-5631	Design and Architecture.	☐	☑	☑
Zambrana Engineering, Inc.	360 Creekside Drive Alpharetta GA 30022	Louis Zambrana 770 664-0555	Civil engineering, land surveying, urban planning, evological/biological services and industrial services.	☑	☐	☐

Certificate of Corporate Bidder

Invitation No. 06-100022-ITB

1

CERTIFICATE OF CORPORATE BIDDER

I, Rae A. McIntire, certify that I am Secretary of the corporation named as Bidder herein, same being organized and incorporated to do business under the laws of the State of Georgia; that Brett K. Hawley and _____ who executed this Proposal on behalf of the Bidder were, then and there, Executive Vice President and _____ respectively, and that said Proposal was duly signed by said officers for and in behalf of said corporation, pursuant to the authority of its governing body and within the scope of its corporate powers.

I further certify that the names and addresses of the owners of all outstanding stock of said corporation as of this date are as follows:

James M. Wilkerson - 1723 Tappahonnock Trail, Marietta, GA 30062

Patricia C. Wilkerson - 1723 Tappahonnock Trail, Marietta, GA 30062

Brett K. Hawley - 4292 Gaskin Walk, Marietta, GA 30068

This 9th day of August, 2006.

Rae A McIntire (Corporate Seal)
Secretary

Bid Bond

1

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, J. M. Wilkerson Construction Co., Inc., 1734 Sands Place, S.E., Marietta, Georgia 30067 (hereinafter called the Principal) and Westfield Insurance Company

(hereinafter called the Surety), a corporation chartered and existing under the laws of the State of Ohio with its principal offices in the City of and listed in the Federal Register and licensed to write surety insurance in the State of Georgia, are held and firmly bound unto DeKalb County, Georgia, in the full and just sum of Twenty (20%) Percent of Principal's Bid Dollars ($_____) good and lawful money of the United States of America, to be paid upon demand of DeKalb County, Georgia, to which payment well and truly to be made we bind ourselves, our heirs, executors, administrators, and assigns, jointly and severally and firmly by these presents.

WHEREAS, the Principal is about to submit, or has submitted to DeKalb County, Georgia, a proposal for Brook Run Skate Park.

WHEREAS, the Principal desires to file this Bond in accordance with law to accompany this Proposal.

NOW, THEREFORE, the conditions of this obligation are such that if the Proposal be accepted, the Principal shall within ten (10) days from the date of Notice of Award of the Contract, execute a Contract in accordance with the Proposal and upon the terms, conditions, and prices set forth therein, and in the form and manner required by DeKalb County, Georgia, and execute a sufficient and satisfactory Performance Bond and Payment Bond payable to DeKalb County, Georgia, each in an amount of one hundred percent (100%) of the total Contract Price, in form and with security satisfactory to DeKalb County and furnish satisfactory proof of the insurance required, then this obligation to be void; otherwise, to be and remain in full force and virtue in law; and the Surety shall, upon failure of the Principal to comply with any or all of the foregoing requirements within the time specified above, immediately pay to the aforesaid DeKalb

County, Georgia, upon demand, the amount hereof in good and lawful money of the United States of America, not as a penalty, but as liquidated damages.

IN TESTIMONY THEREOF, the Principal and Surety have caused these presents to be duly signed and sealed this 27th day of July, 2006.

J. M. Wilkerson Construction Co., Inc. (Seal)
Principal

By: _____
BRET HAWLEY, EXEC. V.P.

Westfield Insurance Company (Seal)
Surety

By: _____
Kevin M. Neidert, Attorney-in-Fact

General Power of Attorney

CERTIFIED COPY

POWER NO. **1011352 13**

Westfield Insurance Co.
Westfield National Insurance Co.
Ohio Farmers Insurance Co.
Westfield Center, Ohio

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint

P. D. YATES, JR., P. D. YATES, III, P. D. YATES, IV, ALAN R. YATES, KEVIN M. NEIDERT, GARY A. SPULLER, MICHAEL L. ANGEL, KAREN A. MAYNARD, TAMARA HENDRIX, BETSY J. HOLMES, MARIE M. HARTLEY, MICHAEL S. BRICKNER, BRIAN K. HUGHES, EMMETT H. HALL, JOINTLY OR SEVERALLY

of **ATLANTA** and State of **GA** its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship.**

LIMITATION: THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.

and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"Be It Resolved, that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact. may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"Be It Further Resolved, that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their **Senior Executive** and their corporate seals to be hereto affixed this **19th** day of **OCTOBER** A.D., **2005** .

Corporate Seals Affixed

WESTFIELD INSURANCE COMPANY
WESTFIELD NATIONAL INSURANCE COMPANY
OHIO FARMERS INSURANCE COMPANY

By: **Richard L. Kinnaird, Jr.,** *Senior Executive*

State of Ohio
County of Medina ss.:

On this **19th** day of **OCTOBER** A.D., **2005** , before me personally came **Richard L. Kinnaird, Jr.** to me known, who, being by me duly sworn, did depose and say, that he resides in **Medina, Ohio;** that he is **Senior Executive** of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial Seal Affixed

William J. Kahelin, Attorney at Law, *Notary Public*
My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code)

State of Ohio
County of Medina ss.:

I, **Frank A. Carrino,** Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Westfield Center, Ohio, this 27th day of July A.D., 2006 .

Frank A. Carrino, *Secretary*

BPOAC2 (combined) (06-02)

Oath of Successful Bidder

OATH OF SUCCESSFUL BIDDER

GEORGIA, DEKALB COUNTY

Personally appeared before the undersigned officer duly authorized by law to administer oaths Brett K. Hawley and ---------- who, after being first duly sworn, depose and say that they are all the officers, agents, persons, or employees who have acted for or represented J. M. Wilkerson Construction Co., Inc. in bidding or procuring the Contract with DeKalb County on the following Project: Brook Run Skate Park and that said Brett K. Hawley and ---------- has not by himself/themselves or through any persons, officers, agents, or employees prevented or attempted to prevent by any means whatsoever competition in such bidding, or by any means whatsoever prevented or endeavored to prevent anyone from making a bid therefore, or induced or attempted to induce another to withdraw a bid for said work.

Signature of Affiant

Brett K. Hawley
Name (Typed or Printed)

Executive Vice President
Title

Sworn to and subscribed
before me this 23rd day
of October, 2006.

Kelly M Baer
Notary Public
My Commission Expires:
12.4.09

KELLY M. BAER NOTARY PUBLIC COBB COUNTY, GEORGIA MY COMMISSION EXPIRES DECEMBER 4 2009

Contract

DeKalb County
Contract No. 06-900422

STATE OF GEORGIA

COUNTY OF DEKALB

CONTRACT FOR PROVISION OF CONSTRUCTION SERVICES

THIS AGREEMENT, by and between DEKALB COUNTY, GEORGIA, a political subdivision of the State of Georgia, party of the first part, hereinafter referred to as the "County," and J. M. Wilkerson Construction Co., Inc., a corporation of the State of Georgia, party of the second part, hereinafter called the "Contractor."

WITNESSETH:

I. SCOPE OF WORK

A. That the Contractor has agreed and by these presents does agree with the County to furnish all equipment, tools, materials, skill, labor of every description, and all things necessary to carry out and complete in a good, firm, substantial and workmanlike manner, the Work and construction in strict conformity with the Drawings and Specifications entitled Brook Run Skate Park, which Drawings and Specifications together with the Advertisement for Bids, Instructions to Bidders, and Proposal for the construction of said Project submitted by the Contractor shall all form essential parts of this agreement. In addition to the foregoing, and notwithstanding anything to the contrary stated herein, the following terms and conditions, amendments to this Contract

and other documents are incorporated by reference and made a part of the terms and conditions of this Contract as if fully set out herein.

1. "GENERAL REQUIREMENTS" consisting of pages GR-1 through GR-3.
2. "GENERAL CONDITIONS" consisting of pages GC-1 through GC-28.
3. "SUPPLEMENTARY CONDITIONS" consisting of pages SC-1 through SC-2.
4. "NOTICES TO CONTRACTORS AND SUBCONTRACTORS" consisting of pages NCS-1 through NCS-4.
5. "TECHNICAL SPECIFICATIONS" consisting of the following sections:

Section 01010 - Summary of Work	01010-1 - 01010-3
Section 01027 - Application for Payment	01027-1 - 01027-4
Section 01040 - Coordination	01040-1 - 01040-5
Section 10045 - Cutting and Patching	01045-1 - 01045-2
Section 01050 - Field Engineering	01050-1 - 01050-3
Section 01200 - Project Meetings	01200-1 - 01200-4
Section 01230 - Alternates	01230-1 - 01230-2
Section 01300 - Submittals	01300-1 - 01300-9
Section 01400 - Quality Control	01400-1 - 01400-5
Section 01421 - References and Standards	01421-1 - 01421-17
Section 01500 - Construction Facilities and Temporary Controls	01500-1 - 01500-11
Section 01600 - Materials and Equipment	01600-1 - 01600-5
Section 01631 - Products and Substitutions	01631-1 - 01631-5
Section 01650 - Starting of Systems	01650-1 - 01650-2
Section 01700 - Contract Closeout	01700-1 - 01700-5
Section 01740 - Warranties	01740-1 - 01740-3
Section 01741 - Contractor Warranty Form	01741-1 - 01741-1
Section 01742 - Subcontractor Warranty form	01742-1 - 01742-1
Section 02070 - Selective Demolition	02070-1 - 02070-2
Section 02110 - Clearing and Grubbing	02110-1 - 02110-3
Section 02125 - Erosion and Sedimentation Control	02125-1 - 02125-6
Section 02200 - Earthwork - SKATE PARK	02200-1 - 02200-6
Section 02205 - Soil Materials	02205-1 - 02205-2
Section 02223 - Backfilling	02223-1 - 02223-2
Section 02230 - Sub Grade Prep & Base Material - SKATE PARK	02230-1 - 02230-2
Section 02300 - Earthwork- SITE DEVELOPMENT	02300-1 - 02300-12
Section 02361 - Termite Control	02361-1 - 02361-6
Section 02510 - Water Distribution	02510-1 - 02510-12

6. "DRAWINGS" as follows:

SITE DEVELOPMENT

C - 0.0	COVER SHEET
C - 0.1	SURVEY - FOR INFORMATION ONLY
C - 1.0	SITE PLAN
C - 2.0	TREE PROTECTION PLAN
C - 3.0	DEMOLITION PLAN
C - 4.0	STAKING PLAN
C - 5.0	GRADING, DRAINAGE AND UTILITY PLAN
C - 6.0	EROSION CONTROL PLAN
C - 6.1	EROSION CONTROL DETAILS
C - 6.2	EROSION CONTROL DETAILS
C - 7.0	SITE DETAILS
C - 7.1	SITE DETAILS
C - 7.2	SITE DETAILS
C - 7.3	SITE DETAILS
C - 7.4	STORM PIPE PROFILES
L - 1.0	LANDSCAPE PLAN
L - 1.1	LANDSCAPE DETAILS
EL - 1.0	SITE ELECTRICAL DETAILS
EL - 1.1	SITE ELECTRICAL PLAN

SKATE PARK

SP - 0.0	GENERAL NOTES
SP - 0.1	TYPICAL PROFILES
SP - 0.2	SITE PLAN
SP - 0.3	AXON
SP - 1.1	MATERIALS PLAN
SP - 1.2	VERTICAL REFERENCE / .JOINTING PLAN
SP - 1.3	LAYOUT PLAN
SP - 1.4	LAYOUT DATA
SP - 1.5	GRADING & DRAINAGE PLAN
SP - 2.1	SECTIONS / PROFILES

SP - 2.2	SECTIONS / PROFILES
SP - 2.3	SECTIONS / PROFILES
SP - 2.4	SECTIONS / PROFILES
SP - 2.5	SECTIONS / PROFILES
SP - 2.6	SECTIONS / PROFILES
SP - 2.7	FENCE PROFILES
SP - 2.8	FENCE PROFILES
SP - 3.1	DET AILS
SP - 3.2	DETAILS
SP - 3.3	DETAILS
SP - 3.4	DETAILS
SP - 3.5	DETAILS
SP - 3.6	DETAILS

ARCHITECTURAL

A - 1	ARCHITECTURAL FLOOR PLAN / SCHEDULE
A - 2	ARCHITECTURAL - ELEVATIONS
A - 3	ARCHITECTURAL - INTERIORS & DETAILS
A - 4	ARCHITECTURAL - WALL SECTIONS
A - 5	ARCHITECTURAL - REFLECTIVE CEILING PLAN / ROOF PLAN
S - 1	STRUCTURAL FOUNDATION PLAN
S - 2	STRUCTURAL DETAILS
S - 3	STRUCTURAL FRAMING PLAN
P - 0	PLUMBING SCHEDULES
P - 1	PLUMBING WASTE & VENT
P - 2	PLUMBING DOMESTIC WA TEA
M - 0	MECHANICAL SCHEDULES
M - 1	MECHANICAL FLOOR PLAN & DETAILS
E - 1	ELECTRICAL - NOTES & DIAGRAMS
E - 2	ELECTRICAL - SPECIFICATIONS
E - 3	ELECTRICAL - FLOOR PLAN & SCHEDULES

7. "ADDENDA" consisting of Addendum No. 1 through Addendum No. 2.

B. The Contractor shall commence work under this Contract within ten (10) calendar days from the date of receipt of the Notice to Proceed, as evidenced by official receipt of certified mail or acknowledgment of personal delivery, and shall fully complete

the Work hereunder within 180 calendar days from and including the date of receipt of such notice.

C. If said Work is not completed within the time stated above, the Contractor shall be liable and hereby agrees to pay the County as liquidated damages and not as a penalty, the sum of Five Hundred Dollars (500.00) per calendar day for each and every day or part of a day thereafter that said Work remains uncompleted.

II. PAYMENT

A. Fees. As full payment for the faithful performance of this Contract, the County shall pay said Contractor the following lump sum amount :

Two Million One Hundred Seventy- Four Thousand Five Hundred Eighty-Six and 00/100 Dollars ($2,174,586.00)

(State amount in writing on this line) (In figures)

B. Fee Schedule. Payment shall be made as follows:

Partial payments to the Contractor shall be made monthly, based on the value of work completed as provided in the Contract Documents, plus the value of materials and equipment suitably stored, insured and protected at the construction site. The Contractor shall submit a draft estimate of work completed during the preceding calendar month to the Owner for review on or before the tenth (10^{th}) day following the month in which the work was performed. The duly certified and approved estimate of work shall be submitted on or before the fifteenth (15th) day following the month in which the Work was performed. Payment to the Contractor shall be made within thirty (30) days of submission, less the amount of retainage.

The amount of retainage shall be as follows:

1. Ten (10%) percent of each progress payment shall be withheld as retainage until the value of fifty (50%) percent of the Contract Price, including change orders and other authorized additions provided in the Contract is due;

2. When fifty (50%) percent of the contract value, as described above, becomes due and the manner of completion of the contract work and its progress, quality, schedule are reasonably satisfactory to the County, and there are no outstanding claims by the Contractor, Subcontractors or material suppliers, the withholding of retainage shall be discontinued.

3. If after discontinuing the retention, the County determines that the Work is unsatisfactory or has fallen behind schedule, retention may be resumed at the previous level.

   When the Work is substantially complete (operational or beneficial occupancy) and the County determines the Work to be reasonably acceptable, the Contractor shall submit an invoice or other documents as may be required and receive payment thereof within thirty (30) days. If there are any remaining incomplete minor items, an amount equal to two hundred (200%) percent of the value of each item, as determined by the County, shall be withheld until such items are completed.

4. This Contract is governed by O.C.G.A. § 13-10-~~2~~-80, which requires that the Contractor, within ten (10) days of receipt of retainage from DeKalb County, pass through payments to Subcontractors and reduce each Subcontractor's retainage accordingly. The Code provision also requires Subcontractors to pass through payments to Lower Tier Subcontractors and reduce each lower tier contractor's retainage. Therefore, DeKalb County, in its discretion, may require the Contractor to submit satisfactory evidence that all payrolls, material bills, or other indebtedness connected with the Work have been paid before making any payment.

Within sixty (60) days after the Work is fully completed and accepted by the County, the balance due hereunder shall be paid; provided, however, that final payment shall not be made until said Contractor shall have completed all work necessary and reasonably incidental to the Contract, including final cleanup and restoration. All claims by the Contractor for breach of contract, violation of state or federal law or for compensation and extensions of time shall be submitted in writing to the Chief Executive Officer within

sixty (60) days after completion and acceptance of the Work as herein provided or all such claims shall be forever barred. In such event no further payment to the Contractor shall be deemed to be due under this agreement until such new or additional security for the faithful performance of the Work shall be furnished in manner and form satisfactory to the County.

III. INSURANCE

A. Performance Bond and Payment Bond. Within ten (10) days from the date of Notice of Award of this Contract, the Contractor, as Principal, and Westfield Insurance Company, a surety company listed in the Federal Register and licensed to write surety insurance in the State of Georgia, as surety, shall give a Contract Performance Bond and a Payment Bond, each in the amount of $2,174,586.00 for the use of all persons doing work or furnishing skills, tools, machinery, or materials under or for the purpose of this Contract, in accordance with the provisions of the law of the State of Georgia including, but not limited to, O.C.G.A. § 13-10-1 and § 36-91-21 et seq. The life of these bonds shall extend through the life of this Contract including a sixty (60) day maintenance period (where applicable) and a twelve-month guarantee period after the completion of work performed under this Contract.

B. Workers Compensation. The Contractor shall, without expense to the County, provide statutory workers compensation insurance and comprehensive liability insurance covering all operations and automobiles as required by the provisions of the Contract, including Subcontractors.

The Contractor may carry statutory workers compensation insurance on Subcontractors or require all Subcontractors likewise to carry such insurance.

C. **Surety Bonds.** It is further agreed between the parties hereto that if at any time after the execution of this agreement and the surety bonds for its faithful performance, the County shall deem the surety or sureties upon such bonds to be unsatisfactory, or if, for any reason, such bonds cease to be adequate to cover the performance of the Work, the Contractor shall, at its expense within five days after the receipt of notice from the County to do so, furnish additional bond or bonds in such form and amount and with such surety or sureties as shall be satisfactory to the County.

IV. WARRANTY AND GUARANTEE

The Contractor warrants to the County that materials and equipment furnished under the Contract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, is considered defective. The County, in its sole discretion, may exclude from the Contractor's warranty, remedies for damage or defect which the County determines were caused by abuse, modifications not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the County, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment. All warranties and guaranties shall extend for the greatest of one (1) full year commencing on the dates of Substantial Completion of the Project or such longer period of time as is

required by any of the Contract Documents. The one (1) year period shall be extended with respect to portions of the Work first performed after Substantial Completion for a period of one (1) year after the actual performance of the Work. If any defect or deviation should exist, develop, be discovered or appear within such one (1) year period, the Contractor, at it sole cost and expense and immediately upon demand, shall fully and completely repair, correct, and eliminate such defect. The foregoing warranties and guarantees are cumulative of and in addition to, and not restrictive of or in lieu of, any and all other warranties and guarantees provided for or required by law. The obligation of this paragraph shall survive acceptance of the Work and termination of the Agreement. All manufacturer warranties and guarantees shall be delivered to the County prior to Substantial Completion and such delivery shall be a condition precedent to the issuance of the Certificate of Substantial Completion. Before Final Payment the Contractor shall assign and transfer to the County all guarantees warranties and agreements from all contractors, Subcontractors, vendors suppliers, or manufacturers regarding their performance quality of workmanship or quality of materials supplied in connection with the Work. The Contractor represents and warrants that all such guarantees, warranties and agreements will be freely assignable to the County, and that upon Final Completion of the Work, all such guarantees, warranties and agreements shall be in place and enforceable by the County in accordance with their terms.

V. INDEMNIFICATION

The General Contractor shall be responsible from the time of signing the Contract, or from the time of the beginning of the first work, whichever shall be the earlier, for all injury or damage of any kind resulting from this work to persons or property, including

employees and property of the County. The Contractor shall exonerate, indemnify, and save harmless the County from and against all claims or actions, and all expenses incidental to the defense of any such claims, litigation, and actions, based upon or arising out of damage or injury (including death) to persons or property caused by or sustained in connection with the performance of this Contract or by conditions created thereby or arising out of or any way connected with work performed under this Contract and shall assume and pay for, without cost to the County, the defense of any and all claims, litigations, and actions suffered through any act or omission of the Contractor, or any Subcontractor, or anyone directly or indirectly employed by or under the supervision of any of them. The Contractor expressly agrees to defend against any claims brought or actions filed against the County, where such claim or action involves, in whole or in part, the subject of the indemnity contained herein, whether such claims or actions are rightfully or wrongfully brought or filed.

VI. RIGHT, TITLE, OR INTEREST

The Contractor agrees it shall not sublet, assign, transfer, pledge, convey, sell, or otherwise dispose of the whole or any part of this Contract or his right, title, or interest therein to any person, firm, or corporation without the previous consent of the County in writing.

[SIGNATURES CONTINUED ON NEXT PAGE]

IN WITNESS WHEREOF, the parties hereto have set their hands and caused their seals to be affixed hereupon in four (4) counterparts, each to be considered as an original by their authorized representatives, on this 14TH day of NOVEMBER, 2006.

J. M. WILKERSON CONSTRUCTION CO., INC.

By: _____ (SEAL)
Signature

Brett K. Hawley
Name (Typed or Printed)

Executive Vice President
Title

58-1478227
Federal Tax I.D. Number

ATTEST:

_____
Signature

Rae A. McIntire
Name (Typed or Printed)

Secretary
Title

DEKALB COUNTY, GEORGIA

_____ by Dir. (SEAL)
VERNON JONES
Chief Executive Officer
DeKalb County, Georgia

ATTEST:

_____
MICHAEL J. BELL
Ex-Officio Clerk of the
Chief Executive Officer and
Board of Commissioners of
DeKalb County, Georgia

APPROVED AS TO SUBSTANCE:

MB _____
Department Director

APPROVED AS TO FORM:

_____
Sr Asst County Attorney Signature

Michelle L. Thomas
Sr Asst County Attorney Name (Typed or Printed)

DeKalb County
Contract No. 06-900478

DEKALB COUNTY, GEORGIA

CERTIFICATE OF CORPORATE AUTHORITY

I, Rae A. McIntire, certify that I am Secretary of the corporation named as Contractor herein, same being organized and incorporated to do business under the laws of the State of Georgia; that Brett K. Hawley, who executed this Contract on behalf of the Contractor was, then and there, Executive Vice President; and that said Contract was duly signed by said officer for and in behalf of said corporation, pursuant to the authority of its governing body and within the scope of its corporate powers.

I further certify that the names and addresses of the owners of all the outstanding stock of said corporation as of this date are as follows:

James M. Wilkerson, 1723 Tappahonnock Trail, Marietta, Georgia 30062

Patricia C. Wilkerson, 1723 Tappahonnock Trail, Marietta, Georgia 30062

Brett K. Hawley, 4292 Gaskin Walk, Marietta, Georgia 30068

This 23rd day of October, 2006.

Rae A. McIntire (Corporate Seal)
Secretary

Contract Performance Bond

COUNTY OF DEKALB

STATE OF GEORGIA

BOND NUMBER: 0029503

PERFORMANCE BOND

CONSTRUCTION CONTRACT

KNOW ALL MEN BY THESE PRESENTS, that we, J. M. Wilkerson Construction Co., Inc., as Principal, and Westfield Insurance Company , as Surety, are held and firmly bound unto DeKalb County, Georgia, hereinafter called the Obligee, in the sum of Two Million One Hundred Seventy-Four Thousand Five Hundred Eighty-Six and 00/100---------- Dollars ($ 2,174,586.00), for the payment of which sum, well and truly to be made, we bind ourselves, our heirs, executors, administrators, and successors, jointly and severally, firmly by these presents.

The condition of this obligation is that Principal has entered into a certain written Contract dated the 10th day of October, 20 06, with Obligee, a copy of which Contract is attached hereto and incorporated herein by reference.

If Principal shall indemnify Obligee against any pecuniary loss resulting from the breach of any of the terms, covenants, and conditions of such Contract to be performed by Principal and to faithfully account for all funds received by the Principal pursuant to said Contract, then this obligation shall be null and void; otherwise, it shall remain in full force and effect subject to the following conditions. This obligation shall run continuously and shall remain in full force and effect until and unless the Bond is terminated as provided herein or as otherwise provided by law. This Bond covers the original Contract and all duly authorized modifications of said Contract that may hereafter be made. Any deviations from, or additions to, or modifications in the obligations of the original Contract may be made without the consent or knowledge of Surety and without in any way releasing Surety from liability under this Bond, except that no change will be made which increases the total Contract Price more than twenty percent in excess of the original Contract Price without notice to the Surety.

The business for the transaction of this Bond shall be deemed to have taken place in the City of Decatur, DeKalb County, Georgia, and if any action or proceeding is initiated in connection with this Bond and any of its obligations arising hereunder, the venue thereof shall be the Courts of the County of DeKalb, State of Georgia.

If any one or more of the provisions of this Bond are determined to be illegal or unenforceable by a court of competent jurisdiction, all other provisions shall remain effective.

This Bond shall be binding upon and inure to the benefit of the parties hereto, their successors, assigns, and legal representatives.

This Bond shall be construed in accordance with the provisions of the law of the State of Georgia including, but not limited to, O.C.G.A. § 13-10-1 and § 36-91-21 et seq.

IN WITNESS WHEREOF, Principal and Surety have executed this Bond at Decatur, Georgia, this 20th day of October, 2006.

ATTEST:

Rae A. McIntire

Rae A. McIntire, Secretary

J. M. Wilkerson Construction Co., Inc. (SEAL)
Principal

By:

Brett K. Hawley, Executive Vice President
Typed Name and Title

WITNESS:

Karen Maynard

Westfield Insurance Company (SEAL)
Surety

By: Kevin M. Neidert

KEVIN M. NEIDERT ATTORNEY-IN-FACT
Typed Name and Title

General
Power
f Attorney

CERTIFIED COPY

POWER NO. **1011352 13**

Westfield Insurance Co.
Westfield National Insurance Co.
Ohio Farmers Insurance Co.

Westfield Center, Ohio

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint
P. D. YATES, JR., P. D. YATES, III, P. D. YATES, IV, ALAN R. YATES, KEVIN M. NEIDERT, GARY A. SPULLER, MICHAEL L. ANGEL, KAREN A. MAYNARD, TAMARA HENDRIX, BETSY J. HOLMES, MARIE M. HARTLEY, MICHAEL S. BRICKNER, BRIAN K. HUGHES, EMMETT H. HALL, JOINTLY OR SEVERALLY

of **ATLANTA** and State of **GA** its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship**- .

LIMITATION: THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.
and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"*Be It Resolved,* that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact. may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"*Be It Further Resolved,* that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their **Senior Executive** and their corporate seals to be hereto affixed this **19th** day of **OCTOBER** A.D., **2005** .

Corporate
Seals
Affixed

SEAL — SEAL — CHARTERED 1848

WESTFIELD INSURANCE COMPANY
WESTFIELD NATIONAL INSURANCE COMPANY
OHIO FARMERS INSURANCE COMPANY

By: *Richard L. Kinnaird, Jr.*
Richard L. Kinnaird, Jr., *Senior Executive*

State of Ohio
County of Medina ss.:

On this **19th** day of **OCTOBER** A.D., **2005** , before me personally came **Richard L. Kinnaird, Jr.** to me known, who, being by me duly sworn, did depose and say, that he resides in **Medina, Ohio;** that he is **Senior Executive** of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial
Seal
Affixed

NOTARIAL SEAL — STATE OF OHIO

William J. Kahelin
William J. Kahelin, Attorney at Law, *Notary Public*
My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code)

State of Ohio
County of Medina ss.:

I, **Frank A. Carrino**, Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Westfield Center, Ohio, this 20th day of October A.D., 2006 .

SEAL — SEAL — CHARTERED 1848

Frank A. Carrino **Secretary**
Frank A. Carrino, *Secretary*

BPOAC2 (combined) (06-02)

Payment Bond

PAYMENT BOND

BOND NUMBER: 0029503

KNOW ALL MEN BY THESE PRESENTS: That _____

J. M. Wilkerson Construction Co., Inc. (hereinafter called the Principal), as Principal, and Westfield Insurance Company, a corporation of the State of Ohio with its principal office in the city of Westfield Center, (hereinafter called the Surety), as Surety, are held and firmly bound unto DEKALB COUNTY, GEORGIA (hereinafter called the Obligee), for the use and protection of all Subcontractors and all persons supplying labor, machinery, materials, and equipment in the prosecution of the Work provided for in the Contract hereinafter referred to in the full and just sum of Two Million One Hundred Seventy-Four Thousand Five Hundred Eighty-Six and 00/100 Dollars ($ 2,174,586.00), to the payment of which sum, well and truly to be made, the Principal and Surety bind themselves, their, and each of their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract, dated the 10th day of October, 20 06 A.D., with the Obligee for Brook Run Skate Park, which Contract is by reference made a part hereof.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION IS SUCH, that if the Principal shall faithfully perform said Contract according to its terms, covenants and conditions, and shall promptly pay all persons furnishing labor or material for use in the performance of said Contract, then this obligation shall be void; otherwise it shall remain in full force and effect.

ALL persons who have furnished labor, material, machinery or equipment for use in the performance of said Contract shall have a direct right of action on this Bond, provided payment has not been made in full within ninety (90) days after the last day on which labor was performed, materials, machinery, and equipment furnished or the subcontract completed, as provided in O.C.G.A. §36-82-104.

PROVIDED, HOWEVER, that no suit or action shall be commenced hereunder by any person furnishing labor or material having a direct contractual relationship with a Subcontractor, but no contractual relationship express or implied with Principal, unless such person shall have given written notice to the Principal within ninety (90) days after such person did, or performed the last of the work or labor, or furnished the last of the materials for which claim is made, stating with substantial accuracy the amount claimed and the name of the party to whom the materials were furnished, or for whom the work or labor was done or performed. Such a notice shall be served by mailing the same by registered mail, postage prepaid, in an envelope addressed to the Principal, at any place where an office is regularly maintained for the transaction of business, or served in any manner in which legal process may be served in the state in which the aforesaid Project is located, save that such service need not be made by a public officer.

PROVIDED, FURTHER, that any suit under this Bond must be instituted before the expiration of one (1) year after the acceptance of the public works covered by the Contract by the proper authorities.

Signed, Sealed and Dated this 20th day of October, 2006 A.D.

ATTEST:

Rae A. McIntire

Rae A. McIntire

J. M. Wilkerson Construction Co., Inc. (SEAL)
Principal

By: _____
Brett K. Hawley, Executive Vice President

WITNESS:

Karen Maynard

Westfield Insurance Company (SEAL)
Surety

By: _____
KEVIN M. NEIDERT ATTORNEY-IN-FACT

General
Power
[Attorney

CERTIFIED COPY

POWER NO. 1011352 13

Westfield Insurance Co.
Westfield National Insurance Co.
Ohio Farmers Insurance Co.

Westfield Center, Ohio

Know All Men by These Presents, That WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, corporations, hereinafter referred to individually as a "Company" and collectively as "Companies," duly organized and existing under the laws of the State of Ohio, and having its principal office in Westfield Center, Medina County, Ohio, do by these presents make, constitute and appoint
P. D. YATES, JR., P. D. YATES, III, P. D. YATES, IV, ALAN R. YATES, KEVIN M. NEIDERT, GARY A. SPULLER, MICHAEL L. ANGEL, KAREN A. MAYNARD, TAMARA HENDRIX, BETSY J. HOLMES, MARIE M. HARTLEY, MICHAEL S. BRICKNER, BRIAN K. HUGHES, EMMETT H. HALL, JOINTLY OR SEVERALLY

of **ATLANTA** and State of **GA** its true and lawful Attorney(s)-in-Fact, with full power and authority hereby conferred in its name, place and stead, to execute, acknowledge and deliver **any and all bonds, recognizances, undertakings, or other instruments or contracts of suretyship**- .

LIMITATION: THIS POWER OF ATTORNEY CANNOT BE USED TO EXECUTE NOTE GUARANTEE, MORTGAGE DEFICIENCY, MORTGAGE GUARANTEE, OR BANK DEPOSITORY BONDS.
and to bind any of the Companies thereby as fully and to the same extent as if such bonds were signed by the President, sealed with the corporate seal of the applicable Company and duly attested by its Secretary, hereby ratifying and confirming all that the said Attorney(s)-in-Fact may do in the premises. Said appointment is made under and by authority of the following resolution adopted by the Board of Directors of each of the WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY:

"*Be It Resolved,* that the President, any Senior Executive, any Secretary or any Fidelity & Surety Operations Executive or other Executive shall be and is hereby vested with full power and authority to appoint any one or more suitable persons as Attorney(s)-in-Fact to represent and act for and on behalf of the Company subject to the following provisions:

The Attorney-in-Fact, may be given full power and authority for and in the name of and on behalf of the Company, to execute, acknowledge and deliver, any and all bonds, recognizances, contracts, agreements of indemnity and other conditional or obligatory undertakings and any and all notices and documents canceling or terminating the Company's liability thereunder, and any such instruments so executed by any such Attorney-in-Fact shall be as binding upon the Company as if signed by the President and sealed and attested by the Corporate Secretary."

"*Be it Further Resolved,* that the signature of any such designated person and the seal of the Company heretofore or hereafter affixed to any power of attorney or any certificate relating thereto by facsimile, and any power of attorney or certificate bearing facsimile signatures or facsimile seal shall be valid and binding upon the Company with respect to any bond or undertaking to which it is attached." (Each adopted at a meeting held on February 8, 2000).

In Witness Whereof, WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY have caused these presents to be signed by their **Senior Executive** and their corporate seals to be hereto affixed this **19th** day of **OCTOBER** A.D., **2005** .

Corporate Seals Affixed

SEAL — SEAL — CHARTERED 1848

WESTFIELD INSURANCE COMPANY
WESTFIELD NATIONAL INSURANCE COMPANY
OHIO FARMERS INSURANCE COMPANY

By: Richard L. Kinnaird, Jr.
Richard L. Kinnaird, Jr., *Senior Executive*

State of Ohio
County of Medina ss.:

On this **19th** day of **OCTOBER** A.D., **2005** , before me personally came **Richard L. Kinnaird, Jr.** to me known, who, being by me duly sworn, did depose and say, that he resides in **Medina, Ohio;** that he is **Senior Executive** of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, the companies described in and which executed the above instrument; that he knows the seals of said Companies; that the seals affixed to said instrument are such corporate seals; that they were so affixed by order of the Boards of Directors of said Companies; and that he signed his name thereto by like order.

Notarial Seal Affixed

NOTARIAL SEAL STATE OF OHIO

William J. Kahelin
William J. Kahelin, Attorney at Law, *Notary Public*
My Commission Does Not Expire (Sec. 147.03 Ohio Revised Code)

State of Ohio
County of Medina ss.:

I, **Frank A. Carrino,** Secretary of WESTFIELD INSURANCE COMPANY, WESTFIELD NATIONAL INSURANCE COMPANY and OHIO FARMERS INSURANCE COMPANY, do hereby certify that the above and foregoing is a true and correct copy of a Power of Attorney, executed by said Companies, which is still in full force and effect; and furthermore, the resolutions of the Boards of Directors, set out in the Power of Attorney are in full force and effect.

In Witness Whereof, I have hereunto set my hand and affixed the seals of said Companies at Westfield Center, Ohio, this 20th day of October A.D., 2006 .

SEAL — SEAL — CHARTERED 1848

Frank A. Carrino
Frank A. Carrino, *Secretary* Secretary

BPOAC2 (combined) (06-02)

General Requirements

GENERAL REQUIREMENTS

01 SCOPE

The following is a general description of the extent of work under the Contract.

A. Work included:

Furnish all labor, materials, equipment, and all things necessary pursuant to Drawings, Specifications, conditions, etc., for construction of Brook Run Skate Park, including site and clearing, grading/drainage, erosion control, utilities, asphalt parking, curb/gutter, concrete paving, building construction, concrete walks/steps, landscaping and field engineering and "as-built" surveys.

B. Work not included in this Contract: N/A

02 SITE OF THE WORK AND OWNER

A. Site: Brook Run Park, 4770 North Peachtree Road, Dunwoody, Georgia.

B. Owner: DeKalb County, Georgia, hereinafter referred to as the "County."

03 ACCESS TO WORK

The County shall at all times have access to the Work wherever it is in preparation or progress and the Contractor shall provide proper facilities for such access.

04 SUBMITTAL PERIOD FOR PRODUCTS AND SUBSTITUTIONS

Substitutions: Where items of equipment or materials are specifically identified herein by a manufacturer's name, model, or catalog number, only such specific item may be used in the Base Bid. If the Bidder wishes to use items of equipment or materials other than those named in his Base Bid, the Bidder shall apply in writing for the County's approval of substitution at least ten (10) days prior to opening of bids, submitting with his request for approval complete descriptive and technical data on the items or item he proposes to furnish in accordance with Section 12 of the General Conditions.

05 MEASUREMENTS AND DIMENSIONS

Before ordering material or doing work which is dependent for proper size or installation upon coordination with conditions, the Contractor shall verify all dimensions by taking measurements at the building and shall be responsible for the correctness of same. No consideration will be given any claim based on the differences between the actual dimensions and those indicated on the Drawings. Any difference which may be found must be submitted to the County for resolution before proceeding with the Work.

If a minor change in the Work is found necessary due to actual field conditions, the Contractor shall submit detailed drawings and written notification of the problems necessitating such departure for approval by the County before making the change. If the Contractor fails to make such request, no excuse will thereafter be entertained for Contractor's failure to carry out work in the required manner or provide required guarantees, warranties, or bonds and Contractor shall not be entitled to any change in the Contract Sum or the Contract Time on account of such failure.

If any portion of the Contract Documents shall be in conflict with any other portion, the various documents comprising the Contract Documents shall govern in the following order of precedence: Contract, Modifications issued after execution of the Contract; the General Conditions of the Contract; General Requirements, Supplementary Conditions, the Specifications; the Drawings; as between schedules and information given on the drawings, the schedules shall govern; as between figures given on Drawings and the scaled measurements, the figures shall govern; as between large-scale Drawings and small-scale Drawings, the larger scale shall govern.

06 STORAGE FACILITIES AND WORK AREAS

The Contractor shall cooperate with the County in any required use of its property and arrange for storage of materials on job site in such areas as are mutually agreed upon. The Contractor shall allot suitable and proper space to his Subcontractors for the storing of their materials and for the erection of their sheds and tool houses. Should it be necessary at any time to move materials, sheds, or storage platforms, the Contractor shall move same as and when directed, at his own expense.

07 IMPROVEMENTS ON CITY OR PUBLIC PROPERTY

The Contractor shall pay all highway fees and for all damages to sidewalks, streets, or other public property, or to public utilities. Contractor shall secure all permits, authorizations, and certificates of inspection or occupancy that may be

required by authorities having jurisdiction over the Work. Said certificates shall be delivered to County upon completion of the Work.

The Contractor shall pay all required material disposal fees and shall dispose of all materials in accordance with all applicable laws and regulations. The Contractor shall be responsible for all costs associated with improper disposal of materials, including any clean-up costs, fines or penalties, whether levied against the Contractor or the County.

08 MANUFACTURERS' CERTIFICATIONS

The Project Manager may require, and the Contractor shall furnish if required to do so, certificates from manufacturers to the effect that the products or materials furnished by them for use in the Work comply with the applicable specified requirements for the materials or products being furnished.

09 SAMPLES

The Contractor shall furnish with reasonable promptness all samples as directed by the County for approval for conformance with the design concept of the Project and for compliance with the information stated in the Contract Documents. The Work shall be in accordance with approved samples.

10 AS-BUILT DRAWINGS

The Contractor shall, upon completion of the Work, furnish a marked set of reproducible drawings indicating the field changes, as actually installed and as specified under these sections of the Specifications, and deliver them to the County.

11 MAINTENANCE MANUAL

Contractor shall, prior to completion of Contract, deliver to the County two copies of a manual, assembled, indexed, and bound, presenting for the County's guidance full details for care and maintenance of visible surfaces and of equipment included in Contract. Contractor shall, for this manual, obtain from Subcontractors literature of manufacturers relating to equipment, including motors; also furnish cuts, wiring diagrams, instruction sheets and other information pertaining to same that will be useful to the County in over-all operation and maintenance. Where the above-described manuals and data are called for under separate sections of the Specifications, they are to be included in the manual described in this article.

General Conditions

INDEX TO GENERAL CONDITIONS

01 DEFINITIONS OF TERMS

Wherever used in the Contract Documents, the following terms shall have the meanings indicated which shall be applicable to both the singular and plural thereof:

"Addenda" shall mean written or graphic instruments issued prior to the execution of the agreement which modify or interpret the Contract Documents by additions, deletions, clarifications, or corrections.

"Bid" shall mean the offer or Proposal of the Bidder submitted on the prescribed form setting forth the price(s) for the Work to be performed.

"Bidder" shall mean any person, firm, or corporation submitting a Bid for the Work.

"Bonds" shall mean Bid, Performance, and Payment Bonds and other instruments of security, furnished by the Contractor and his surety in accordance with the Contract Documents.

"Change Order" shall mean a written order to the Contractor authorizing an addition, deletion, or revision in the Work within the general scope of the Contract Documents, or authorizing an adjustment in the Contract Price or Contract Time, as approved by the Board of Commissioners of DeKalb County, or exempted from Board approval for Contract Price changes up to the amount of Twenty Thousand Dollars ($20,000.00), or ten percent (10%) of the Contract as originally executed, whichever is less.

"Contract Documents" shall consist of Advertisement for Bids, Proposal, Bid Bond, Certificate of Corporate Bidder, Oath of Successful Bidder, Contract, Contract Performance Bond, Payment Bond, Instructions to Bidders, General Requirements, General Conditions, Supplementary Conditions, Technical Specifications, Certificates of Insurance, and Drawings. The intent of these documents is to include all materials, appliances, tools, labor and services of every kind necessary for the proper execution of the Work, and the terms and conditions of payment therefor. The Contract Documents shall be considered as one, and whatever is called for by any one of them shall be as binding as if called for by all.

"Contract Price" shall mean the total monies payable to the Contractor under the terms and conditions of the Contract Documents.

"Contract Time" shall mean the number of calendar days stated in the Contract Documents for the completion of the Work.

"Contractor" or "General Contractor" shall mean the individual, firm, or corporation undertaking the execution of the Work as an independent contractor under the terms of the Contract and acting through his or its agents or employees.

"County" shall mean DeKalb County, Georgia.

"Drawings" shall mean the part of the Contract Documents which show largely through graphical presentation the characteristics and scope of the Work to be performed and which have been prepared or approved by the Owner.

"Field Order" shall mean a written order effecting a change in the Work not involving an adjustment in the Contract Price or an extension of the Contract Time, issued by the ____Owner to the Contractor during construction.

"Notice of Award" shall mean the written notice of the acceptance of the Bid from the County to the successful Bidder as evidenced by return receipts of registered or certified letters.

"Notice to Proceed" shall mean written communication issued by the County to the Contractor authorizing him to proceed with the Work and establishing the date of commencement of the Work as evidenced by official receipt of certified mail or acknowledgment of personal delivery.

"Owner" shall mean DeKalb County, Georgia.

"Project" shall mean the undertaking to be performed as provided in the Contract Documents.

"Shall" is mandatory; "may" is permissive.

"Shop Drawings" shall mean all drawings, diagrams, illustrations, brochures, schedules, and other data which are prepared by the Contractor, a Subcontractor, manufacturer, Supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

"Specifications" shall mean a part of the Contract Documents consisting of written descriptions of a technical nature of materials, equipment, construction systems, standards, and workmanship specified for this Project.

"Subcontractor" shall mean an individual, firm, or corporation having a direct contract with the Contractor or with any other Subcontractor for the performance of a part of the Work at the site.

"Substantial Completion" shall mean that date determined by the Owner when the construction of the Project or an expressly stipulated part thereof is sufficiently completed, in accordance with the Contract Documents, so that the Project or stipulated part can be fully utilized for the purposes for which it is intended.

"Supplementary Conditions" shall mean a part of the Contract Documents consisting of modifications to the General Conditions.

"Superintendent" shall mean the Contractor's authorized on-job representative designated in writing by the Contractor prior to commencement of any work.

"Suppliers" shall mean any person, supplier, or organization who furnishes materials or equipment for the Work, including that fabricated to a special design, but who does not perform labor at the site.

"Work" of the Contractor or Subcontractor shall include all labor, material, equipment, transportation, skill, tools, machinery and other equipment, and things useful or necessary in order to complete the Contract.

02 APPLICABLE REQUIREMENTS

The work shall comply with the Contract Documents and with all applicable codes, laws, and regulations of the County, State, or Federal agencies which may have cognizance of any part of the Work. In the event of any conflict between the terms of this Contract and such codes, laws, and regulations, the codes, laws, and/or regulations shall prevail. If the Contractor performs any work knowing it to be contrary to such codes, laws, or regulations, and without such notice to the County, he shall assume full responsibility therefore and shall bear any and all costs necessary to correct the Work.

03 CONTRACT SECURITY

The Contractor shall furnish a Contract Performance Bond and a Payment Bond, each equal to one hundred percent (100%) of the Contract Price. Bonds given shall meet the requirements of the law of the State of Georgia including, but not limited to, O.C.G.A. § 13-10-1 and § 36-91-21 et seq. The surety on each Bond shall be a surety company satisfactory to the County and listed in the Federal Register and licensed to write surety insurance in the State of Georgia.

04 NOTICE AND SERVICE THEREOF

Any notice to Contractor from the County relative to any part of this Contract shall be in writing and considered delivered and the service thereof completed, when said notice is posted by mail, to the said Contractor at his last given address or delivered in person to said Contractor or his authorized representative on the work site.

05 SPECIFICATIONS

.01 The Specifications, the Drawings accompanying them, and the other Contract Documents shall be supplementary to each other, and any material, workmanship, and/or service which may be in one, but not called for in the others, shall be as binding as if indicated, called for, or implied by all.

.02 The General Contractor will be held responsible to furnish all labor and materials necessary to complete the Work as indicated by the Drawings and Specifications.

.03 Unless otherwise stipulated, the General Contractor shall provide and pay for all materials, labor, water, tools, equipment, light, power, transportation, and other facilities necessary for the execution and completion of the Work. He shall be responsible for the entire Work and every part thereof.

.04 Each section or type of work is described separately in the Technical Specifications; however, should any item of material, equipment, work, or combinations of such be required in one section, and not be described in that section and a similar item described in another section, that description shall apply regardless of the section under which it is described.

.05 Upon award of the Contract, the Contractor will be supplied, free of charge, up to three complete sets of the Contract Drawings and Specifications. Any prints and Specifications in excess of these shall be furnished at cost at the Contractor's expense.

06 DRAWINGS AND SPECIFICATIONS

.01 The intent of the Drawings and Specifications is that the Contractor shall furnish all labor, materials, tools, equipment, and transportation necessary for the proper execution of the Work in accordance with the Contract Documents and all incidental work necessary to complete the Project in an acceptable manner, ready for use, occupancy, or operation by the County.

.02 In case of conflict between the Drawings and Specifications, the Specifications shall govern. Figure dimensions on Drawings shall govern over scale dimensions, and detailed drawings shall govern over general drawings.

.03 If existing utilities or structures are indicated by the Contract Documents, no warranty is made as to the accuracy or completeness of such indication.

.04 Any discrepancies found between the Drawings and Specifications and site conditions or any inconsistencies or ambiguities in the Drawings or Specifications shall be immediately reported to the Owner, in writing, who shall promptly correct

such inconsistencies or ambiguities in writing. Work done by the Contractor after his discovery of such discrepancies, inconsistencies, or ambiguities shall be done at the Contractor's risk.

.05 The County may, (without changing the scope of the Work) furnish the Contractor additional instructions and detail drawings, as necessary to carry out the Work required by the Contract Documents. The additional drawings and instructions thus supplied will become a part of the Contract Documents. The Contractor shall carry out the Work in accordance with the additional detail drawings and instructions.

.06 Abridging: Attention is directed to the fact that the detailed Specifications and separate sections may be written in short or abridged form. In regard to every section of the Specifications and all parts thereof, mention therein, or indications on the Drawings of articles, materials, operations, or methods, requires that the Contractor:

1. Provide each item mentioned and indicated, of quality or subject to qualifications noted;

2. Perform according to conditions stated, each operation prescribed; and

3. Provide therefore all necessary labor, equipment, and incidentals.

.07 Wording: Whenever in these Specifications or on the Drawings the words "directed," "required," "permitted," "ordered," or words of like import are used, it shall be understood that the direction, requirement, permission, or order of the County is intended, and similar words, "approved," "acceptable," "satisfactory," or words of like import shall mean approved by, acceptable to, or satisfactory to the County.

.08 Specification Sections: For convenience of reference and to facilitate the letting of contracts and subcontracts, these Specifications are separated into titled sections. Such separation shall not, however, operate to make the County an arbiter to establish limits to the contracts between the Contractor and Subcontractors, nor shall such separation be interpreted as superseding normal union jurisdictions.

.09 Language: Notwithstanding the appearance of such language in the various sections of the Specifications as, "The Paving Contractor," "The Grading Contractor," etc., the Contractor is responsible to the County for the entire Contract and the execution of all work referred to in the Contract Documents.

07 **PRESENT DOCUMENTS GOVERN**

The Contractor shall in no case claim a waiver of any specification requirements on the basis of previous approval of material or workmanship on other jobs of like nature or on the basis of what might be considered "standard" for material or workmanship in any particular location. The Contract Documents for this job shall govern the Work.

08 **CONTRACTOR'S SHOP DRAWINGS**

.01 The approved Drawings will be supplemented by such Shop Drawings as are needed to adequately control the Work. It is mutually agreed that all authorized alterations affecting the requirements and information given on the approved Drawings shall be in writing. Shop Drawings, Product Data, Samples and similar submittals are not Contract Documents. The purpose of their submittal is to demonstrate for those portions of the Work for which submittals are required by the Contract Documents the way by which the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals which are not required by the Contract Documents may be returned by the Owner without action.

.02 Shop Drawings to be furnished by the Contractor for any structure shall consist of such detailed drawings as may be required for the execution of the Work.

.03 Shop Drawings must be approved by the County before the work in question is performed. Drawings for false work, centering, and form work may also be required, and in such cases shall be likewise subjected to approval unless approval be waived. It is expressly understood, however, that approval of the Contractor's Shop Drawings does not relieve the Contractor of any responsibility for accuracy of dimensions and details. It is mutually agreed that the Contractor shall be responsible for agreement and conformity of his Shop Drawings with the approved Drawings and Specifications. The County will review and approve or take other appropriate action upon the Contractor's submittals such as Shop Drawings, Product Data and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The County's review will be within reasonable promptness as to cause no delay in the Work. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The County's review of the Contractor's submittals shall not relieve the Contractor of his obligations. The

County's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences or procedures. The County's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

.04 It is the responsibility of the Contractor to check all Shop Drawings before same are submitted to the County for approval. Shop Drawings which have not been checked and approved by the Contractor will not be approved.

.05 Shop Drawings shall be submitted only by the Contractor who shall indicate by a signed stamp on the drawings that he has checked the Shop Drawings and that the work shown on them is in accordance with Contract requirements and has been checked for dimensions and relationship with work of all other trades involved. Under no conditions shall Shop Drawings be accepted from anyone other than the Contractor.

.06 The Contractor shall furnish the County with at least six copies of all Shop Drawings for approval. Two finally approved copies will be returned to the Contractor for his use.

.07 The Contract Price shall include the cost of furnishing all Shop Drawings and the Contractor will be allowed no extra compensation for such drawings.

.08 The approval of such Shop Drawings shall not relieve the Contractor from responsibility for deviations from Drawings or the Specifications unless he has in writing called attention to such deviations, and the County has approved the changes or deviations in writing at the time of submission, nor shall it relieve him from the responsibility for errors of any kind in Shop Drawings. When the Contractor does call such deviations to the attention of the County, he shall state in his letter whether or not such deviations involve any extra cost. If this is not mentioned, it will be assumed that no extra cost is involved for making the change.

.09 The Contractor shall maintain a log of all contract submittals which includes, at a minimum, the submittal number, revision number, description, responsible company, proposed submittal date, date actually submitted, date approved, any comments received or status. The log shall be updated on a regular basis and made available to the County for review upon request.

09 INSTRUCTIONS, CHANGES, ETC.

.01 All changes, alterations, or instructions in regard to any feature of the Work that differ from the Drawings and Specifications must be approved in writing by Change Order in all cases, and no verbal orders will be regarded as a basis for claims for extra work.

.02 If the Contractor claims that any instruction by supplemental drawings or otherwise involves extra cost or an extension of time, he shall notify the County in writing within ten (10) days after the receipt of such instructions and in any event before proceeding to execute the Work. Thereafter, the procedure for executing such change shall be in accordance with Section 34 of these General Conditions. No such claim shall be valid unless made in accordance with the terms of this section.

.03 No claims for extra cost will be considered based on an escalation of material prices throughout the period of the Contract.

.04 No extra work is to be performed or any changes made that involves any extra cost or extension of time unless approved by the County and authorized by Change Order.

10 EXAMINATION OF WORK BY CONTRACTOR

It is understood and agreed that the Contractor has, by careful examination, satisfied himself as to the nature and location of the Work, the conformation of the ground, the character, quality, and quantity of the facilities needed preliminary to and during the prosecution of the Work, the general and local conditions, and all other matters which can in any way affect the Work or the cost thereof under this Contract. No verbal agreement or conversation with any officer, agent, or employee of the County, either before or after the execution of the Contract, shall affect or modify any of the terms or obligations herein contained.

11 MATERIALS, SERVICES, AND FACILITIES

.01 The Contractor shall at all times employ sufficient labor and equipment for executing the Work to full completion in the manner and time specified. Failure of the Contractor to provide adequate labor and equipment may result in default of the Contract. The labor and equipment to be used in the Work by the Contractor shall be sufficient to meet the requirements of the Work and shall be such as to produce a satisfactory quality of work, in accordance with accepted industry practices within the time specified in the Contract.

.02 Materials and equipment shall be so stored and handled as to insure the preservation of their quality and fitness for the Work. Stored materials and equipment to be incorporated in the Work shall be located so as to facilitate prompt inspection. No product which has in any way become unfit for the intended purpose shall be incorporated into the Work.

.03 Manufactured articles, materials, and equipment shall be applied, installed, connected, erected, cleaned, and conditioned as directed by the manufacturer.

.04 Materials, supplies, and equipment to be incorporated into the Work shall be new and unused unless otherwise specifically stated in the Contract Documents. The source of supply for all such products shall be submitted to the Owner, together with detailed descriptions thereof in the form of samples, Shop Drawings, tests, or other means necessary to adequately describe the items proposed. If, after trial, it is found that sources of supply, even though previously approved by the Owner, have not furnished products meeting the intent of the Contract Documents, the Contractor shall thereafter furnish products from other approved sources, and shall remove completed Work incorporating products which do not meet Contract requirements.

.05 The Contractor shall confine operations at the site to areas permitted by law, ordinances, permits and the Contract Documents and shall not unreasonably encumber the site with materials or equipment. The Contractor shall provide parking for all construction vehicles only within the construction limits as indicated on the drawings or make appropriate arrangements as permitted by law.

.06 Only materials and equipment which are to be used directly in the Work may be brought to and stored on the Project site by the Contractor. After equipment is no longer required for the Work, it must be promptly removed from the Project site. Protection of construction materials and equipment stored at the Project site from weather, theft, damage, and all other adversity is the sole responsibility of the Contractor.

.07 The Contractor and any entity for which the Contractor is responsible must not erect any sign on the Project site without the prior written consent of the Owner, which may be withheld in the sole discretion of the Owner.

.08 Contractor must ensure that the Work, at all times, is performed in a manner that affords reasonable access, both vehicular, pedestrian, and for emergency to the site of the Work and all adjacent areas. The Work must be performed, to the fullest extent reasonably possible, in such a manner that public areas adjacent to the site of the Work must be free from debris, building materials and equipment likely to cause hazardous conditions. Without limitation of any other provision of the Contract Documents, Contractor must use its best efforts to minimize any interference with the occupancy or beneficial use of (1) any areas and buildings adjacent to the site of the Work, or (2) the Building in the event of partial occupancy.

.09 Without prior approval of the County, the Contractor shall not permit any workers to use any existing facilities at the Project site, including, without limitation, lavatories, toilets, entrances, and parking areas other than those designated by the County. Without limitation of any other provision of the Contract Documents, the Contractor shall use its best efforts to comply with all rules and regulations promulgated by the County in connection with the use and occupancy of the Project

site and the Building, as amended from time to time. The Contractor shall immediately notify the County in writing if during the performance of the Work, the Contractor finds compliance with any portion of such rules and regulations to be impracticable, setting forth the problems of such compliance and suggesting alternatives through which the same results intended by such portions of the rules and regulations can be achieved. The County may, in the County's sole discretion, adopt such suggestions, develop new alternatives or require compliance with the existing requirements of the rules and regulations. The Contractor shall also comply with all insurance requirements applicable to use and occupancy of the Project site and the Building.

12 REQUESTS FOR SUBSTITUTIONS

.01 Requests for substitutions of proprietary products or of a particular manufacturer or vendor must be accompanied by the following documentation:

(a) Full explanation of the proposed substitution and submittal of all supporting data including technical information, catalog cuts, warranties, test results, installation instructions, operating procedures, and other like information necessary for a complete evaluation of the substitution;

(b) Reasons the substitution is advantageous and necessary, including benefits to the County and the Work in the event the substitution is acceptable;

(c) The adjustment, if any, in the Contract Sum, in the event the substitution is acceptable;

(d) The adjustment, if any, in the time of completion of the Agreement and the construction schedule in the event the substitution is acceptable; and

(e) An affidavit stating that (1) the proposed substitution conforms and meets all the requirements of the pertinent Specifications and the requirements shown on the Drawings and (2) the Contractor accepts the warranty and correction obligations in connection with the proposed substitution as if originally specified. Proposals for substitutions must be submitted in triplicate to the County in sufficient time to allow the County no less than ten (10) working days for review. No substitutions will be considered or allowed without the Contractor's submittal of complete substantiating data and information as stated hereinbefore.

.02 Substitutions and alternates may be rejected without explanation and will be considered only under one or more of the following conditions:

(a) Required for compliance with interpretation of code requirements or insurance regulations then existing;

(b) Unavailability or specified products, through no fault of the Contractor; or

(c) Subsequent information discloses inability or specified products to perform properly or to fit in designated space;

(d) Manufacturer/fabricator refuses to certify or guarantee performance of specified product as required; and

(e) When in judgment of the Owner, that a substitution would be substantially to the Owner's best interests, in terms of costs, time, or other considerations.

.03 Whether or not any proposed substitution is accepted by the Owner, the Contractor must reimburse the Owner for any fees charged by the Architect or other consultants for evaluating each proposed substitute.

.04 By making requests for substitutions based on the above, the Contractor:

(a) Represents and warrants that the Contractor has personally investigated the proposed substitute product or Subcontractor and determined that it is equal or superior in all respects to the product or Subcontractor previously specified;

(b) Represents and warrants that the Contractor will provide the same warranty for the substituted product or for the workmanship of the substituted Subcontractor, as applicable, that the Contractor would have provided for the product or Subcontractor previously specified;

(c) Certifies that the cost data presented, in form of certified quotations from Suppliers of both specified and proposed equipment is complete and includes all related costs under this Contract, but excludes costs under separate contracts, and waives all claims for additional costs related to the substitution which subsequently become apparent; and

(d) Agrees that the Contractor will coordinate the installation of the accepted substitution, making such changes as may be required for the Work to be complete and in accordance with the Contract Documents in all respects.

.05 The item proposed for substitution shall be equal to or superior to the specified it item or items, in construction, efficiency, and utility in the opinion of the Owner. The opinion of the Owner shall be final and no substitute material or article shall be purchased or installed without such written approval.

.06 In case of a difference in price, the County shall receive all benefits of the

difference in cost involved in any substitution, when lower, and the Contract altered by Change Order to credit the County with any savings to be obtained. However, the County shall not be charged for any additional cost in case of a price difference.

13 INSPECTION AND TESTING OF MATERIALS

Unless otherwise specifically provided for, the inspection and testing of materials and finished articles to be incorporated in the Work at the site shall be made by bureaus, laboratories, or agencies approved by the County. The cost of such inspection and testing shall be paid by the Contractor. The Contractor shall furnish evidence satisfactory to the County that the material and finished articles have passed the required tests prior to the incorporation of such materials and finished articles in the Work.

14 INSPECTION OF WORK

.01 The Contractor shall, at all times, permit and facilitate inspection of the Work by authorized representatives of the County and public authorities having jurisdiction in connection with the Work of this Contract. The presence or observations of the County or its representative at the site of the Work shall not be construed to, in any manner, relieve the Contractor of this responsibility for strict compliance with the provisions of the Contract Documents.

.02 If the specifications, County's instructions, laws, ordinances, or a public authority require any work to be specially tested or approved, the Contractor shall give the County timely notice of its readiness for observation or inspection.. If the inspection is by another authority, then the County shall be advised of the date fixed for such inspection. Required certificates of inspection shall be secured by the Contractor. Contractor having secured all certificates of inspection will deliver same to the County upon completion. If any work should be covered up without approval or consent of the County, it shall, if required by the County, be uncovered for examination at the Contractor's expense.

.03 Should any disagreement or difference arise as to the estimate, quantities, or classifications or as to the meaning of the Drawings or Specifications, or any point concerning the character, acceptability, and nature of the several kinds of work, any materials and construction thereof, the decisions of the County shall be final and conclusive and binding upon all parties to the Contract.

.04 If the County determines that portions of the Work require additional testing, inspection or approval, the County will instruct the Contractor to make arrangements for such additional testing, inspection or approval by an entity acceptable to the County, and the Contractor shall give timely notice to the

County of when and where tests and inspections are to be made so that the County may be present for such procedures. Such costs, except as provided below, shall be at the County 's expense.

.05 If such procedures for testing or inspection reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure including those of repeated procedures shall be at the Contractor's expense.

.06 Required certificates of testing, inspection or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

.07 Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.

15 AUTHORITY OF THE COUNTY

.01 The Contractor shall perform all of the Work herein specified under the general direction, and to the entire satisfaction, approval, and acceptance of the County. The County shall decide all questions relating to measurements of quantities, the character of the Work performed, and as to whether the rate of progress is such that the Work will be completed within the time limit of the Contract. All questions as to the meaning of these Specifications will be decided by the County.

.02 The approval of the County of any materials, plants, equipment, Drawings, or of any other items executed, or proposed by the Contractor, shall be construed only to constitute an approval of general design. Such approval shall not relieve the Contractor from the performance of the Work in accordance with the Contract Documents, or from any duty, obligations, performance guarantee, or other liability imposed upon him by the provisions of the Contract.

16 PROHIBITED INTERESTS

No official of the County who is authorized in such capacity and on behalf of the County to negotiate, make, accept, or approve, or to take part in negotiating, making, accepting, or approving any architectural, engineering, inspection, construction, or material supply contract, or any subcontract in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part hereof. No officer, employee, architect, attorney, engineer, or inspector of or for the County who is authorized is such capacity and on behalf of the County to exercise any legislative, executive, supervisory, or other similar functions in connection with the construction of the Project, shall become directly or indirectly interested personally in this Contract or in any part thereof,

any material supply contract, subcontract, insurance contract, or any other contract pertaining to the Project.

17 REJECTIONS OF WORK AND MATERIALS

.01 All materials and equipment furnished and all work done that is not in accordance with the Drawings or Specifications or that is defective will be rejected. All rejected materials, equipment, or work shall be removed immediately. If rejected materials, equipment, or work is not removed within forty-eight hours from the date of letter of notification, the County shall have the right and authority to stop the Contractor and his work immediately, and/or shall have the right to arrange for the removal of said rejected materials, equipment, or work at the cost and expense of the Contractor. All rejected materials, equipment, or work shall be replaced with other material, equipment, or work which conforms with the Drawings and Specifications at no additional cost to the County.

.02 Inspection of the Work shall not relieve the Contractor of any of his obligations to fulfill his Contract and defective work shall be made good regardless of whether such work, material, or equipment has been previously inspected by the County and accepted or estimated for payment. The failure of the County to condemn improper materials or workmanship shall not be considered as a waiver of any defect which may be discovered later, or for work actually defective. All work, material, and/or equipment shall be guaranteed against defects for a period of one year from date of Project acceptance as established by the County.

18 WEATHER CONDITIONS

The Contractor will be required to protect all work and materials against damage or injury from the weather. If, in the opinion of the County, any work or materials shall have been damaged or injured by reason of failure to protect such, all such materials or work shall be removed and replaced at the expense of the Contractor.

19 ROYALTIES AND PATENTS

The Contractor shall hold and save the County and its officers, agents, servants, and employees, harmless from liability of any nature or kind, including cost and expenses for, or on account of, any patented or unpatented invention, process, article, or appliance manufactured or used in the performance of the Contract, including its use by the County, unless otherwise specifically stipulated in the Contract Documents.

20 CONTRACTOR'S PERSONNEL

.01 The Contractor will supervise and direct the Work. He will be solely responsible for the means, methods, techniques, sequences, and procedures of construction. An experienced Superintendent and necessary assistants competent to supervise the particular types of work involved shall be assigned to the Project by the Contractor, and shall be available at all times when work is in progress. The name of the Superintendent shall be submitted with qualifications of same prior to start of the Work and shall be approved by the County prior to start of the Work. The Superintendent so named by the Contractor shall be employed by the Contractor and shall have served in a supervisory capacity on at least one Project of like description and size performed by the Contractor during the previous twelve months. Under no circumstances shall an employee of any Subcontractor serve as Project Superintendent. The Superintendent shall represent the Contractor, and all directions given to the Superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

.02 The Contractor shall not change key members of its staff without the consent of the Owner, unless such staff members prove to be unsatisfactory to the Contractor and cease to be in its employ. If the Contractor intends to change a key staff member (defined as those full-time personnel stationed at the site including Project Manager, Superintendent, Project Engineer, Assistant Project Manager, Assistant Superintendent, or Assistant Project Engineer) it shall give the Owner written notice at least fifteen (15) days prior to the intended change. The written notice shall include a description of qualifications for the new proposed key staff member. The Owner shall have the right to approve or disapprove the proposed key staff member.

.03 Only persons skilled in the type of work which they are to perform shall be employed. The Contractor shall, at all times, maintain discipline and good order among his employees, and shall not employ on the Work any unfit person or persons or anyone unskilled in the work assigned him.

21 LINES, GRADES, AND MEASUREMENTS

.01 Such stakes and markings as the County may set for either its or the Contractor's guidance shall be preserved by the Contractor. Failure to protect such stakes or markings, or gross negligence on the Contractor's part resulting in loss of same, may result in the Contractor being charged for their replacement.

.02 The Contractor must exercise proper care and caution to verify the grades and figures given him before proceeding with the Work, and shall be responsible for any damage or defective work caused by his failure of such care and caution. He shall promptly notify the County of any errors or discrepancies he may discover in order that the proper corrections may be made.

22 **PERMITS AND INSPECTION FEES**

Permits shall be secured by the Contractor and inspections will be required, but the County will not charge the Contractor for such permits and inspections obtained from the County. The Contractor shall secure and pay for any permits and inspection fees required by any other governmental entity or agency.

23 **LAWS AND REGULATIONS**

The Contractor's attention is directed to the fact that all applicable Federal, State, and County laws, municipal ordinances, and the rules and regulations of all authorities having jurisdiction over construction of the Project shall apply to the Contract throughout, and they will be deemed to be included in the Contract Documents the same as though herein written out in full. The Contractor shall keep himself fully informed of all laws, ordinances, and regulations of the Federal, State, and County in any manner affecting those engaged or employed in the Work or the materials used in the Work or in any way affecting the conduct of the Work and of all orders and decrees of bodies or tribunals having any jurisdiction or authority over same. If any discrepancy or inconsistency should be discovered in this Contract, or in the Drawings or Specifications herein referred to, in relation to any such law, regulation, ordinance, order, or decree, he shall herewith report the same, in writing, to the County. He shall at all times himself observe and comply with all such laws, ordinances, and regulations, and shall protect and indemnify the County and its agents against any such law, ordinance, regulation, order, or decree, whether by himself or by his employees.

24 **CONTRACTOR'S OBLIGATIONS**

The Contractor shall, in good workmanlike manner, do and perform, all work and furnish all supplies and materials, machinery, equipment, facilities, and means, except as herein otherwise expressly specified, necessary, or proper to perform and complete all the Work required by this Contract, within the time herein specified, in accordance with the provisions of this Contract and said Specifications and in accordance with the Drawings of the Work covered by this Contract and any and all supplemental drawings of the Work covered by this Contract. He shall furnish, erect, maintain, and remove such construction, plants, and such temporary works as may be required. He alone shall be responsible for the safety, efficiency, and adequacy of his plants, appliances, and methods, and for any damage which may result from their failure or their improper construction, maintenance, or operation. The Contractor shall observe, comply with, and be subject to all terms, conditions, requirements and limitations of the Contract and Specifications, local ordinances, and State and Federal laws; and shall do, carry on, and complete the entire Work.

25 SUBCONTRACTING

.01 The Contractor understands and agrees that it shall be a breach of this Contract to subcontract any portion of the Work on this Project unless the Work and the contractor proposed to perform it have been declared in the Proposal to the Contract; or the Contractor shall have obtained written approval from the County.

THE CONTRACTOR FURTHER UNDERSTANDS AND AGREES THAT ANY WORK ON THIS PROJECT WHICH THE CONTRACTOR SECURES IN VIOLATION OF THIS PROVISION SHALL BE DEEMED A GRATUITY FROM THE CONTRACTOR FOR WHICH DEKALB COUNTY SHALL NOT BE OBLIGATED TO PAY.

.02 Nothing contained in this Contract shall create any contractual relation between any Subcontractor and the County.

26 ASSIGNMENTS

The Contractor shall not assign the whole or any part of this Contract or any monies due or to become due hereunder without written consent of the County.

27 CONTRACTOR'S HOLD HARMLESS AGREEMENT

The General Contractor shall be responsible from the time of signing the Contract, or from the time of the beginning of the first work, whichever shall be the earlier, for all injury or damage of any kind resulting from this work, to persons or property, including employees and property of the County. The Contractor shall exonerate, indemnify, and save harmless the County from and against all claims or actions, and all expenses incidental to the defense of any such claims, litigation, and actions, based upon or arising out of damage or injury (including death) to persons or property caused by or sustained in connection with the performance of this Contract or by conditions created thereby or arising out of or any way connected with work performed under this Contract and shall assume and pay for, without cost to the County, the defense of any and all claims, litigation, and actions suffered through any act or omission of the Contractor, or any Subcontractor, or anyone directly or indirectly employed by or under the supervision of any of them. The Contractor expressly agrees to defend against any claims brought or actions filed against the County, where such claim or action involves, in whole or in part, the subject of the indemnity contained herein, whether such claims or actions are rightfully or wrongfully brought or filed.

28 INSURANCE REQUIREMENTS

The Contractor shall furnish the following along with Bonds and Contract Documents sent to the County for execution:

A. Certificates of Insurance in companies doing business in Georgia and acceptable to the County covering:

1. Statutory Workers Compensation Insurance.

2. Comprehensive General Liability Insurance covering all operations with combined single limit of $1,000,000, inclusive of protection against bodily injury due to excavation, shoring, and underpinning, to the extent to which such risks are present.

3. Comprehensive Automobile Liability Insurance with form coverage for all owned, non-owned and hired vehicles with combined single limit of $500,000.

4. Umbrella or Excess Insurance is acceptable to meet the minimum limits whenever there is an insurer licensed to do business in Georgia which is providing at least the first $100,000 of primary coverage.

B. Certificates of Insurance must be executed in accordance with the following provisions:

1. Certificates to contain policy number, policy limits, and policy expiration date of all policies issued in accordance with this Contract;

2. Certificates to contain the location and operations to which the insurance applies;

3. N/A

4. Certificates to contain Contractor's protective coverage for any Subcontractor's operations;

5. Certificates to contain Contractor's contractual liability insurance coverage;

6. Certificates are to be **issued** to:

DeKalb County, Georgia
Director of Purchasing & Contracting
The Maloof Center
1300 Commerce Drive
Decatur, Georgia 30030.

C. The Contractor shall be wholly responsible for securing certificates of insurance coverage as set forth above from all Subcontractors who are engaged in this Work.

D. The Contractor agrees to carry statutory Workers Compensation Insurance and to have all Subcontractors likewise carry statutory Workers Compensation Insurance.

E. **FIRE INSURANCE WITH EXTENDED COVERAGE**
The Contractor shall effect and maintain fire insurance with extended coverage including vandalism and malicious mischief endorsements up to 100% of the Contract Price of the Work including items of labor and materials connected therewith whether in or adjacent to the structure insured, materials in place or to be used as part of the permanent construction including surplus materials, shanties, protective fences, bridges, temporary structures, miscellaneous materials, and supplies incident to the Work and such scaffolding, staging towers, forms, and equipment not owned or rented by the Contractor, the cost of which is included in the cost of the Work.

EXCLUSIONS: This insurance does not cover any tools owned by mechanics, any tools, equipment, scaffolding, staging towers, and forms owned or rented by the Contractor, the capital value of which is not included in the cost of the Work.

The following language must be included on the policy:

> The loss, if any, is to be made adjustable with and payable to DeKalb County as trustee for the insured and Contractors and Subcontractors as their interests may appear.

Insurance shall be written by a company licensed to do business in the State of Georgia.

The Contractor shall furnish evidence of coverage to the County. Form of policy shall be Completed Value Builder's Risk Form.

If after loss no special agreement is made, replacement of injured work shall be ordered and executed as provided for changes in the Work.

29 LAND AND RIGHTS-OF-WAY

.01 Prior to entering on any land or right-of-way, the Contractor shall ascertain the requirements of applicable permits or easements obtained by the County, and shall conduct his work in accordance with requirements thereof including the giving of notice. The Contractor shall be fully responsible for performing work to the requirements of any permit or easement granting entity even though such requirements may exceed or be more stringent than that otherwise required by the

Contract Documents, and shall compensate the County fully for any loss or expense arising from failure of the Contractor to perform as required by such entity.

.02 The Contractor shall provide at his own expense and without liability to the County any additional land and access thereto that the Contractor may desire for temporary construction facilities, or for storage of materials.

30 PROTECTION OF WORK, PROPERTY, AND PERSONS

.01 The Contractor will be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work. He will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the Work and other persons who may be affected thereby, all the Work and all materials or equipment to be incorporated therein, whether in storage on or off the site, and other property at the site or adjacent thereto, including trees, shrubs, lawns, lakes, drainage ways, walks, pavements, roadways, structures, and utilities not designated for removal, relocation or replacement in the course of construction.

.02 The Contractor will comply with all applicable laws, ordinances, rules, regulations, and orders of any public body having jurisdiction. He will erect and maintain, as required by the conditions and progress of the Work, all necessary warning safeguards for devices and safety and protection of the Work, the public, and adjoining property. He will notify owners of adjacent utilities when prosecution of the Work may affect them. The Contractor will remedy all damage, injury, or loss to any property caused, directly or indirectly, in whole or in part, by the Contractor, any Subcontractor, or anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable.

.03 The Contractor shall, prior to commencing other on-site work, accurately locate above and below ground utilities and structures which may be affected by the Work, using whatever means may be appropriate. The Contractor shall mark the location of existing utilities and structures, not otherwise readily visible, with flagging, stakes, barricades, or other suitable means, and shall preserve and protect all utilities and structures not designated for removal, relocation, or replacement in the course of construction. He shall notify the County promptly on discovery of any conflict between the Contract Documents and any existing facility.

.04 In emergencies affecting the safety of persons or the Work or property at the site or adjacent thereto, or unanticipated conditions where delay would substantially impact the time or cost of work, the Contractor, upon notification to the County, shall act to prevent threatened damage, injury, or loss. Any claim for compensation or extension of time by the Contractor due to such extra work shall be submitted to the County within ten (10) days of the date of performing such work or deviations in the manner prescribed for a Change Order.

.05 All existing utilities, both public and private, including sewer, gas, water, electrical, and telephone services, etc., shall be protected and their operation shall be maintained through the course of the Work. Any temporary shutdown of an existing service shall be arranged between the Contractor and the responsible agency. The Contractor shall assume full responsibility and hold the County harmless from the result of any damage that may occur as a result of the Contractor's activities.

31 **PRIOR USE BY COUNTY**

Prior to completion of the Work, the County may take over operation and/or use of the Project or portions thereof. Such prior use of facilities by the County shall not be deemed as acceptance of any work or relieve the Contractor from any of the requirements of the Contract Documents.

32 **CLEANING UP**

The Contractor shall at all times, keep the premises free from accumulation of waste materials or rubbish caused by Contractor's employees or work. Upon completion of the Work, the Contractor shall remove all his plants, tools, materials, and other articles from the property of the County.

If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the cost thereof shall be charged to the Contractor. Contractor shall ensure that neither it, its subcontractors nor their employees or agents bring any hazardous materials or other materials/waste regulated by state, federal or local law, which are not commonly used in the construction process or which are not listed in any Specifications for the Project onto the Project site without first obtaining the Owner's advance written approval. Contractor agrees to ensure that any hazardous materials/waste or other materials/waste regulated by state, federal or local law that Contractor, its Subcontractors or their employees or agents bring onto or generate at the Project Site are handled in accordance with all applicable laws.

3.15.3 In addition to the removing of rubbish on a periodic basis and leaving the building broom clean the Contractor shall: clean all tile and glass: replace broken glass: remove stains, paint spots, and dirt from all Work; clean and polish all plumbing fixtures and equipment and remove all temporary protection items. To the maximum extent reasonably possible the Contractor shall keep the interior of the building free of combustible materials as the Work progresses.

3.15.4 The Contractor shall maintain and keep clean at all times the immediate approach to the Project site including the roads abutting the Project site.

33 BARRICADES

.01 Lanterns: Contractor shall provide continuously burning lanterns at all barricades and at protective barriers around excavations so that the public is adequately warned of such hazards. Lanterns shall remain lighted from sundown to sunrise and at all other times when the labor forces are not on the job site.

.02 Access to Site: Delivery of construction materials and equipment shall be only from locations approved by the County.

34 CHANGES IN THE WORK

.01 The County may at any time, as the need arises, order changes within the scope of the Work without invalidating the agreement. If such changes increase or decrease the amount due under the Contract Documents, or in the time required for performance of the Work, an adjustment may be authorized by Change Order.

.02 The County, also, may at any time, by issuing a Field Order make changes in the details of the Work. The Contractor shall proceed with the performance of any changes in the Work so ordered by the County unless the Contractor believes that such Field Order entitles him to a change in Contract Price or Time, or both, in which event he shall give the County written notice thereof within fifteen days after the receipt of the ordered change, and the Contractor shall not execute such changes pending the receipt of an executed Change Order or further instruction from the County.

.03 The Contract Price may be changed only by a Change Order. The value of any work covered by a Change Order or of any claim for increase or decrease in the Contract Price shall be determined by one or more of the following methods in the order of precedence listed below.

A. Unit prices previously approved.

B. An agreed lump sum.

C. The actual cost for labor, direct overhead, materials, supplies, equipment, and other services necessary to complete the Work. In addition, there shall be added an amount agreed upon but not to exceed fifteen percent (15%) of the actual cost of such work to cover the cost of general overhead and profit.

.04 Agreement on any Change Order constitutes a final settlement of all matters relating to the change in the Work which is the subject of the Change Order, including, but not limited to, all direct or indirect costs associated with such change and any and all adjustment to the Contract Sum and the construction schedule. In the event a Change Order increases the Contract Sum, Contractor must include the Work covered by such Change Orders in Applications for Payment as if such Work were originally part of the Contract Documents.

35 TIME FOR COMPLETION AND LIQUIDATED DAMAGES

.01 It is hereby understood and mutually agreed, by and between the Contractor and the County, that the date of beginning, rate of progress, and the time for completion of the Work are essential conditions of this Contract; and it is further mutually understood and agreed that the Work embraced in this Contract shall be commenced on a date to be specified in the Notice to Proceed.

.02 The Contractor agrees that said work shall be executed regularly, diligently, and uninterrupted at such rate of progress as will insure full completion thereof within the time specified. It is expressly understood and agreed, by and between the Contractor and the County, that the time for the completion of the Work described herein is a reasonable time for the completion of the same, taking into consideration the average climate range and usual industrial conditions prevailing in this locality.

.03 If the said Contractor shall neglect, fail or refuse to complete the Work within the time herein specified, then the Contractor does hereby agree, as a part consideration for the awarding of this Contract, to pay to the County, the amount specified herein, not as a penalty, but as liquidated damages.

The Contractor is hereby advised that time is of the essence with respect to the work governed by the Contract Documents. Contractor acknowledges and recognizes that if it fails to achieve Substantial Completion of any portion of the Work with the Contract Time set forth herein, as may be extended in accordance with the terms and provisions of the Agreement, County will sustain substantial losses as a result of such failure.

The Owner and Contractor agree that if the Contractor fails to achieve Substantial Completion of the Work within the Contract Time, as adjusted according to the Contract Documents, the County will suffer damages that are difficult if not impossible to accurately estimate; that Five Hundred dollars ($ 500.00) for each calendar day Substantial Completion of the Work is delayed past the Contract Time is a reasonable estimate of the probable damages that will be suffered by the Owner if Substantial Completion is delayed; that said Five Hundred dollars ($500.00) per day amount is intended to compensate the County for it damages and is not intended to penalize the Contractor for it delay; that the Contractor shall pay the Five Hundred dollars ($ 500.00) for each calendar day Substantial

Completion of the Work is delayed past the Contract Time, as adjusted according to the Contract Documents; and that the foregoing damages shall be County's sole remedy for delays in Substantial Completion caused by the Contractor.

The County may deduct liquidated damages from any unpaid amounts then or thereafter due the Contractor under this Agreement. Any liquidated damages not so deducted from any unpaid amounts due the Contractor are payable to the County at the County's demand, together with interest from the date of the demand at a rate equal to _eight_ percent (_8_%) per annum.

The County shall not be liable to the Contractor or any Subcontractor for claims or damages of any nature caused by or arising out of delays. The sole remedy against the County for delays shall be the allowance of additional time for completion of the Work, the amount of which shall be subject to the claims procedure set forth in the General Conditions.

.04 It is further agreed that time is of the essence of each and every portion of this Contract and of the Specifications wherein a definite portion and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract an additional time is allowed for the completion of any work, the new time limit fixed by such extension shall be the essence of this Contract. Provided, that the Contractor shall not be charged with liquidated damages or any excess cost when the delay in completion of the Work due to unforeseeable causes beyond the control and without the fault or negligence of the Contractor including, but not restricted to, acts of God, or to the public enemy, acts of the County, acts of another contractor in the performance of the contract with the County, fires, floods, epidemics, quarantine restrictions, strikes, freight embargoes, and unusually severe weather exceeding the average climatic conditions in the area of the Work.

.05 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be supported by the attachment of records of the National Oceanic and Atmospheric Administration showing meaningful variances from historic trend thereby substantiating the fact that weather conditions were abnormal for the period of time, could not have been reasonably anticipated and had an adverse effect on the scheduled construction activities. The Contractor shall be entitled to an extension of the Contract Time only for extraordinary adverse weather conditions, and then only for the number of days which are due solely to such extraordinary adverse weather conditions. The Contractor is not entitled to any costs associated with extraordinary adverse weather conditions.

.06 Provided further, that the Contractor shall within ten (10) days from the beginning of such delay, notify the County, in writing, of the causes of the delay, who shall ascertain the facts and extent of the delay and notify the Contractor within a reasonable time of its decision in the matter. Any claims submitted by the contractor shall include detailed information and facts to support the claim

including but not limited to written logs, photographs, meeting minutes, cost analysis and time impact analysis.

.07 Where the County has beneficial occupancy of a usable facility prior to the expiration of the specified Contract Time, but where contract work items remain outstanding, the County, at its option, may, in lieu of all or a portion of liquidated damages owed by the Contractor, charge the Contractor for actual cost of administering the Contract for the period subsequent to expiration of the Contract completion date (not to exceed the total amount which could be assessed under liquidated damages).

36 PAYMENTS TO CONTRACTOR

.01 Cost Breakdown - The Contractor shall be prepared to submit a cost breakdown immediately after the opening of Bids. Cost breakdown shall be based on values of parts of the Work as divided according to sections of the Specifications, and shall be further subdivided into labor and materials. This Schedule of Values, when approved by the County, shall be used as a basis for the Contractor's Application for Payment.

.02 Equipment, Materials, and Work Covered by Partial Payments - All equipment, materials, and work covered by progress payments shall, upon payment thereof, become the sole property of the County, but this provision shall not be construed as relieving the Contractor from the sole responsibility for the care and protection of equipment, materials, and work upon which payments have been made, or the restoration of any damaged work.

37 SCHEDULES, REPORTS, AND RECORDS

.01 The Contractor shall submit to the County such schedule of quantities and costs, progress schedules, payrolls, reports, estimates, records, and other data as the County may request concerning work performed or to be performed.

.02 The Contractor shall also submit a schedule of payments that he anticipates he will earn during the course of the Work

.03 Prior to the first partial payment estimate, the Contractor shall submit schedules showing the order in which he proposes to carry on the Work, including dates at which he will start the various parts of the Work, estimated date of completion of each part; and, as applicable, the dates at which special detail drawings will be required, and respective dates for submission of Shop Drawings, the beginning of manufacture, the testing and the installation of materials, supplies and equipment.

.04 The Contractor shall prepare and keep current, for the County's approval, a schedule of submittals which is coordinated with the Contractor's construction schedule and allows the County reasonable time to review submittals.

.05 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the County.

.06 Prior to Commencement of the Work under this Contract, the Contractor and its major Subcontractors shall, in a prearranged meeting together with the County, assist in the preparation of a detailed and specific construction schedule. Such schedule shall be complete in all respects and shall, when approved, become a part of the Contract Documents and shall not be changed without the prior written consent of the County. The construction schedule shall not exceed time limits current under the Contract Documents, shall be revised at appropriate intervals as required by the conditions of the Work and Project, shall be related to the entire Project to the extent required by the Contract Documents, shall be Critical Path Method (CPM) based on software approved by the County, and shall provide for expeditious and practicable execution of the Work. The approved construction schedule shall not be changed without the prior written consent of the County.

.07 In the event the County determines that the performance of the Work, or a Milestone Date, has not progressed or reached the level of completion required by the Contract Documents, the County will have the right to order the Contractor to take corrective measures necessary to expedite the progress of construction, including, without limitation, (1) working additional shifts or overtime; (2) supplying additional manpower, equipment, and facilities; and (3) other similar measures (hereinafter referred to collectively as "Extraordinary Measures"). Such Extraordinary Measures must continue until the progress of the Work complies with the stage of completion required by the Contract Documents. The Owner's right to require Extraordinary Measures is solely for the purpose of ensuring the Contractor's compliance with the construction schedule. The Contractor is not entitled to an adjustment in the Contract Sum in connection with Extraordinary Measures required by the Owner. The County may exercise the rights furnished the County under or pursuant to this Paragraph as frequently as the County deems necessary to ensure that the Contractor's performance of the Work will comply with any Milestone Date or completion date set forth in the Contract Documents.

38 COUNTY'S RIGHT TO SUSPEND OR TERMINATE WORK

.01 If the Contractor is adjudged bankrupt or insolvent, or if he makes a general assignment for the benefit of his creditors, or if a trustee or receiver is appointed for the Contractor or for any of his property, or if he files a petition to take advantage of any debtor's act or to reorganize under the bankruptcy or applicable laws, or if he repeatedly fails to supply sufficient skilled workers or suitable materials or equipment, payments to Subcontractors or for labor, materials or equipment, or if he disregards laws, ordinances, rules, regulations or orders of any public body having jurisdiction of the Work, or if he otherwise violates any provision of the Contract Documents, then the County may, without prejudice to any other right or remedy

and after giving the Contractor and his surety a maximum of seven days from delivery of a written notice, declare the Contract in default, take possession of the Project and of all materials, equipment, tools, construction equipment and machinery thereon owned by the Contractor, and call upon the surety to finish the Work by whatever method deemed expedient.

.02 Where Contractor's services have been so terminated by County, the termination will not affect any rights or remedies of County against Contractor then existing or which may therefore accrue. Any retention or payment of moneys due Contractor by County will not release Contractor from liability. If the Contractor can establish or it is otherwise determined that the Contractor was not in default or that the failure to perform is excusable, a termination for default will be considered to have been a termination for the convenience of the County and the rights and obligations of the parties governed accordingly.

.03 Upon seven days' written notice to Contractor, County may, for its own convenience and at its sole option, without cause and without prejudice to any other right or remedy of County, elect to terminate the Contract. In such case, Contractor shall be paid for the completed and acceptable work executed in accordance with the Contract Documents prior to the effective date of termination.

39 **ACCEPTANCE OF WORK AND FINAL PAYMENT**

.01 Before final acceptance of the Work and payment to the Contractor of the percentage retained by the County, the following requirements shall be complied with:

A. Final Inspection: Upon notice from the Contractor that his work is completed, the County shall make a final inspection of the Work, and shall notify the Contractor of all instances where his work fails to comply with the Drawings and Specifications, as well as any defects he may discover. The Contractor shall immediately make such alterations as are necessary to make the Work comply with the Drawings and Specifications.

B. Final Payment: When the Work under this Contract is completed, a final payment request shall be submitted representing the original Contract Price and Change Orders to the Contract. The final payment shall not be due until the Contractor shall have completed all work necessary and reasonably incidental to the Contract, including final clean-up.

.02 Acceptance of the Work and the making of final payment shall not constitute a waiver of any claims by the County. Payments otherwise due the Contractor may be withheld by the County because of defective work not remedied and unadjusted damage to others by the Contractor or Subcontractors, vendors, or laborers.

.03 All claims for final payment must be submitted within sixty (60) days after the Work has been completed and accepted by the County. Failure to present said claims within that period shall constitute a waiver of the claim by the Contractor. All claims are subject to final approval and audit by the Board of Commissioners of DeKalb County.

40 GUARANTEE AND CORRECTION OF WORK

The Contractor shall guarantee all Work to have been accomplished in conformance with the Contract Documents. Neither the final certificate of payment nor any provision of the Contract Documents, nor partial or entire occupancy or use of the Work by the County, shall constitute an acceptance of any part of the Work not done in accordance with the Contract Documents, or relieve the Contractor of liability for incomplete or faulty materials or workmanship. The Contractor shall promptly remedy any omission or defect in the Work and pay for any damage to other improvements or facilities resulting from such omission or defect which shall appear within a period of one year from the date of final acceptance, unless a longer period is elsewhere specified. In the event that the Contractor should fail to make repairs, adjustments, or other remedy that may be made necessary by such defects, the County may do so and charge the Contractor the cost thereby incurred. The Performance Bond shall remain in full force and effect through the guarantee period.

41 VENUE

The law of the State of Georgia shall govern the construction of this Contract. The courts of DeKalb County, Georgia shall have exclusive jurisdiction to try disputes arising under or by virtue of this Contract.

Supplementary Conditions

SUPPLEMENTARY CONDITIONS

01 SCOPE

Furnish, erect, and maintain temporary facilities and perform temporary work required in the performance of this Contract, including those shown and specified.

02 USE OF TEMPORARY FACILITIES

Contractor may be required by the County to provide and maintain a suitable office on the site for his own use and for the use of representatives of the County.

03 MAINTENANCE AND REMOVAL

A. Utilities and Furnishings: Contractor shall furnish sufficient heat, artificial light, ventilation and janitor's service, and shall also provide a table or desk, plan rack and chairs, all for the use of those visiting the job, in addition to such furnishings as he provides for his own use.

B. Location and Removal: Temporary offices and other structures shall be located where approved by the County, and shall be removed from the premises upon completion of the Contract or earlier if so directed by the County. They shall remain the property of the Contractor.

04 FIELD OFFICES

Contractor and his Subcontractors shall provide such additional offices, storage shanties, tool sheds and other temporary buildings as required for their own use and those employed on the Work.

05 TOILET AND WASHING FACILITIES

A. Toilet Building: Contractor may be required by the County, at the beginning of work, to provide on premises suitable and adequate temporary toilets and enclosure for use of workers on the job; maintain same in sanitary condition; remove same at completion of building operations and/or when directed.

B. Sanitary Regulations: Do not allow any sanitary nuisances to be committed in or about work; enforce sanitary regulations of local and State Health Authorities.

06 UTILITIES DURING CONSTRUCTION

A. Utilities: Contractor shall furnish all utilities and pay for all utility bills used during construction. Utilities shall include electric power or fuel of any sort used for heating, etc., and water.

B. Connections to Utilities: Contractor shall provide all temporary connections to utilities when not provided by the utility company or others at no additional cost to the Owner.

07 TELEPHONE

Contractor shall, if required by the County, install and maintain at his own expense, a job telephone and communications equipment necessary for the execution of the Work for the duration of the Contract.

08 TEMPORARY HEAT

The Contractor shall provide at his own expense temporary heat as necessary to protect all work and materials against injury from dampness and cold. Fuel, equipment and method of heating shall not present a fire hazard and shall be satisfactory to the County. See requirements in detail Specifications for temperatures to be maintained for application of work under the various trades.

Notice to Contractors and Subcontractors

NOTICE TO CONTRACTORS AND SUBCONTRACTORS

The Georgia Legislature has enacted a new Code provision, designated O.C.G.A. §13-10-80, governing progress payments and retainage for public works contracts. It is applicable to contracts which, when awarded exceed $150,000.00 in value or forty-five (45) days in duration, and establishes mandatory guidelines by which payments received from DeKalb County in this contract must be passed through the subcontractors. For your information, its provisions are set out below:

13-10-2. Periodic Progress Payments; Retainage; Exceptions; Minimal Standard of this Code Section.

(a) As used in this Code section, the term:

(1) "Contractor" means a person having a direct contract with the owner.

(2) "Lower tier subcontractor" means a person other than a contractor having a direct contract with a subcontractor.

(3) "Owner" means the state, any county, municipal corporation, authority, board of education, or other public board, public body, department, agency, instrumentality, or political subdivision of the state.

(4) "Owner's authorized contract representative" means the architect or engineer in charge of the project for the owner or such other contract representative or officer as designated in the contract documents as the party representing the owner's interest regarding administration and oversight of the project.

(5) "Subcontractor" means a person other than an owner having a direct contract with the contractor.

(b) In any contract for the performance of any construction project entered into on or after July 1, 1985, with an owner, as defined in paragraph (3) of subsection (a) of this Code section, such contract shall provide for the following:

(1) After work has commenced at the construction site, progress payments to be made on some periodic basis, and at least monthly, based on the value of work completed as may be provided in the contract documents plus the value of materials and equipment suitably stored, insured, and protected at the construction site, and at the owner's discretion such materials and equipment suitably stored, insured, and protected off site at a location approved by the owner's authorized contract representative when allowed by the contract documents, less retainage; and

(2) (A) Retainage to a maximum of ten (10%) percent of each progress payment; provided, however, that, when fifty (50%) percent of the contract value including change orders and other additions to the contract value provided for by the contract documents is due and the manner of completion of the contract work and its progress are reasonably satisfactory to the owner's authorized contract representative, the owner shall withhold no more retainage. At the discretion of the owner and with the approval of the contractor, the retainage of each subcontractor may be released separately as the subcontractor completes his work.

(B) If, after discontinuing the retention, the owner's authorized contract representative determines that the work is unsatisfactory or has fallen behind schedule, retention may be resumed at the previous level. If retention is resumed by an owner, the contractor and subcontractors shall be entitled to resume withholding retainage accordingly.

(C) At substantial completion of the work or such other standard of completion as may be provided in the contract documents and as the owner's authorized contract representative determines the work to be reasonably satisfactory, the owner shall within thirty (30) days after invoice and other appropriate documentation as may be required by the contract documents are provided pay the retainage to the contractor. If at that time there are any remaining incomplete minor items, an amount equal to two hundred (200%) percent of the value of each item as determined by the owner's authorized contract representative shall be withheld until such item or items are completed. The reduced retainage shall be shared by the contractor and subcontractors as their interests may appear.

(D) The contractor shall, within ten (10) days from the contractor's receipt of retainage from the owner, pass through payments to subcontractors and shall reduce each subcontractor's retainage in the same manner as the contractor's retainage is reduced by the owner, provided that the value of each subcontractor's work complete and in place equals fifty (50%) percent of his subcontract value, including approved change orders and other additions to the subcontract value and provided, further, that the work of the subcontractor is proceeding satisfactorily and the subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his work including any warranty work as the contractor in his reasonable discretion may require, including, but not limited to, a payment and performance bond.

(E) The subcontractor shall, within ten (10) days from the subcontractor's receipt of retainage from the contractor, pass through payments to lower tier subcontractors and shall reduce each lower tier subcontractor's retainage in the same manner as the subcontractor's retainage is reduced by the contractor, provided that the value of each lower tier subcontractor's work complete and in place equals fifty (50%) percent of his subcontract value, including approved change orders and other additions to the subcontract value and provided, further, that the work of the lower tier subcontractor is proceeding satisfactorily and the lower tier subcontractor has provided or provides such satisfactory reasonable assurances of continued performance and financial responsibility to complete his work including any warranty work as the subcontractor in his reasonable discretion may require, including, but not limited to, a payment and performance bond.

(c) This Code section shall not apply to:

(1) Any contracts let by the Department of Transportation of this state for the construction, improvement, or maintenance of roads or highways in this state or purposes incidental thereto; or

(2) Any contracts whose value or duration at the time of the award does not exceed $150,000.00 or forty-five (45) days in duration.

(d) Contract and subcontract provisions inconsistent with the benefits extended to contractors, subcontractors, and lower tier subcontractors by this Code section shall be unenforceable; provided, however, that nothing

in this Code section shall render unenforceable any contracts or subcontract provisions allowing greater benefits to be extended to such contractors, subcontractors, or lower tier subcontractors, the provisions and benefits of this Code section being minimal only.

(e) Nothing shall preclude a payor under this Code section, prior to making a payment, from requiring the payee to submit satisfactory evidence that all payrolls, material bills, and other indebtedness connected with the work have been paid. (Code 1981, §13-10-2, enacted by Ga. L. 1985, p. 1043, §1.)

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 WORK COVERED BY CONTRACT DOCUMENTS

A. The project includes but is not limited to site and clearing, grading/drainage, erosion control, utilities, asphalt parking, curb/gutter, concrete paving, building construction, concrete walks/steps, the skate park facilities, landscaping and field engineering and "as-built" surveys.

B. Project Location:

North East corner of Brook Run Park

4770 North Peachtree Road

Dunwoody, GA 30338

Owner: DeKalb County, GA

C. The Prime Consultant for the Project:

Altamira

Design & Common Sense, Incorporated

591 North Highland Avenue, NE

Atlanta, Georgia 30307

D. The work will be constructed under a single prime contract.

1.3 CONTRACTOR USE OF PREMISES

A. Use of the Site: Limit use of the premises to work in areas indicated. Confine operations to areas within contract limits indicated. Do not disturb portions of the site beyond the areas in which the Work is indicated.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 PRECONSTRUCTION MEETING

3.3 COORDINATION

A. If required, inform each party involved, in writing, of procedures required for coordination, include requirements for giving notice, submitting reports, and attending meetings.

END OF SECTION 01010

SECTION 01027

APPLICATION FOR PAYMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

1.3 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the Schedule of Values with preparation of the Contractor's Construction Schedule.

a. Contractor's Construction Schedule.

b. Application for Payment forms, including Continuation Sheets.

c. List of subcontractors.

d. List of products.

e. List of principal suppliers and fabricators.

f. Schedule of submittals.

2. Submit the Schedule of Values to Owner's Representative at the earliest possible date but no later than 7 days before the date scheduled for submittal of the initial Applications for Payment.

B. Format and Content: Use the Project Manual table of contents as a guide to establish the format for the Schedule of Values. Provide at least one line item for each Specification Section.

1. Identification: Include the following Project identification on the Schedule of Values:

a. Project name and location.

b. Name of the Owner's Representative.

c. Project number.

d. Contractor's name and address.

e. Date of submittal.

2. Arrange the Schedule of Values in tabular form with separate columns to indicate the following for each item listed:

a. Related Specification Section.

b. Description of Work.

c. Name of subcontractor.

d. Name of manufacturer or fabricator.

e. Name of supplier.

f. Change Orders (numbers) that affect value.

g. Dollar value.

1) Percentage of Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent.

3. Provide a breakdown of the Contract Sum in sufficient detail to facilitate continued evaluation of Applications for Payment and progress reports. Coordinate with the Project Manual table of contents.

4. Round amounts to nearest two decimal points; the total shall equal the Contract Sum.

5. Provide a separate line item in the Schedule of Values for each part of the Work where Applications for Payment may include materials or equipment, purchased or fabricated and stored, but not yet installed.

6. Schedule Updating: Update and resubmit the Schedule of Values prior to the next Applications for Payment when Change Orders or Construction Change Directives result in a change in the Contract Sum.

1.4 APPLICATIONS FOR PAYMENT

A. Each Application for Payment shall be consistent with previous applications and payments as certified by the Owner's representative and paid for by the Owner.

1. The initial Application for Payment, the Application for Payment at time of Substantial Completion, and the final Application for Payment involve additional requirements.

B. Payment-Application Times: The General Contractor shall not submit pay applications to Owner's representative more frequently than once a month.

C. Payment-Application Forms: Use AIA Document G702, 1992 and Continuation Sheets G703, 1992 as the form for Applications for Payment.

D. Application Preparation: Complete every entry on the form. Include notarization and execution by a person authorized to sign legal documents on behalf of the Contractor. The Owner's Representative will return incomplete applications without action.

1. Entries shall match data on the Schedule of Values and the Contractor's Construction Schedule. Use updated schedules if revisions were made.

2. Include amounts of approved Change Orders and Construction Change Directives issued prior to the last day of the construction period covered by the application.

E. Transmittal: Submit 3 signed and notarized original copies of each Application for Payment to the Owner's representative by a method ensuring receipt within 24 hours.

One copy shall be complete, including waivers of lien and similar attachments, when required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information related to the application, in a manner acceptable to the Owner's representative.

F. Initial Application for Payment: Administrative actions and submittals, that must precede or coincide with submittal of the first Application for Payment, include the following:

1. List of subcontractors.
2. List of principal suppliers and fabricators.
3. Schedule of Values.
4. Contractor's Construction Schedule (preliminary if not final).
5. Schedule of principal products.
6. Schedule of unit prices.
7. Submittal Schedule (preliminary if not final).
8. List of Contractor's staff assignments.
9. List of Contractor's principal consultants.
10. Copies of authorizations and licenses from governing authorities for performance of the Work.
11. Initial progress report.
12. Report of preconstruction meeting.
13. Certificates of insurance and insurance policies.

G. Application for Payment at Substantial Completion: Following issuance of the Certificate of Substantial Completion, submit an Application for Payment.

1. This application shall reflect Certificates of Partial Substantial Completion issued previously for Owner occupancy of designated portions of the Work.
2. Administrative actions and submittals that shall precede or coincide with this application include:
    a. Permits and similar approvals.
    b. Warranties (guarantees) and maintenance agreements.
    c. Test/adjust/balance records.
    d. Maintenance instructions.
    e. Meter readings.
    f. Startup performance reports.

g. Changeover information related to Owner's occupancy, use, operation, and maintenance.

h. Final cleaning.

i. Application for reduction of retainage and consent of surety.

j. Advice on shifting insurance coverage.

k. Final progress photographs.

l. List of incomplete Work, recognized as exceptions to Owner's Representative Certificate of Substantial Completion.

H. Final Payment Application: Administrative actions and submittals that must precede or coincide with submittal of the final Application for Payment include the following:

1. Completion of Project closeout requirements.

2. Completion of items specified for completion after Substantial Completion.

3. Ensure that unsettled claims will be settled.

4. Ensure that incomplete Work is not accepted and will be completed without undue delay.

5. Transmittal of required Project construction records to the Owner.

6. Removal of temporary facilities and services.

7. Removal of surplus materials, rubbish, and similar elements.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01027

SECTION 01040

COORDINATION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and supervisory requirements necessary for coordinating construction operations including, but not necessarily limited to, the following:

1. General project coordination procedures.
2. Conservation.
3. Coordination Drawings.
4. Administrative and supervisory personnel.
5. Cleaning and protection.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section "Field Engineering" specifies procedures for field engineering services, including establishment of benchmarks and control points.
2. Section "Project Meetings" for progress meetings, coordination meetings, and pre-installation conferences.
3. Section "Submittals" for preparing and submitting the Contractor's Construction Schedule.
4. Section "Materials and Equipment" for coordinating general installation.
5. Section "Contract Closeout" for coordinating contract closeout.

1.3 COORDINATION

A. Coordinate construction operations included in various Sections of these Specifications to assure efficient and orderly installation of each part of the Work. Coordinate construction operations included under different Sections that depend on each other for proper installation, connection, and operation.

1. Schedule construction operations in the sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.

2. Coordinate installation of different components to assure maximum accessibility for required maintenance, service, and repair.

3. Make provisions to accommodate items scheduled for later installation.

B. Contractor shall submit all questions **in writing** as follows:

1. **(RFI)** Request for Information (Numbered and Dated)

a. State the question and provide any drawings required to communicate the information.

b. Provide a space at the bottom of each RFI for Owner's representative's written response.

C. Where necessary, prepare memoranda for distribution to each party involved, outlining special procedures required for coordination. Include such items as required notices, reports, and attendance at meetings.

1. Prepare similar memoranda for the Owner and separate contractors where coordination of their work is required.

D. Administrative Procedures: Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and assure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:

1. Preparation of schedules.

2. Installation and removal of temporary facilities.

3. Delivery and processing of submittals.

4. Progress meetings.

5. Project closeout activities.

E. Conservation: Coordinate construction operations to assure that operations are carried out with consideration given to conservation of energy, water, and materials.

1. Salvage materials and equipment involved in performance of, but not actually incorporated in, the Work.

1.4 SUBMITTALS

A. Coordination Drawings: Prepare coordination drawings where careful coordination is needed for installation of products and materials fabricated by separate entities. Prepare coordination drawings where limited space availability necessitates maximum utilization of space for efficient installation of different components.

1. Show the relationship of components shown on separate Shop Drawings.

2. Indicate required installation sequences.

3. Comply with requirements contained in Section "Submittals."

B. Staff Names: Within 15 days of commencement of construction operations, submit a list of the Contractor's principal staff assignments, including the superintendent and other personnel in attendance at the Project Site. Identify individuals and their duties and responsibilities. List their addresses and telephone numbers.

1. Post copies of the list in the Project meeting room, the temporary field office, and each temporary telephone.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 GENERAL INSTALLATION PROVISIONS

A. Inspection of Conditions: Require the Installer of each major component to inspect both the substrate and conditions under which Work is to be performed. Do not proceed until unsatisfactory conditions have been corrected.

B. Manufacturer's Instructions: Comply with manufacturer's installation instructions and recommendations, to the extent that those instructions and recommendations are more explicit or stringent than requirements contained in Contract Documents.

C. Inspect materials or equipment immediately upon delivery and again prior to installation. Reject damaged and defective items.

D. Visual Effects: Provide uniform joint widths in exposed Work. Arrange joints in exposed Work to obtain the best visual effect. Refer questionable choices to the Architect for final decision.

E. Recheck measurements and dimensions before starting each installation.

F. Mounting Heights: Where mounting heights are not indicated, refer to the Architect for final decision.

G. Where conflicting information or dimensions are indicated, refer to the Architect for final decision.

3.2 CLEANING AND PROTECTION

A. Clean and protect construction in progress and adjoining materials in place, during handling and installation. Apply protective covering where required to assure protection from damage or deterioration at Substantial Completion.

B. Clean and provide maintenance on completed construction as frequently as necessary through the remainder of the construction period. Adjust and lubricate operable components to assure operability without damaging effects.

C. Limiting Exposures: Supervise construction operations to assure that no part of the construction, completed or in progress, is subject to harmful, dangerous, damaging, or

otherwise deleterious exposure during the construction period. Where applicable, such exposures include, but are not limited to, the following:

1. Excessive static or dynamic loading.
2. Excessive internal or external pressures.
3. Excessively high or low temperatures.
4. Thermal shock.
5. Excessively high or low humidity.
6. Air contamination or pollution.
7. Water or ice.
8. Solvents.
9. Chemicals.
10. Light.
11. Radiation.
12. Puncture.
13. Abrasion.
14. Heavy traffic.
15. Soiling, staining, and corrosion.
16. Rodent and insect infestation.
17. Combustion.
18. Electrical current.
19. High-speed operation.
20. Improper lubrication.
21. Unusual wear or other misuse.
22. Contact between incompatible materials.
23. Destructive testing.
24. Misalignment.
25. Excessive weathering.
26. Unprotected storage.

27. Improper shipping or handling.

28. Theft.

29. Vandalism.

END OF SECTION 01040

SECTION 01045

CUTTING AND PATCHING

1PART GENERAL

1.1 SECTION INCLUDES

A. Requirements and limitations for cutting and patching of Work. Cutting and patching includes cutting existing construction to provide for installation or access of other Work and the subsequent patching and finishing to restore surfaces to match existing or adjacent surfaces.

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

1.2 RELATED SECTIONS

A. Section 02070 - Selective Demolition

2PART PRODUCTS

2.1 MATERIALS

A. Primary Products: Those required for original installation. Match existing Products and work for patching and extending work.

3PART EXECUTION

3.1 EXAMINATION

A. Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.

B. After uncovering existing Work, assess conditions affecting performance of work.

C. Beginning of cutting or patching means acceptance of existing conditions.

3.2 PREPARATION

A. Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.

B. Provide protection from elements for areas which may be exposed by uncovering work.

C. Cut, move or remove existing construction for access to alteration and renovation work.

Replace and restore at completion. Remove and replace unsuitable materials, such as rotted wood, and corroded metals.

3.3 CUTTING

A. Execute cutting and fitting [including excavation and fill] to complete the Work.

B. Uncover work to install improperly sequenced work.

C. Remove and replace defective or non-conforming work.

D. Provide openings in the Work for penetration of mechanical and electrical Work.

E. Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.

3.4 PATCHING

A. Execute patching to complement adjacent Work.

B. Fit Products together to integrate with other Work.

C. Execute Work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.

D. Restore work with new Products in accordance with requirements of Contract Documents.

E. Fit Work tight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

F. Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.

G. If patching includes painted surfaces, extend paint over entire wall surface to nearest break such as a corner or change in plane.

H. If cutting and patching involves an existing roof covered by a warranty, cutting and patching shall be conducted by a company approved by the Roofing Manufacturer. Obtain information from the Owner regarding warranty.

I. Construct test patches showing intended finishes for approval of the Architect.

END OF SECTION 01045

SECTION 01050

FIELD ENGINEERING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. General: This Section specifies administrative and procedural requirements for field-engineering services including, but not limited to, the following:

1. Construction Layout.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section "Coordination" for procedures for coordinating field engineering with other construction activities.

2. Section "Submittals" for submitting Project record surveys.

3. Section "Project Closeout" for submitting final property survey with Project Record Documents and recording of Owner-accepted deviations from indicated lines and levels.

1.3 SUBMITTALS

A. Certificates: Submit a certificate signed by the land surveyor or professional engineer certifying the location and elevation of improvements. Both the land surveyor and the professional engineer must be licensed in the state of Georgia.

B. Project Record Documents: Submit a record of Work performed and record survey data as required under provisions of "Submittals" and "Project Closeout" Sections, and DeKalb County Public Utilities Department. An "as built" survey prepared by a surveyor registered in the state of Georgia is a required component of the Project Record Documents.

1.4 QUALITY ASSURANCE

A. Surveyor Qualifications: Engage a **land surveyor registered in the state** where the Project is located, to perform required land-surveying and construction-layout services.

B. The Contractor shall provide a survey prepare by a surveyor registered in the state of Georgia that illustrates as-built conditions, including underground utilities with invert elevations and the irrigation system and all other improvements both above and below ground. Provide as-built drawings to Owner's Representative at Contract Close-out.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify layout information shown on the Drawings, in relation to the property survey and existing vertical and horizontal benchmarks, before proceeding to lay out the Work. Locate and protect existing benchmarks and control points. Preserve permanent reference points during construction.

1. Do not change or relocate benchmarks or control points without prior written approval. Promptly report lost or destroyed reference points or requirements to relocate reference points because of necessary changes in grades or locations.

2. Promptly replace lost or destroyed Project control points. Base replacements on the original survey control points.

B. Establish and maintain a minimum of 2 permanent benchmarks on the site, referenced to data established by survey control points.

1. Record benchmark locations, with horizontal and vertical data, on Project Record Documents.

C. Existing Utilities and Equipment: The existence and location of underground and other utilities and construction indicated as existing are not guaranteed. Before beginning site work, investigate and verify the existence and location of underground utilities and other construction.

1. Prior to construction, verify the location and invert elevation at points of connection of sanitary sewer, storm sewer, and water-service piping.

3.2 PERFORMANCE

A. Establish benchmarks and markers to set lines, levels and elevations at each phase of construction and elsewhere as needed to locate each element of the Project. Calculate and measure required dimensions within indicated or recognized tolerances. Do not scale Drawings to determine dimensions.

1. Advise entities engaged in construction activities of marked lines and levels provided for their use.

2. As construction proceeds, check every major element for line, level, elevations and plumb.

B. Surveyor's Log: Maintain a surveyor's log of control and other survey work. Make this log available for reference.

1. Record deviations from required lines and levels, and advise the Owner's Representative when deviations that exceed indicated or recognized tolerances are detected. On Project Record Drawings, record deviations that are accepted and not corrected.

C. Site Improvements: Locate and lay out site improvements, including stakes for grading, utility slopes, and invert elevations.

D. Existing Utilities: Contractor is responsible for coordination with and payment to utility companies as necessary to adjust, move, or relocate existing structures, utility poles, lines, services, or other appurtenances located in or affected by construction. Coordinate with local authorities having jurisdiction.

END OF SECTION 01050

SECTION 01200

PROJECT MEETINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section specifies administrative and procedural requirements for project meetings, including, but not limited to, the following:

1. Preconstruction conferences.

2. Preinstallation conferences.

3. Progress meetings.

4. Coordination meetings.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section "Coordination" for procedures for coordinating project meetings with other construction activities.

2. Section "Submittals" for submitting the Contractor's Construction Schedule.

1.3 PRECONSTRUCTION CONFERENCE

A. Schedule a preconstruction conference before starting construction, at a time convenient to the Owner and Prime Consultant, but no later than 10 days after execution of the Agreement. Hold the conference at the Project Site or another convenient location. Conduct the meeting to review responsibilities and personnel assignments.

B. Attendees: Authorized representatives of the Owner, Prime Consultant, and their consultants; the Contractor and its superintendent; major subcontractors; manufacturers; suppliers; and other concerned parties shall attend the conference. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Discuss items of significance that could affect progress, including the following:

1. Tentative construction schedule.

2. Critical work sequencing.

3. Designation of responsible personnel.

4. Procedures for processing RFI's, proposal requests, and Change Orders.
5. Procedures for processing Applications for Payment.
6. Distribution of Contract Documents.
7. Submittal of Shop Drawings, Product Data, and Samples.
8. Preparation of record documents.
9. Use of the premises.
10. Office, work, and storage areas.
11. Equipment deliveries and priorities.
12. Safety procedures.
13. First aid.
14. Security.
15. Working hours.

1.4 PREINSTALLATION CONFERENCES

A. Conduct a pre-installation conference at the Project Site before each construction activity that requires coordination with other construction.

B. Attendees: The Installer and representatives of manufacturers and fabricators involved in or affected by the installation, and its coordination or integration with other materials and installations that have preceded or will follow, shall attend the meeting. Advise the Prime Consultant of scheduled meeting dates.

1. Review the progress of other construction activities and preparations for the particular activity under consideration at each preinstallation conference, including requirements for the following:

   a. Contract Documents.
   b. R.F.I.'s
   c. Related Proposal Requests and Change Orders
   d. Purchases.
   e. Deliveries.
   f. Shop Drawings, Product Data, and quality-control samples.
   g. Possible conflicts.
   h. Compatibility problems.

i. Time schedules.

j. Weather limitations.

k. Manufacturer's recommendations.

l. Warranty requirements.

m. Compatibility of materials.

n. Acceptability of substrates.

o. Temporary facilities.

p. Space and access limitations.

q. Governing regulations.

r. Safety.

s. Inspecting and testing requirements.

t. Required performance results.

u. Recording requirements.

v. Protection.

2. The General Contractor shall record significant discussions and agreements and disagreements of each conference, and the approved schedule. Promptly distribute the record of the meeting to everyone concerned, including the Owner and Prime Consultant.

3. Do not proceed with the installation if the conference cannot be successfully concluded. Initiate whatever actions are necessary to resolve impediments to performance of work and reconvene the conference at the earliest feasible date.

1.5 PROGRESS MEETINGS

A. Conduct progress meetings will occur bi-weekly at the Project Site. Notify the Owner and Prime Consultant of scheduled meeting dates.

B. Attendees: In addition to the Prime Consultant, each subcontractor, supplier, or other entity concerned with current progress or involved in planning, coordination, or performance of future activities shall be represented at these meetings. All participants at the conference shall be familiar with the Project and authorized to conclude matters relating to the Work.

C. Agenda: Review and correct or approve minutes of the previous progress meeting. Review other items of significance that could affect progress. Include topics for discussion as appropriate to the status of the Project.

1. Contractor's Construction Schedule: Review progress since the last meeting. Determine where each activity is in relation to the Contractor's Construction Schedule, whether on time or ahead or behind schedule. Determine how construction behind schedule will be expedited; secure commitments from parties involved to do so. Discuss whether schedule revisions are required to insure that current and subsequent activities will be completed within the Contract Time.

2. Review the present and future needs of each entity present, including the following:
   a. Interface requirements.
   b. Time.
   c. Sequences.
   d. Status of submittals.
   e. Deliveries.
   f. Off-site fabrication problems.
   g. Access.
   h. Site utilization.
   i. Temporary facilities and services.
   j. Hours of work.
   k. Hazards and risks.
   l. R.F.I.'s.
   m. Quality and work standards.
   n. Proposal Requests and Change Orders.
   o. Documentation of information for payment requests.

D. The General Contractor's Reporting: No later than 3 days after each meeting, distribute 2 (two) copies of minutes of the meeting to Prime Consultant, each party present and to parties who should have been present. Include a brief summary, in narrative form, of progress since the previous meeting and report.

1. Schedule Updating: Revise the Contractor's Construction Schedule after each progress meeting where revisions to the schedule have been made or recognized. Issue the revised schedule concurrently with the report of each meeting.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01200

SECTION 01230

ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for alternates.

1.3 DEFINITIONS

A. Alternate: An amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to or deducted from the Base Bid amount if Owner decides to accept a corresponding change either in the amount of construction to be completed or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

1. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternate into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Modify or adjust affected adjacent work as necessary to completely integrate work of the alternate into Project.

1. Include as part of each alternate, miscellaneous devices, accessory objects, and similar items incidental to or required for a complete installation whether or not indicated as part of alternate.

B. Notification: Immediately following award of the Contract, notify each party involved, in writing, of the status of each alternate. Indicate if alternates have been accepted, rejected, or deferred for later consideration. Include a complete description of negotiated modifications to alternates.

C. Execute accepted alternates under the same conditions as other work of the Contract.

D. Schedule: A Schedule of Alternates is included at the end of this Section. Specification Sections referenced in schedule contain requirements for materials necessary to achieve the work described under each alternate.

PART 2 - PRODUCTS (Not Used)

PART 3 - EXECUTION

3.1 SCHEDULE OF ALTERNATES

END OF SECTION 01230

SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for submittals required for performance of the Work, including the following:

1. Contractor's construction schedule.
2. Submittal schedule.
3. Daily construction reports.
4. Shop Drawings.
5. Product Data.
6. Samples.
7. Quality assurance submittals.

B. Administrative Submittals: Refer to other Sections and other Contract Documents for requirements for administrative submittals. Such submittals include, but are not limited to, the following:

1. Permits.
2. Applications for Payment.
3. Performance and payment bonds.
4. Insurance certificates.
5. List of subcontractors.

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section "Applications for Payment" specifies requirements for submittal of the Schedule of Values.
2. Section "Coordination" specifies requirements governing preparation and submittal of required Coordination Drawings.

3. Section "Project Meetings" specifies requirements for submittal and distribution of meeting and conference minutes.

4. Section "Quality Control" specifies requirements for submittal of inspection and test reports.

5. Section "Contract Closeout" specifies requirements for submittal of Project Record Documents and warranties at project closeout.

1.3 SUBMITTAL PROCEDURES

A. Coordination: Coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay.

1. Coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals, and related activities that require sequential activity.

2. Coordinate transmittal of different types of submittals for related elements of the Work so processing will not be delayed by the need to review submittals concurrently for coordination.

a. Owner's Representative reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

3. Processing: To avoid the need to delay installation as a result of the time required to process submittals, allow sufficient time for submittal review, including time for resubmittals.

a. Allow 2 weeks for initial review. Allow additional time if Owner's Representative must delay processing to permit coordination with subsequent submittals.

b. If an intermediate submittal is necessary, process the same as the initial submittal.

c. Allow 2 weeks for reprocessing each submittal.

d. No extension of Contract Time will be authorized because of failure to transmit submittals to Owner's Representative sufficiently in advance of the Work to permit processing.

B. Submittal Preparation: Place a permanent label or title block on each submittal for identification. Indicate the name of the entity that prepared each submittal on the label or title block.

1. Provide a space approximately 4 by 5 inches on the label or beside the title block on Shop Drawings to record the Contractor's review and approval markings and the action taken.

2. Include the following information on the label for processing and recording action taken.

   a. Project name.

   b. Date.

   c. Name and address of Owner's Representative.

   d. Name and address of the Contractor.

   e. Name and address of the subcontractor.

   f. Name and address of the supplier.

   g. Name of the manufacturer.

   h. Number and title of appropriate Specification Section.

   i. Drawing number and detail references, as appropriate.

C. Submittal Transmittal: Package each submittal appropriately for transmittal and handling. Transmit each submittal from the Contractor to Owner's Representative using a transmittal form. Owner's Representative will not accept submittals received from sources other than the Contractor.

1. On the transmittal, record relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including variations and limitations. Include Contractor's certification that information complies with Contract Document requirements.

1.4 CONTRACTOR'S CONSTRUCTION SCHEDULE

A. Submit initial schedule in duplicate within 15 days after Notice to Proceed

B. Submit revised schedules with each application for payment, identifying changes since previous version

C. Submit computer generated network analysis diagram using the critical path PERT method, as outlined in the Associated General Contractors of America (AGC) publication " The Use of CPM in construction – A Manual for General Contractors and the Construction Industry", 1997.

D. Show complete sequence of construction activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.

E. Indicate estimated percentage of completion for each item of Work at each submission.

F. Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by the Owner and required allowances.

G. Include in schedule coordination dates and activities involving Work by the Owner and all subcontractors

H. Distribution: Following response to the initial submittal, print and distribute copies Owner's Representative, Owner, subcontractors, and other parties required to comply with scheduled dates. Post copies in the Project meeting room and temporary field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

I. Schedule Updating: Revise the schedule after each meeting, event, or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.5 SUBMITTAL SCHEDULE

A. After development and acceptance of the Contractor's Construction Schedule, prepare a complete schedule of submittals. Submit the schedule within 10 days of the date required for submittal of the Contractor's Construction Schedule.

1. Coordinate Submittal Schedule with the list of subcontracts, Schedule of Values, and the list of products as well as the Contractor's Construction Schedule.

2. Prepare the schedule in chronological order. Provide the following information:

a. Scheduled date for the first submittal.

b. Related Section number.

c. Submittal category (Shop Drawings, Product Data, or Samples).

d. Name of the subcontractor.

e. Description of the part of the Work covered.

f. Scheduled date for resubmittal.

g. Scheduled date for the Owner's Representative final release or approval.

B. Distribution: Following response to the initial submittal, print and distribute copies to Owner's Representative, Owner, subcontractors, and other parties required to comply with submittal dates indicated. Post copies in the Project meeting room and field office.

1. When revisions are made, distribute to the same parties and post in the same locations. Delete parties from distribution when they have completed their assigned portion of the Work and are no longer involved in construction activities.

C. Schedule Updating: Revise the schedule after each meeting or activity where revisions have been recognized or made. Issue the updated schedule concurrently with the report of each meeting.

1.6 DAILY CONSTRUCTION REPORTS

A. Prepare a daily construction report recording the following information concerning events at the site, and submit duplicate copies to Owner's Representative at weekly intervals:

1. List of subcontractors at the site.
2. Approximate count of personnel at the site.
3. High and low temperatures, general weather conditions.
4. Accidents and unusual events.
5. Meetings and significant decisions.
6. Stoppages, delays, shortages, and losses.
7. Meter readings and similar recordings.
8. Emergency procedures.
9. Orders and requests of governing authorities.
10. Change Orders received, implemented.
11. Services connected, disconnected.
12. Equipment or system tests and startups.
13. Partial Completions, occupancies.
14. Substantial Completions authorized.

1.7 SHOP DRAWINGS

A. Submit newly prepared information drawn accurately to scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the Project is not a Shop Drawing.

B. Shop Drawings include fabrication and installation Drawings, setting diagrams, schedules, patterns, templates and similar Drawings. Include the following information:

1. Dimensions.
2. Identification of products and materials included by sheet and detail number.

3. Compliance with specified standards.

4. Notation of coordination requirements.

5. Notation of dimensions established by field measurement.

6. Sheet Size: Except for templates, patterns and similar full-size Drawings, submit Shop Drawings on sheets at least 8-1/2 by 11 inches but no larger than 36 by 48 inches.

7. Final Submittal: Submit 4 blue- or black-line prints; submit 4 prints where required for maintenance manuals. Owner's Representative will retain 2 prints and return the remainder.

   a. One of the prints returned shall be marked up and maintained as a "Record Document."

8. Do not use Shop Drawings without an appropriate final stamp indicating action taken.

1.8 PRODUCT DATA

A. Collect Product Data into a single submittal for each element of construction or system. Product Data includes printed information, such as manufacturer's installation instructions, catalog cuts, standard color charts, roughing-in diagrams and templates, standard wiring diagrams, and performance curves.

1. Mark each copy to show applicable choices and options. Where printed Product Data includes information on several products that are not required, mark copies to indicate the applicable information. Include the following information:

   a. Manufacturer's printed recommendations.

   b. Compliance with trade association standards.

   c. Compliance with recognized testing agency standards.

   d. Application of testing agency labels and seals.

   e. Notation of dimensions verified by field measurement.

   f. Notation of coordination requirements.

2. Do not submit Product Data until compliance with requirements of the Contract Documents has been confirmed.

3. Preliminary Submittal: Submit a preliminary single copy of Product Data where selection of options is required.

4. Submittals: Submit 4 copies of each required submittal; submit 4 copies where required for maintenance manuals. Owner's Representative will retain one and

will return the other marked with action taken and corrections or modifications required.

a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

5. Distribution: Furnish copies of final submittal to installers, subcontractors, suppliers, manufacturers, fabricators, and others required for performance of construction activities. Show distribution on transmittal forms.

a. Do not proceed with installation until a copy of Product Data is in the Installer's possession.

b. Do not permit use of unmarked copies of Product Data in connection with construction.

1.9 SAMPLES

A. Submit full-size, fully fabricated Samples cured and finished as specified and physically identical with the material or product proposed. Samples include partial sections of manufactured or fabricated components, cuts or containers of materials, color range sets, and swatches showing color, texture, and pattern.

1. Mount or display Samples in the manner to facilitate review of qualities indicated. Prepare Samples to match the Owner's Representative sample. Include the following:

a. Specification Section number and reference.

b. Generic description of the Sample.

c. Sample source.

d. Product name or name of the manufacturer.

e. Compliance with recognized standards.

f. Availability and delivery time.

2. Submit Samples for review of size, kind, color, pattern, and texture. Submit Samples for a final check of these characteristics with other elements and a comparison of these characteristics between the final submittal and the actual component as delivered and installed.

a. Where variation in color, pattern, texture, or other characteristic is inherent in the material or product represented, submit at least 3 multiple units that show approximate limits of the variations.

b. Refer to other Specification Sections for requirements for Samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.

c. Refer to other Sections for Samples to be returned to the Contractor for incorporation in the Work. Such Samples must be undamaged at time of use. On the transmittal, indicate special requests regarding disposition of Sample submittals.

d. Samples not incorporated into the Work, or otherwise designated as the Owner's property, are the property of the Contractor and shall be removed from the site prior to Substantial Completion.

3. Preliminary Submittals: Submit a full set of choices where Samples are submitted for selection of color, pattern, texture, or similar characteristics from a range of standard choices.

a. Owner's Representative will review and return preliminary submittals with the Owner's Representative notation, indicating selection and other action.

4. Submittals: Except for Samples illustrating assembly details, workmanship, fabrication techniques, connections, operation, and similar characteristics, submit 2 sets. Owner's Representative will return one set marked with the action taken.

5. Maintain sets of Samples, as returned, at the Project Site, for quality comparisons throughout the course of construction.

a. Unless noncompliance with Contract Document provisions is observed, the submittal may serve as the final submittal.

b. Sample sets may be used to obtain final acceptance of the construction associated with each set.

B. Distribution of Samples: Prepare and distribute additional sets to subcontractors, manufacturers, fabricators, suppliers, installers, and others as required for performance of the Work. Show distribution on transmittal forms.

1.10 QUALITY ASSURANCE SUBMITTALS

A. Submit quality-control submittals, including design data, certifications, manufacturer's instructions, manufacturer's field reports, and other quality-control submittals as required under other Sections of the Specifications.

B. Certifications: Where other Sections of the Specifications require certification that a product, material, or installation complies with specified requirements, submit a notarized certification from the manufacturer certifying compliance with specified requirements.

1. Signature: Certification shall be signed by an officer of the manufacturer or other individual authorized to sign documents on behalf of the company.

C. Inspection and Test Reports: Requirements for submittal of inspection and test reports from independent testing agencies are specified in Section "Quality Control."

1.11 ARCHITECT'S ACTION

A. Except for submittals for the record or information, where action and return is required, Owner's Representative will review each submittal, mark to indicate action taken, and return promptly.

1. Compliance with specified characteristics is the Contractor's responsibility.

B. Action Stamp: Owner's representative will stamp each submittal with a uniform, action stamp. The Owner's Representative will mark the stamp appropriately to indicate the action taken, as follows:

1. ( ) No Exceptions Taken: When the Owner's Representative marks a submittal "No Exceptions Taken", the Work covered by the submittal may proceed provided it complies with requirements of the Contract Documents. Final payment depends on that compliance.

2. ( ) Revise as Noted: When Owner's Representative marks a submittal "Revise as Noted," the Work covered by the submittal may proceed provided it complies with notations or corrections on the submittal and requirements of the Contract Documents. Final payment depends on that compliance.

3. ( ) Resubmit: When Owner's Representative marks a submittal " Resubmit," do not proceed with Work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal according to the notations; resubmit without delay. Repeat if necessary to obtain different action mark.

a. Do not use, or allow others to use, submittals marked "Not Approved, Revise and Resubmit" at the Project Site or elsewhere where Work is in progress.

4. Other Action: Where a submittal is for information or record purposes or special processing or other activity, Owner's Representative will return the submittal marked "Action Not Required."

C. Unsolicited Submittals: Owner's Representative will return unsolicited submittals to the sender without action.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01300

SECTION 01400

QUALITY CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for quality-control services.

B. Quality-control services include inspections, tests, and related actions, including reports performed by Contractor, by independent agencies, and by governing authorities. They do not include contract enforcement activities performed by the Owner's Representative.

C. Inspection and testing services are required to verify compliance with requirements specified or indicated. These services do not relieve Contractor of responsibility for compliance with Contract Document requirements.

D. Requirements of this Section relate to customized fabrication and installation procedures, not production of standard products.

1. Specific quality-control requirements for individual construction activities are specified in the Sections that specify those activities. Requirements in those Sections may also cover production of standard products.

2. Specified inspections, tests, and related actions do not limit Contractor's quality-control procedures that facilitate compliance with Contract Document requirements.

3. Requirements for Contractor to provide quality-control services required by the Owner's Representative, Owner, or authorities having jurisdiction are not limited by provisions of this Section.

E. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section "Submittals" specifies requirements for development of a schedule of required tests and inspections.

1.3 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions and workmanship to produce Work of specified quality

B. Comply with manufacturer's instructions, including each step in sequence

C. Should manufacturer's instructions conflict with Contract Documents, request clarification from Landscape Architect before proceeding

D. Comply with specified standards as minimum quality for Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion of disfigurement

1.4 TOLERANCES

A. Monitor tolerance control of installed Products to produce acceptable Work. Do not permit tolerances to accumulate

B. Comply with manufacturer's tolerances. Should manufacturer's tolerances conflict with Contract Documents, request clarification from Landscape Architect/Architect before proceeding.

C. Adjust Products to appropriate dimensions; position before securing Products in place.

1.5 REFERENCES

A. For Products or workmanship specified by association, trade, or other concensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current on date of Contract Documents, except where a specific date is established by code or specific reference.

C. Obtain copies of standards where required by product specification sections.

D. The contractual relationship, duties, and responsibilities of the parties in Contract nor those of the Landscape Architect shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.6 MOCK-UP

A. Tests will be performed under provisions identified in this section and identified in the respective product specification sections.

B. Assemble and erect specified items with specified attachment and anchorage devices, flashings, seals, and finishes

C. Accepted mock-ups are representative of the quality for the work

D. Where moch-up has been accepted by Landscape Architect/Architect and is specified in product specification sections to be removed, remove mock-up and clear area when directed to do so.

1.7 RESPONSIBILITIES

A. Owner Responsibilities: Unless otherwise indicated as the responsibility of another identified entity, The Owner shall provide inspections, tests, and other quality-control services specified elsewhere in the Contract Documents and required by authorities having jurisdiction. Costs for these services will be paid by the Owner.

1. Where individual Sections specifically indicate that certain inspections, tests, and other quality-control services are the Contractor's responsibility, the Contractor shall employ and pay a qualified independent testing agency to perform quality-control services. Costs for these services are paid by the Contractor.

B. Retesting: The Contractor is responsible for retesting or reinspecting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was Contractor's responsibility. The cost of repair/replacement of items damaged by retesting shall be borne by the Contractor, when required tests performed on original construction indicated noncompliance with contract documents.

C. Associated Services: Cooperate with agencies performing required inspections, tests, and similar services, and provide reasonable auxiliary services as requested. Notify the agency sufficiently in advance of operations to permit assignment of personnel. Auxiliary services required include, but are not limited to, the following:

D. Duties of the Testing Agency: The independent agency engaged to perform inspections, sampling, and testing of materials and construction specified in individual Sections shall cooperate with Owner's representative and the Contractor in performance of the agency's duties. The testing agency shall provide qualified personnel to perform required inspections and tests.

1. The agency shall notify Owner's Representative and the Contractor promptly of irregularities or deficiencies observed in the Work during performance of its services.

2. The agency is not authorized to release, revoke, alter, or enlarge requirements of the Contract Documents or approve or accept any portion of the Work.

3. The agency shall not perform any duties of the Contractor.

E. Coordination: Coordinate the sequence of activities to accommodate required services with a minimum of delay. Coordinate activities to avoid the necessity of removing and replacing construction to accommodate inspections and tests.

1. The Contractor is responsible for scheduling times for inspections, tests, and similar activities.

1.8 SUBMITTALS

A. The independent testing agency shall submit a certified written report, in duplicate, of each inspection, test, or similar service to the Owner's Representative.

1. Submit additional copies of each written report directly to the governing authority, when the authority so directs.

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

a. Date of issue.

b. Project title and number.

c. Name, address, and telephone number of testing agency.

d. Dates and locations of samples and tests or inspections.

e. Names of individuals making the inspection or test.

f. Designation of the Work and test method.

g. Identification of product and Specification Section.

h. Complete inspection or test data.

i. Test results and an interpretation of test results.

j. Ambient conditions at the time of sample taking and testing.

k. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.

l. Name and signature of laboratory inspector.

m. Recommendations on retesting.

1.9 SUBMITTALS

A. Qualifications for Service Agencies: Engage inspection and testing service agencies, including independent testing laboratories, that are pre-qualified as complying with the American Council of Independent Laboratories' "Recommended Requirements for Independent Laboratory Qualification" and that specialize in the types of inspections and tests to be performed.

1. Each independent inspection and testing agency engaged on the Project shall be authorized by authorities having jurisdiction to operate in the state where the Project is located.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 REPAIR AND PROTECTION

A. General: Upon completion of inspection, testing, sample taking and similar services, repair damaged construction and restore substrates and finishes.

B. Protect construction exposed by or for quality-control service activities, and protect repaired construction.

C. Repair and protection is Contractor's responsibility, regardless of the assignment of responsibility for inspection, testing, or similar services.

END OF SECTION 01400

SECTION 01421

REFERENCE AND STANDARDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic contract definitions are included in the Conditions of the Contract.

B. "Indicated": The term "indicated" refers to graphic representations, notes, or schedules on the Drawings; or to other paragraphs or schedules in the Specifications and similar requirements in the Contract Documents. Terms such as "shown," "noted," "scheduled," and "specified" are used to help the user locate the reference. Location is not limited.

C. "Directed": Terms such as "directed," "requested," "authorized," "selected," "approved," "required," and "permitted" mean directed by the Owner's representative, requested by the Owner's representative, and similar phrases.

D. "Approved": The term "approved," when used in conjunction with the Architect's action on the Contractor's submittals, applications, and requests, is limited to the Owner's representative's duties and responsibilities as stated in the Conditions of the Contract.

E. "Regulations": The term "regulations" includes laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, as well as rules, conventions, and agreements within the construction industry that control performance of the Work.

F. "Furnish": The term "furnish" means to supply and deliver to the Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

G. "Install": The term "install" describes operations at the Project site including the actual unloading, temporary storage, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations.

H. "Provide": The term "provide" means to furnish and install, complete and ready for the intended use.

I. "Installer": An installer is the Contractor or another entity engaged by the Contractor, either as an employee, subcontractor, or contractor of lower tier, to perform a particular construction activity, including installation, erection, application, or similar operations. Installers are required to be experienced in the operations they are engaged to perform.

1. The term "experienced," when used with the term "installer," means having successfully completed a minimum of five previous projects similar in size and scope to this Project; being familiar with the special requirements indicated; and having complied with requirements of authorities having jurisdiction.

2. Trades: Using a term such as "carpentry" does not imply that certain construction activities must be performed by accredited or unionized individuals of a corresponding generic name, such as "carpenter." It also does not imply that requirements specified apply exclusively to tradespersons of the corresponding generic name.

3. Assigning Specialists: Certain Sections of the Specifications require that specific construction activities shall be performed by specialists who are recognized experts in those operations. The specialists must be engaged for those activities, and their assignments are requirements over which the Contractor has no option. However, the ultimate responsibility for fulfilling contract requirements remains with the Contractor.

    a. This requirement shall not be interpreted to conflict with enforcing building codes and similar regulations governing the Work. It is also not intended to interfere with local trade-union jurisdictional settlements and similar conventions.

J. "Project site" is the space available to the Contractor for performing construction activities, 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 on which the Project is to be built.

K. "Testing Services": A testing agency is an independent entity engaged to perform specific inspections or tests, either at the Project site or elsewhere, and to report on and, if required, to interpret results of those inspections or tests.

1.3 INDUSTRY STANDARDS

A. Applicability of Standards: Unless the Contract Documents include more stringent requirements, applicable construction industry standards have the same force and effect as if bound or copied directly into the Contract Documents to the extent referenced. Such standards are made a part of the Contract Documents by reference.

B. Publication Dates: Comply with standards in effect as of the date of the Contract Documents.

C. Conflicting Requirements: Where compliance with two or more standards is specified and the standards establish different or conflicting requirements for minimum quantities or quality levels comply with the most stringent requirement. Refer uncertainties and requirements that are different, but apparently equal, to the Architect for a decision before proceeding.

1. Minimum Quantity or Quality Levels: The quantity or quality level shown or specified shall be the minimum provided or performed. The actual installation may comply exactly with the minimum quantity or quality specified or it may exceed the minimum within reasonable limits. To comply with these requirements, indicated numeric values are minimum or maximum, as appropriate, for the context of the requirements. Refer uncertainties to the Owner's representative for a decision before proceeding.

D. Copies of Standards: Each entity engaged in construction on the Project must be familiar with industry standards applicable to its construction activity. Copies of applicable standards are not bound with the Contract Documents.

1. Where copies of standards are needed to perform a required construction activity, the Contractor shall obtain copies directly from the publication source and make them available on request.

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

AAN	American Association of Nurserymen (See ANLA)	
AASHTO	American Association of State Highway and Transportation Officials 444 North Capitol St., NW, Suite 249 Washington, DC 20001 www.aashto.org	(202) 624-5800
ACI	American Concrete Institute P.O. Box 9094 Farmington Hills, MI 48333-9094 www.aci-int.org	(248) 848-3700
ACIL	ACIL: The Association of Independent Scientific, En-	(202) 887-5872

	gineering, and Testing Firms 1629 K St., NW, Suite 400 Washington, DC 20006 www.acil.org	
ACPA	American Concrete Pipe Association 222 West Las Colinas Blvd., Suite 641 Irving, TX 75039-5423 www.concrete-pipe.org	(972) 506-7216
ADA	American Disabilities Act Department of Justice 950 Pennsylvania Avenue, NW Civil Rights Division Disability Rights Section – NYAV Washington, D.C. 20530	(800) 514-0301
AFPA	American Forest and Paper Association (Formerly: National Forest Products Association) 1111 19th St., NW, Suite 800 Washington, DC 20036	(800) 878-8878 (202) 463-2700
AI	Asphalt Institute Research Park Dr. P.O. Box 14052 Lexington, KY 40512-4052	(606) 288-4960

	www.asphaltinstitute.org	
AIA	The American Institute of Architects 1735 New York Ave., NW Washington, DC 20006-5292 www.aia.org	(202) 626-7300
AIA	American Insurance Association 1130 Connecticut Ave., NW, Suite 1000 Washington, DC 20036	(202) 828-7100
AIHA	American Industrial Hygiene Association 2700 Prosperity Ave., Suite 250 Fairfax, VA 22031	(703) 849-888
AISC	American Institute of Steel Construction One East Wacker Dr., Suite 3100 Chicago, IL 60601-2001	(800) 644-2400 (312) 670-2400
AISI	American Iron and Steel Institute 1101 17th St., NW Washington, DC 20036-4700 www.steel.org	(202) 452-7100
AITC	American Institute of Timber Construction 7012 S. Revere Pkwy, Suite 140	(303) 792-9559

	Englewood, CO 80112 www.aitc-glulam.org	
ALCA	Associated Landscape Contractors of America 12200 Sunrise Valley Dr., Suite 150 Reston, VA 20191 www.alca.org	(703) 620-6363
ALI	Associated Laboratories, Inc. P.O. Box 152837 1323 Wall St. Dallas, TX 75315	(214) 565-0593
ALSC	American Lumber Standards Committee P.O. Box 210 Germantown, MD 20875	(301) 972-1700
ANLA	American Nursery and Landscape Association (Formerly: American Association of Nurserymen) 1250 Eye St., NW, Suite 500 Washington, DC 20005	(202) 789-2900
ANSI	American National Standards Institute 11 West 42nd St., 13th Floor New York, NY 10036-8002 www.ansi.org	(212) 642-4900

AOSA	Association of Official Seed Analysts 201 N. 8th St., Suite 400 P.O. Box 81152 Lincoln, NE 68501-1152	(402) 476-3852
APA	APA-The Engineered Wood Association (Formerly: American Plywood Association) P.O. Box 11700 Tacoma, WA 98411-0700 www.apawood.org	(206) 565-6600
APA	Architectural Precast Association P.O. Box 08669 Fort Myers, FL 33908-0669	(941) 454-6989
API	American Petroleum Institute 1220 L St., NW, Suite 900 Washington, DC 20005-8029	(202) 682-8000
ASCE	American Society of Civil Engineers-World Headquarters 1801 Alexander Bell Dr. Reston, VA 20191-4400 www.asce.org	(800) 548-2723 (703) 295-6000
ASLA	American Society of Landscape Architects	(202) 686-2752

	4401 Connecticut Ave., NW, 5th Floor Washington, DC 20008-2369 www.asla.org	
ASME	American Society of Mechanical Engineers 345 East 47th St. New York, NY 10017-2392 www.asme.org	(800) 434-2763 (212) 705-7722
ASPE	American Society of Plumbing Engineers 3617 Thousand Oaks Blvd., Suite 210 Westlake Village, CA 91362-3649	(805) 495-7120
ASQC	American Society for Quality Control 611 East Wisconsin, Ave. Milwaukee, WI 53201-3005 www.asqc.org	(800) 248-1946 (414) 272-8575
ASSE	American Society of Sanitary Engineering 28901 Clemens Rd. Westlake, OH 44145 www.asse-plumbing.org	(216) 835-3040
ASTM	American Society for Testing and Materials 100 Barr Harbor Dr.	(610) 832-9500

	West Conshohocken, PA 19428-2959 www.astm.org	
ATIS	Alliance for Telecommunications Industry Solutions (Formerly: Exchange Carriers Standards Association) 1200 G St., NW, Suite 500 Washington, DC 20005	(202) 628-6380
AWPA	American Wood Preservers' Association 3246 Fall Creek Hwy, Suite 1900 Granbury, TX 76049-7979	(817) 326-6300
AWPB	American Wood Preservers' Bureau (This organization is now defunct.)	
AWS	American Welding Society 550 NW LeJeune Rd. Miami, FL 33126 www.amweld.org	(800) 443-9353 (305) 443-9353
AWWA	American Water Works Association 6666 W. Quincy Ave. Denver, CO 80235 www.awwa.org	(800) 926-7337 (303) 794-7711
BANC	Brick Association of North Carolina	(800) 622-7425 (910) 273-5566

	P.O. Box 13290 Greensboro, NC 27415-3290	
BHMA	Builders Hardware Manufacturers Association 355 Lexington Ave., 17th Floor New York, NY 10017-6603	(212) 661-4261
BIA	Brick Institute of America 11490 Commerce Park Dr. Reston, VA 22091-1525 www.bia.org	(703) 620-0010
CISPI	Cast Iron Soil Pipe Institute 5959 Shallowford Rd., Suite 419 Chattanooga, TN 37421	(423) 892-0137
CLFMI	Chain Link Fence Manufacturers Institute 9891 Broken Land Pkwy, Suite 300 Columbia, MD 21046	(301) 596-2584
CPPA	Corrugated Polyethylene Pipe Association 432 N. Superior St. Toledo, OH 43604	(800) 510-2772 (419) 241-2221
CRSI	Concrete Reinforcing Steel Institute 933 N. Plum Grove Rd.	(847) 517-1200

	Schaumburg, IL 60173-4758 www.crsi.org	
DIPRA	Ductile Iron Pipe Research Association 245 Riverchase Pkwy East, Suite O Birmingham, AL 35244	(205) 988-9870
EJMA	Expansion Joint Manufacturers Association 25 N. Broadway Tarrytown, NY 10591-3201	(914) 332-0040
GRI	Geosynthetic Research Institute 33rd and Lancaster Walk Rush Building, West Wing Philadelphia, PA 19104 www.gri-server.coe.drexel.edu	(215) 895-2343
IEEE	Institute of Electrical and Electronics Engineers 345 E. 47th St. New York, NY 10017-2394 www.ieee.org	(800) 678-4333 (212) 705-7900
IMSA	International Municipal Signal Association P.O. Box 539 165 E. Union St.	(800) 723-4672 (315) 331-2182

	Newark, NY 14513	
MIA	Masonry Institute of America 2550 Beverly Blvd. Los Angeles, CA 90057 www.masonryinstitute.org	(213) 388-0472
MSS	Manufacturers Standardization Society Valves and Fitting Society 127 Park Street, N.E. Vienna, VA. 22180-4602	(703) 281-6613
NAA	National Arborist Association P.O. Box 1094 Amherst, NH 03031-1094 www.natlarb.com	(800) 733-2622 (603) 673-3311
NAPA	National Asphalt Pavement Association NAPA Building 5100 Forbes Blvd. Lanham, MD 20706-4413	(301) 731-4748
NCMA	National Concrete Masonry Association 2302 Horse Pen Rd. Herndon, VA 20171-3499 www.ncma.org	(703) 713-1900

NCPI	National Clay Pipe Institute P.O. Box 759 253-80 Center St. Lake Geneva, WI 53147	(414) 248-9094
NCSPA	National Corrugated Steel Pipe Association 1255 23rd St., NW, Suite 850 Washington, DC 20037 www.ncspa.org	(202) 452-1700
NECA	National Electrical Contractors Association 3 Bethesda Metro Center, Suite 1100 Bethesda, MD 20814-5372	(301) 657-3110
NEMA	National Electrical Manufacturers Association 1300 N 17th St., Suite 1847 Rosslyn, VA 22209 www.nema.org	(703) 841-3200
NETA	InterNational Electrical Testing Association P.O. Box 687 106 Stone St. Morrison, CO 80465-1526 www.electricnet.com/neta	(303) 697-8441
NFPA	National Fire Protection	(800) 344-3555

	Association	(617) 770-3000
	One Batterymarch Park	
	P.O. Box 9101	
	Quincy, MA 02269-9101	
	www.nfpa.org	
NFPA	National Forest Products Association	
	(See AFPA)	
NHLA	National Hardwood Lumber Association	(901) 377-1818
	P.O. Box 34518	
	Memphis, TN 38184-0518	
	www.natlhardwood.org	
NLGA	National Lumber Grades Authority	(604) 524-2393
	#406-First Capital Pl.,	
	960 Quayside Dr.	
	New Westminster, BC V3M 6G2	
NPCA	National Paint and Coatings Association	(202) 462-6272
	1500 Rhode Island Ave., NW	
	Washington, DC 20005-5597	
	www.paint.org	
NRMCA	National Ready Mixed	(301) 587-1400
	Concrete Association	
	900 Spring St.	

	Silver Spring, MD 20910 www.nrmca.org	
NSA	National Stone Association 1415 Elliot Pl., NW Washington, DC 20007 www.aggregates.org	(202) 342-1100
PCA	Portland Cement Association 5420 Old Orchard Rd. Skokie, IL 60077-1083 www.portcement.org	(847) 966-6200
PCI	Precast/Prestressed Concrete Institute 175 W. Jackson Blvd. Chicago, IL 60604 www.pci.org	(312) 786-0300
PPI	Plastic Pipe Institute (The Society of the Plastics Industry, Inc.) 1801 K St., NW, Suite 600L Washington, DC 20006 www.plasticpipe.org	(202) 974-5306
TPI	Turfgrass Producers International (Formerly: American Sod Producers Association) 1855-A Hicks Rd.	(800) 405-8873 (847) 705-9898

Rolling Meadows, IL 60008

UL	Underwriters Laboratories Inc.	(800) 704-4050
	333 Pfingsten Rd.	(847) 272-8800
	Northbrook, IL 60062	
	www.ul.com	

F. State Government Agencies: The following state government agencies produce standards referenced in the Contract Documents:

GDOT	State of Georgia, Department of Transportation

1.4 SUBMITTALS

A. 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, correspondence, records, and similar documents, established for compliance with standards and regulations bearing on performance of the Work.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION (Not Applicable)

END OF SECTION 01421

SECTION 01500

CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes requirements for construction facilities and temporary controls, including temporary utilities, support facilities, and security and protection.

B. Temporary utilities include, but are not limited to, the following:

1. Water service and distribution.
2. Temporary electric power and light.
3. Temporary heat.
4. Sanitary facilities.
5. Contractor pays for all utilities.

C. Support facilities include, but are not limited to, the following:

1. Storage sheds.
2. Temporary roads and paving.
3. Dewatering facilities and drains.
4. Temporary enclosures.
5. Waste disposal services.
6. Rodent and pest control.
7. Construction aids and miscellaneous services and facilities.

D. Security and protection facilities include, but are not limited to, the following:

1. Temporary fire protection.
2. Barricades, fencing, warning signs, and lights.
3. Environmental protection.

E. Dust Control

1. During the performance of the work required by these specifications or any operations appurtenant thereto, whether with the project limits provided by the Owner or elsewhere, the Contractor shall furnish all the labor, equipment, materials, and means required, and shall carry out proper and efficient measures wherever and as often as necessary to reduce the dust nuisance, and to prevent dust which has originated from his operations from damaging trees, shrubs, vegetation, vehicles, buildings, and dwellings, or causing a nuisance to persons or animals.

2. Contractor will be held liable for any damage resulting from dust originating from his operations under these specifications.

1.3 GENERAL

A. The Contractor shall pay all costs for providing and maintaining temporary facilities except as specifically noted otherwise. At time of substantial completion, the Owner will assume responsibility for payment of future electrical, water and gas utilization.

1.4 TEMPORARY ELECTRICITY

A. Cost: By Contractor; provide and pay for power service from utility source.

B. Provide adequate distribution equipment, wiring, and outlets to provide single phase branch circuits for power and lighting.

1.5 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

C. Provide and maintain lighting for construction operations [to achieve a minimum lighting level of 5 footcandles, for General Construction and 25 footcandles for painting, finishing, and inspections.

1.6 TEMPORARY HEAT

A. Provide heating devices and heat as needed to maintain specified conditions for construction operations.

1. General Enclosed spaces: Minimum of 40EF.

2. Finishing operation: Minimum of 55EF.

3. Provide higher temperatures as required for specific products or installation.

D. Prior to operation of permanent equipment for temporary heating purposes, verify that installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.7 TEMPORARY VENTILATION

A. Ventilate enclosed areas to assist cure of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.8 TELEPHONE SERVICE

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

1.9 TEMPORARY WATER SERVICE

A. Provide, maintain and pay for suitable quality water service required for construction operations.

1.10 TEMPORARY SANITARY FACILITIES

A. Provide and maintain adequate facilities and enclosures. Existing facility use is not permitted (if any).

1.11 BARRIERS

A. Provide barriers / fencing per plans to prevent unauthorized entry to construction areas to allow for Owner's use of site, and to protect existing facilities and adjacent properties from damage from construction operations.

B. Provide barricades and covered walkways required by governing authorities for public rights-of-way and for public access to existing building.

C. Provide protection for plant life designated to remain. Replace damaged plant life.

D. Protect non-owned vehicular traffic, stored materials, site, and structures from dam age.

1.12 EXTERIOR ENCLOSURES

A. Provide temporary insulated weather tight closure of exterior openings to accommodate acceptable working conditions and protection for Products, to allow for temporary heating and maintenance of required ambient temperatures identified in individual specification sections, and to prevent entry of unauthorized persons. Provide access doors with self-closing hardware and locks.

1.13 INTERIOR ENCLOSURES

A. Provide temporary partitions and enclosures to separate work areas from Owner occupied areas, to prevent penetration of dust and moisture into Owner occupied areas, and to prevent damage to existing materials and equipment.

1.14 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed Products. Control activity in immediate work area to prevent damage.

C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.

D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects, by protecting with durable sheet materials.

E. Prohibit traffic or storage upon waterproofed or roofed surfaces. If traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.

1.15 DRINKING WATER

A. Provide potable water adequate for personnel at project site. Furnish paper cups and waste receptacles.

1.16 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Provide adequate containers for storage of waste material. Collect and remove waste materials, debris, and rubbish from site no less than weekly and legally dispose off-site.

E. Open free-fall chutes not permitted. Terminate closed chutes into appropriate containers with lids.

1.17 PROJECT IDENTIFICATION

A. Provide 8' wide x 4' high (2.4m wide x 1.8m high) project sign of exterior grade 3/4" plywood and wood frame construction, painted, with exhibit lettering by professional sign painter, to Landscape Architect's design and colors.

B. List title of Project, names of Owner, Architect, and Contractor.

C. Erect on site at location established by Architect/ Engineer.

D. No other signs are allowed without Owner permission except those required by law.

1.18 FIELD OFFICES AND SHEDS

A. Office: Weather tight, with lighting, electrical outlets, heating, cooling and ventilating equipment, and equipped with sturdy furniture drawing rack, and drawing display table.

B. Provide space for Project meetings, with table and chairs to accommodate 6 persons. Existing building may be used for this purpose if restored to existing conditions at end of construction.

1.19 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Substantial Completion Final Application for Payment inspection.

B. Remove underground installations to a minimum depth of 2 feet (600 mm). Grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

1.20 QUALITY ASSURANCE

A. Regulations: Comply with industry standards and applicable laws and regulations of authorities having jurisdiction including, but not limited to, the following:

1. Building code requirements.
2. Health and safety regulations.
3. Utility company regulations.
4. Police, fire department, and rescue squad rules.
5. Environmental protection regulations.

B. Standards: Comply with NFPA 241 (2000) "Standard for Safeguarding Construction, Alterations, and Demolition Operations," ANSI A10 (1998) Series standards for "Safety Requirements for Construction and Demolition," and NECA (2004) Electrical Design Library "Temporary Electrical Facilities."

1. Electrical Service: Comply with NEMA, NECA, and UL standards and regulations for temporary electric service. Install service in compliance with NFPA 70 (2004) "National Electric Code."

C. Inspections: Arrange for authorities having jurisdiction to inspect and test each temporary utility before use. Obtain required certifications and permits.

1.21 PROJECT CONDITIONS

A. Conditions of Use: Keep temporary services and facilities clean and neat in appearance. Operate in a safe and efficient manner. Relocate temporary services and facilities as the Work progresses. Do not overload facilities or permit them to interfere with progress. Take necessary fire-prevention measures. Do not allow hazardous, dangerous, or unsanitary conditions, or public nuisances to develop or persist on-site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General: Provide new materials. If acceptable to the Owner's Representative, the Cotractor may use undamaged, previously used materials in serviceable condition. Provide materials suitable for use intended.

B. Lumber and Plywood: Comply with requirements in Section "Rough Carpentry."

1. For signs and directory boards, provide exterior-type, Grade B-B high-density concrete form overlay plywood of sizes and thickness indicated.

2. For fences and vision barriers, provide minimum 3/8-inch- thick exterior plywood.

3. For safety barriers, and similar uses, provide minimum 5/8-inch- thick exterior plywood.

C. Tarpaulins: Provide waterproof, fire-resistant, UL-labeled tarpaulins with flame-spread rating of 15 or less. For temporary enclosures, provide translucent, nylon-reinforced, laminated polyethylene or polyvinyl chloride, fire-retardant tarpaulins.

D. Water: Provide potable water approved by local health authorities.

E. Open-Mesh Fencing: Provide 11 gauge, galvanized 2-inch chain link fabric fencing feet high with galvanized barbed-wire top strand and galvanized steel pipe posts, 1-1/2 inches I.D. for line posts and 2-1/2 inches I.D. for corner posts.

2.2 EQUIPMENT

A. General: Provide new equipment. If acceptable to the Owner's Representative, the Contractor may use undamaged, previously used equipment in serviceable condition. Provide equipment suitable for use intended.

B. Water Hoses: Provide 3/4-inch, heavy-duty, abrasion-resistant, flexible rubber hoses 100 feet long, with pressure rating greater than the maximum pressure of the water distribution system. Provide adjustable shutoff nozzles at hose discharge.

C. Electrical Outlets: Provide properly configured, NEMA-polarized outlets to prevent insertion of 110- to 120-Volt plugs into higher voltage outlets. Provide receptacle outlets equipped with ground-fault circuit interrupters, reset button, and pilot light for connection of power tools and equipment.

D. Electrical Power Cords: Provide grounded extension cords. Use hard-service cords where exposed to abrasion and traffic. Provide waterproof connectors to connect

separate lengths of electric cords if single lengths will not reach areas where construction activities are in progress. Do not exceed safe length-voltage ratio.

E. Lamps and Light Fixtures: Provide general service incandescent lamps of wattage required for adequate illumination. Provide guard cages or tempered-glass enclosures where exposed to breakage. Provide exterior fixtures where exposed to moisture.

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

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

H. Fire Extinguishers: Provide hand-carried, portable, UL-rated, Class A fire extinguishers for temporary offices and similar spaces. In other locations, provide hand-carried, portable, UL-rated, Class ABC, dry-chemical extinguishers or a combination of extinguishers of NFPA-recommended classes for the exposures.

1. Comply with NFPA 10 (1998) and NFPA 241 (2000) for classification, extinguishing agent, and size required by location and class of fire exposure.

2 EXECUTION

1. INSTALLATION

A. Use qualified personnel for installation of temporary facilities. Locate facilities where they will serve the Project adequately and result in minimum interference with performance of the Work. Relocate and modify facilities as required.

B. Provide each facility ready for use when needed to avoid delay. Maintain and modify as required. Do not remove until facilities are no longer needed or are replaced by authorized use of completed permanent facilities.

2. TEMPORARY UTILITY INSTALLATION

A. General: Engage the appropriate local utility company to install temporary service or connect to existing service. Where company provides only part of the service, provide the remainder with matching, compatible materials and equipment. Comply with company recommendations.

1. Arrange with company and existing users for a time when service can be interrupted, if necessary, to make connections for temporary services.

2. Provide adequate capacity at each stage of construction. Prior to temporary utility availability, provide trucked-in services.

3. Obtain easements to bring temporary utilities to the site where the Owner's easements cannot be used for that purpose.

4. Use Charges: Cost or use charges for temporary facilities are not chargeable to the Owner or Owner's Representative. Neither the Owner nor Owner's Representative will accept cost or use charges as a basis of claims for Change Orders.

B. Temporary Electric Power Service: Provide weatherproof, grounded electric power service and distribution system of sufficient size, capacity, and power characteristics during construction period. Include meters, transformers, overload-protected disconnects, automatic ground-fault interrupters

1. Install and operate temporary lighting that will fulfill security and protection requirements. Provide temporary lighting that will provide adequate illumination for construction operations and traffic conditions.

C. Temporary Heat: Provide temporary heat required by construction activities.

D. Heating Facilities: Provide vented, self-contained, LP-gas or fuel oil heaters with individual space thermostatic control.

1. Use of gasoline-burning space heaters, open flame, or salamander heating units is prohibited.

E. Toilets: Install self-contained toilet units. Shield toilets to ensure privacy. Use of pit-type privies will not be permitted.

1. Provide separate facilities for male and female personnel.

3. SUPPORT FACILITIES INSTALLATION

A. Locate, storage sheds, and other temporary construction and support facilities for easy access.

1. Maintain support facilities until near Substantial Completion. Remove prior to Substantial Completion.

B. Provide incombustible construction for offices, shops, and sheds located within the construction area or within 30 feet of building lines. Comply with requirements of NFPA 241 (2000).

C. Storage and Fabrication Sheds: Install storage and fabrication sheds sized, furnished, and equipped to accommodate materials and equipment involved, including temporary utility service. Sheds may be open shelters or fully enclosed spaces on-site.

D. Dewatering Facilities and Drains: For temporary drainage and dewatering facilities and operations not directly associated with construction activities included under individual Sections, comply with dewatering requirements of applicable Sections. Where feasible, utilize the same facilities. Maintain the site, excavations, and construction free of water.

E. Temporary Enclosures: Provide temporary enclosures for protection of construction, in progress and completed, from exposure, foul weather, other construction operations, and similar activities.

F. Collection and Disposal of Waste: Collect waste from construction areas and elsewhere daily. Comply with requirements of NFPA 241 (2000) for removal of combustible waste material and debris. Enforce requirements strictly. Do not hold materials more than 7 days during normal weather or 3 days when the temperature is expected to rise above 80 deg F. Handle hazardous, dangerous, or unsanitary waste materials separately from other waste by containerizing properly. Dispose of material lawfully.

4. SECURITY AND PROTECTION FACILITIES INSTALLATION

A. Barricades, Warning Signs, and Lights: Comply with standards and code requirements for erection of structurally adequate barricades. Paint with appropriate colors, graphics, and warning signs to inform personnel and the public of the hazard being protected against. Where appropriate and needed, provide lighting, including flashing red or amber lights.

B. Security Enclosure and Lockup: Install substantial temporary enclosure of partially completed areas of construction. Provide locking entrances to prevent unauthorized entrance, vandalism, theft, and similar violations of security.

1. Storage: Where materials and equipment must be stored, and are of value or attractive for theft, provide a secure lockup. Enforce discipline in connection with the installation and release of material to minimize the opportunity for theft and vandalism.

C. Environmental Protection: Provide protection, operate temporary facilities, and conduct construction in ways and by methods that comply with environmental regulations, and minimize the possibility that air, waterways, and subsoil might be contaminated or polluted or that other undesirable effects might result. Avoid use of tools and equipment that produce harmful noise. Restrict use of noise-making tools and equipment to hours that will minimize complaints from persons or firms near the site.

5. OPERATION, TERMINATION, AND REMOVAL

A. Supervision: Enforce strict discipline in use of temporary facilities. Limit availability of temporary facilities to essential and intended uses to minimize waste and abuse.

B. Maintenance: Maintain facilities in good operating condition until removal. Protect from damage by freezing temperatures and similar elements.

1. Protection: Maintain markers for underground lines. Protect from damage during excavation operations.

2. Materials and facilities that constitute temporary facilities are the Contractor's property.

3. Remove temporary paving not intended for or acceptable for integration into permanent paving. Where the area is intended for landscape development, remove soil and aggregate fill that do not comply with requirements for fill or subsoil in the area. Remove materials contaminated with road oil, asphalt and other petrochemical compounds, and other substances that might impair growth of plant materials or lawns. Repair or replace street paving, curbs, and sidewalks at the temporary entrances, as required by the governing authority.

END OF SECTION 01500

SECTION 01600

MATERIALS AND EQUIPMENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements governing the Contractor's selection of products for use in the Project.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section "Reference Standards and Definitions" specifies the applicability of industry standards to products specified.

2. Section "Submittals" specifies requirements for submittal of the Contractor's Construction Schedule and the Submittal Schedule.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

b. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

1.4 SUBMITTALS

A. Product List: Prepare a list showing products specified in tabular form acceptable to the Owner's Representative. Include generic names of products required. Include the manufacturer's name and proprietary product names for each item listed.

1. Coordinate product list with the Contractor's Construction Schedule and the Schedule of Submittals.

2. Form: Prepare product list with information on each item tabulated under the following column headings:

a. Related Specification Section number.

b. Generic name used in Contract Documents.

c. Proprietary name, model number, and similar designations.

d. Manufacturer's name and address.

e. Supplier's name and address.

f. Installer's name and address.

g. Projected delivery date or time span of delivery period.

3. Initial Submittal: Within 45 days after date of commencement of the Work, submit 3 copies of an initial product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.

a. At the Contractor's option, the initial submittal may be limited to product selections and designations that must be established early in the Contract period.

4. Completed List: Within 45 days after date of commencement of the Work, submit 3 copies of the completed product list. Provide a written explanation for omissions of data and for known variations from Contract requirements.

5. Owner's Representative Action: Owner's Representative will respond in writing to Contractor within 2 weeks of receipt of the completed product list. No response within this period constitutes no objection to listed manufacturers or products but does not constitute a waiver of the requirement that products comply with Contract Documents. The Owner's Representative response will include a list of unacceptable product selections, containing a brief explanation of reasons for this action.

1.5 QUALITY ASSURANCE

A. Source Limitations: To the fullest extent possible, provide products of the same kind from a single source.

1. When specified products are available only from sources that do not, or cannot, produce a quantity adequate to complete project requirements in a timely manner, consult with the Owners Representative to determine the most important product qualities before proceeding. Qualities may include attributes, such as visual appearance, strength, durability, or compatibility. When a determination has been made, select products from sources producing products that possess these qualities, to the fullest extent possible.

B. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer.

b. Model and serial number.

c. Capacity.

d. Speed.

e. Ratings.

1.6 PRODUCT DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle products according to the manufacturer's recommendations, using means and methods that will prevent damage, deterioration, and loss, including theft.

1. Schedule delivery to minimize long-term storage at the site and to prevent overcrowding of construction spaces.

2. Coordinate delivery with installation time to assure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.

3. Deliver products to the site in an undamaged condition in the manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.

4. Inspect products upon delivery to ensure compliance with the Contract Documents and to ensure that products are undamaged and properly protected.

5. Store products at the site in a manner that will facilitate inspection and measurement of quantity or counting of units.

6. Store heavy materials away from the Project structure in a manner that will not endanger the supporting construction.

7. Store products subject to damage by the elements above ground, under cover in a weather tight enclosure, with ventilation adequate to prevent condensation. Maintain temperature and humidity within range required by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:

1. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

2. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

3. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.

    a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.

4. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, select a product that complies with the standards, codes, or regulations specified.

5. Visual Matching: Where Specifications require matching an established Sample, the Owner's Representative's decision will be final on whether a proposed product matches satisfactorily.

    a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.

6. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Owners Representative will select the color, pattern, and texture from the product line selected.

7. Allowances: Refer to individual Specification Sections and "Allowance" provisions for allowances that control product selection and for procedures required for processing such selections.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration at time of Substantial Completion.

END OF SECTION 01600

SECTION 01631

PRODUCTS AND SUBSTITUTIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF REQUIREMENTS

A. Substitutions: The requirements for substitutions do not apply to specified Contractor options on products and construction methods. Revisions to the Contract Documents, where requested by Owner's representative are "changes" not "substitutions". Requested substitutions during bidding period, which have been accepted prior to Contract Date, are included in the Contact Documents and are not subject to the requirements for substitutions as specified herein. Governing authorities do not constitute "substitutions"; and do not constitute as a basis for change orders, except as provide for in Contract Documents. Otherwise, Contractor's requests for changes in products, materials and methods of construction required by the Contract Documents are considered requests for "substitutions, and are subject to requirements hereto.

B. General: Deliver, handle, and store products in accordance with the manufacturer's recommendations and by methods and means, which will prevent damage, deterioration, and loss including theft. Control delivery schedules to minimize long term storage of products at site and overcrowding of construction spaces. In particular, provide delivery/installation coordination to ensure minimum holding or storage times for products to be flammable, hazardous, easily damaged, or sensitive to deterioration, theft and other sources of loss.

1.3 DEFINITIONS

A. Definitions used in this Article are not intended to change the meaning of other terms used in the Contract Documents, such as "specialties," "systems," "structure," "finishes," "accessories," and similar terms. Such terms are self-explanatory and have well-recognized meanings in the construction industry.

1. "Products" are items purchased for incorporation in the Work, whether purchased for the Project or taken from previously purchased stock. The term "product" includes the terms "material," "equipment," "system," and terms of similar intent.

a. "Named Products" are items identified by the manufacturer's product name, including make or model number or other designation, shown or listed in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

b. "Foreign Products," as distinguished from "domestic products," are items substantially manufactured (50 percent or more of value) outside the United States and its possessions. Products produced or supplied by entities substantially owned (more than 50 percent) by persons who are not citizens of, nor living within, the United States and its possessions are also considered to be foreign products.

2. "Materials" are products substantially shaped, cut, worked, mixed, finished, refined or otherwise fabricated, processed, or installed to form a part of the Work.

3. "Equipment" is a product with operational parts, whether motorized or manually operated, that requires service connections, such as wiring or piping.

4. Domestic products that comply with the Contract Documents are available only at prices or terms substantially higher than foreign products that comply with the Contract Documents.

B. Nameplates: Except for required labels and operating data, do not attach or imprint manufacturer's or producer's nameplates or trademarks on exposed surfaces of products that will be exposed to view in occupied spaces or on the exterior.

1. Labels: Locate required product labels and stamps on concealed surfaces or, where required for observation after installation, on accessible surfaces that are not conspicuous.

2. Equipment Nameplates: Provide a permanent nameplate on each item of service-connected or power-operated equipment. Locate on an easily accessible surface that is inconspicuous in occupied spaces. The nameplate shall contain the following information and other essential operating data:

a. Name of product and manufacturer.

b. Model and serial number.

c. Capacity.

d. Speed.

e. Ratings.

PART 2 - PRODUCTS

2.1 GENERAL PRODUCT SELECTION

A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged and, unless otherwise indicated, new at the time of installation.

1. Provide products complete with accessories, trim, finish, safety guards, and other devices and details needed for a complete installation and the intended use and effect.

2. Standard Products: Where available, provide standard products of types that have been produced and used successfully in similar situations on other projects.

B. Product Selection Procedures: The Contract Documents and governing regulations govern product selection. Procedures governing product selection include the following:

1. Nonproprietary Specifications: When Specifications list products or manufacturers that are available and may be incorporated in the Work, but do not restrict the Contractor to use of these products only, the Contractor may propose any available product that complies with Contract requirements. Comply with Contract Document provisions concerning "substitutions" to obtain approval for use of an unnamed product.

2. Descriptive Specification Requirements: Where Specifications describe a product or assembly, listing exact characteristics required, with or without use of a brand or trade name, provide a product or assembly that provides the characteristics and otherwise complies with Contract requirements.

3. Performance Specification Requirements: Where Specifications require compliance with performance requirements, provide products that comply with these requirements and are recommended by the manufacturer for the application indicated.

   a. Manufacturer's recommendations may be contained in published product literature or by the manufacturer's certification of performance.

4. Compliance with Standards, Codes, and Regulations: Where Specifications only require compliance with an imposed code, standard, or regulation, selects a product that complies with the standards, codes, or regulations specified.

5. Visual Matching: Where Specifications require matching an established Sample, the Owner's Representative decision will be final on whether a proposed product matches satisfactorily.

   a. Where no product available within the specified category matches satisfactorily and complies with other specified requirements, comply with provisions of the Contract Documents concerning "substitutions" for selection of a matching product in another product category.

6. Visual Selection: Where specified product requirements include the phrase "... as selected from manufacturer's standard colors, patterns, textures ..." or a similar phrase, select a product and manufacturer that complies with other specified requirements. The Owner's Representative will select the color, pattern, and texture from the product line selected.

7. Allowances: Refer to individual Specification Sections and "Allowance" provisions for allowances that control product selection and for procedures required for processing such selections.

2.2 SUBSTITUTIONS:

A. Conditions: Contractor's request for substitution will be received and considered when extensive revisions to the Contract Documents are not required and changes are in keeping with general intent of Contract documents; when timely, fully documented and properly submitted; and when one or more of the following conditions are satisfied, all as judged by Owner's Representative. Otherwise, request will be returned without action except to record non-compliance with these requirements.

B. Where request is directly related to an "or approved equal" clause or other language of the same effect.

C. Where required product, material or method cannot be provided within Contract Time, but not as a result of Contractor's failure to pursue the work promptly to coordinate various activities properly.

D. Where required product, material or method cannot be provided in a manner which is compatible with other materials of the work, or cannot be properly coordinated, therewith, or cannot be warranted as required, or cannot be used without adversely affecting Owner's Representative insurance coverage or completed work, or will encounter other substantial non-compliance which are not possible or otherwise overcome except by making requested substitution, which Contractor thereby certifies to overcome such non-compatibility, non-coordination, non-warranty, non-insurability or other non-compliance claimed.

E. Where required product, material or method cannot receive required approval by a governing authority, and requested substitution can so be approved.

F. Where substantial advantage is offered to the Owner, in terms of cost, time, energy conservation or other valuable consideration.

G. Work-Related Submittals: Contractor's submittal of and Owner's representative's acceptance shop drawings, product data or samples which indicated work not complying with requirements of Contract Documents, does not constitute an acceptance and valid request for, nor approval of, a substitution.

PART 3 - EXECUTION

3.1 INSTALLATION OF PRODUCTS

A. Comply with manufacturer's instructions and recommendations for installation of products in the applications indicated. Anchor each product securely in place, accurately located and aligned with other Work.

1. Clean exposed surfaces and protect as necessary to ensure freedom from damage
2. and deterioration at time of Substantial Completion.

END OF SECTION 01631

SECTION 01650

STARTING OF SYSTEMS

1PART - GENERAL

1.1 SECTION INCLUDES

A. Starting systems.

B. Demonstration and instructions.

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

1.2 RELATED SECTIONS

A. Section 01400 - Quality Control: Manufacturer's field reports.

B. Individual Specification Sections: System commissioning, starting, testing, demonstration on balancing.

C. Section 01700 - Contract Closeout: System operation and maintenance data and extra materials.

1.3 STARTING SYSTEMS

A. Coordinate schedule for start-up of various equipment and systems.

B. Notify Architect/Engineer and Owner seven days prior to start-up of each item.

C. Verify that each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, or for other conditions which may cause damage.

D. Verify that tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.

E. Verify wiring and support components for equipment are complete and tested.

F. Execute start-up under supervision of applicable Contractors' personnel in accordance with manufacturers' instructions.

G. When specified in individual specification Sections, require manufacturer to provide authorized representative to be present at site to inspect, check, and approve equipment or system installation prior to start-up, and to supervise placing equipment or system in operation.

H. Submit a written report in accordance with Section 01400 that equipment or system has been properly installed and is functioning correctly.

1.4 DEMONSTRATION AND INSTRUCTIONS

A. Demonstrate operation and maintenance of Products to Owner's personnel prior to date of Substantial Completion.

B. Demonstrate Project equipment by a qualified manufacturers' representative who is knowledgeable about the Project.

C. For equipment or systems requiring seasonal operation, perform demonstration for other season within six months.

D. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with Owners' personnel in detail to explain all aspects of operation and maintenance.

E. Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, maintenance, and shutdown of each item of equipment at agreed time at equipment location.

F. Prepare and insert additional data in operations and maintenance manuals when need for additional data becomes apparent during instruction.

G. All Instructional training sessions are to be video taped by the contractor. Contractor to provide digital copy for each training video to Owner as part of close-out documents.

2PART - PRODUCTS (Not Used)

3PART - EXECUTION (Not Used)

END OF SECTION 01650

SECTION 01700

CONTRACT CLOSEOUT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes administrative and procedural requirements for contract closeout including, but not limited to, the following:

1. Inspection procedures.
2. Project record document submittal.
3. Operation and maintenance manual submittal.
4. Submittal of warranties.
5. Final cleaning.
6. "As-built" surveys.

B. Closeout requirements for specific construction activities are included in the appropriate Sections.

1.3 SUBSTANTIAL COMPLETION

A. Preliminary Procedures: Before requesting inspection for certification of Substantial Completion, complete the following. List exceptions in the request.

1. In the Application for Payment that coincides with, or first follows, the date Substantial Completion is claimed, show 100 percent completion for the portion of the Work claimed as substantially complete.

   a. Include supporting documentation for completion as indicated in these Contract Documents and a statement showing an accounting of changes to the Contract Sum.
   b. If 100 percent completion cannot be shown, include a list of incomplete items, the value of incomplete construction, and reasons the Work is not complete.

2. Advise the Owner of pending insurance changeover requirements.

3. Submit specific warranties, workmanship bonds, maintenance agreements, final certifications, and similar documents.
4. Obtain and submit releases enabling the Owner unrestricted use of the Work and access to services and utilities.
5. Submit record drawings, maintenance manuals, final project photographs, damage or settlement surveys, property surveys, and similar final record information.
6. Deliver tools, spare parts, extra stock, and similar items.
7. Make final changeover of permanent locks and transmit keys to the Owner. Advise the Owner's personnel of changeover in security provisions.
8. Complete startup testing of systems and instruction of the Owner's operation and maintenance personnel. Discontinue and remove temporary facilities and utilities from the site, along with mockups, construction tools, and similar elements.
9. Complete final cleanup requirements, including touchup painting.
10. Touch up and otherwise repair and restore marred, exposed finishes.

B. Inspection Procedures: On receipt of a request for inspection, Owner's Representative will either proceed with inspection or advise the Contractor of unfilled requirements. Owner's Representative will prepare the Certificate of Substantial Completion following inspection or advise the Contractor of construction that must be completed or corrected before the certificate will be issued.

1. The Owner's Representative will repeat inspection when requested and assured that the Work is substantially complete.
2. Results of the completed inspection will form the basis of requirements for final acceptance.

1.4 FINAL ACCEPTANCE

A. Preliminary Procedures: Before requesting final inspection for certification of final acceptance and final payment, complete the following. List exceptions in the request.

1. Submit the final payment request with releases and supporting documentation not previously submitted and accepted. Include insurance certificates for products and completed operations where required.
2. Submit an updated final statement, accounting for final additional changes to the Contract Sum.
3. Submit a certified copy of the Owner's Representative final inspection list of items to be completed or corrected, endorsed and dated by Owner's Representative. The certified copy of the list shall state that each item has been completed or otherwise resolved for acceptance and shall be endorsed and dated by Owner's Representative.
4. Submit final meter readings for utilities, a measured record of stored fuel, and similar data as of the date of Substantial Completion or when the Owner

took possession of and assumed responsibility for corresponding elements of the Work and coordinate utility account change-over.
5. Submit consent of surety to final payment.
6. Submit a final liquidated damages settlement statement.
7. Submit evidence of final, continuing insurance coverage complying with insurance requirements.

B. Reinspection Procedure: Owner's Representative will reinspect the Work upon receipt of notice that the Work, including inspection list items from earlier inspections, has been completed, except for items whose completion is delayed under circumstances acceptable to the Owner's Representative.

1. Upon completion of reinspection, Owner's Representative will prepare a certificate of final acceptance. If the Work is incomplete, the Owner's Representative will advise the Contractor of Work that is incomplete or of obligations that have not been fulfilled but are required for final acceptance.
2. If necessary, reinspection will be repeated. The Contractor shall be responsible for all costs and expenses associated with reinspections.

1.5 RECORD DOCUMENT SUBMITTALS

A. General: Do not use record documents for construction purposes. Protect record documents from deterioration and loss in a secure, fire-resistant location. Provide access to record documents for the Owner's Representative reference during normal working hours.

B. Record Drawings: Contractor shall provide a **sealed and stamped field run as-built survey prepared by a surveyor licensed in the State of Georgia** of all improvements with in the limits of work, including all underground utilities. Submission shall be required prior to final payment.
1. Record Drawings: Provide sewer system as-built drawings in accordance with all Dekalb County requirements. DeKalb County standards and requirements can be obtained from the DeKalb County Land Development Department.

C. Record Specifications: Maintain one complete copy of the Project Manual, including addenda. Include with the Project Manual one copy of other written construction documents, such as Change Orders and modifications issued in printed form during construction.

1. Mark these documents to show substantial variations in actual Work performed in comparison with the text of the Specifications and modifications.
2. Give particular attention to substitutions and selection of options and information on concealed construction that cannot otherwise be readily discerned later by direct observation.
3. Note related record drawing information and Product Data.

4. Upon completion of the Work, submit record Specifications to the Owner's Representative for the Owner's records.

D. Miscellaneous Record Submittals: Refer to other Specification Sections for requirements of miscellaneous record keeping and submittals in connection with actual performance of the Work. Immediately prior to the date or dates of Substantial Completion, complete miscellaneous records and place in good order. Identify miscellaneous records properly and bind or file, ready for continued use and reference. Submit to the Owner's Representative for the Owner's records.

E. Maintenance Manuals: Organize operation and maintenance data into suitable sets of manageable size. Bind properly indexed data in individual, heavy-duty, 3-inch, 3-ring, vinyl-covered binders, with pocket folders for folded sheet information. Mark appropriate identification on front and spine of each binder. Include the following types of information: (3 copies of Manuals)

1. Copies of warranties.
2. Inspection procedures.
3. Shop Drawings and Product Data.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 CLOSEOUT PROCEDURES

A. Operation and Maintenance Instructions: Arrange for each Installer of equipment that requires regular maintenance to meet with the Owner's personnel to provide instruction in proper operation and maintenance. Provide instruction by manufacturer's representatives if installers are not experienced in operation and maintenance procedures. Include a detailed review of the following items:

1. Maintenance manuals.
2. Record documents.
3. Spare parts and materials.
4. Cleaning.
5. Warranties and bonds.
6. Maintenance agreements and similar continuing commitments.

3.2 FINAL CLEANING

A. General: The General Conditions require general cleaning during construction. Regular site cleaning is included in Section "Construction Facilities and Temporary Controls."

1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion.
   a. Clean the site, including landscape development areas, of rubbish, litter, and other foreign substances. Sweep paved areas broom clean; remove stains, spills, and other foreign deposits. Rake grounds that are neither paved nor planted to a smooth, even-textured surface.
   b. Clean storm catch basins and storm lines of debris of all kinds.

B. Removal of Protection: Remove temporary protection and facilities installed for protection of the Work during construction.

C. Compliance: Comply with regulations of authorities having jurisdiction and safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on the Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from the site and dispose of lawfully.

1. Where extra materials of value remain after completion of associated Work, they become the Owner's property. Dispose of these materials as directed by the Owner.

END OF SECTION 01700

SECTION 01740

WARRANTIES

1.1 GENERAL

A. Standard product warranties are preprinted written warranties published by individual manufacturers for particular products and are specifically endorsed by the manufacturer to the Owner.

B. Special warranties are written warranties required by or incorporated in the Contract Documents, either to extend time limits provided by standard warranties or to provide greater rights for the Owner.

1. Refer to the General Conditions for terms of the Contractor's period for correction of the Work.
2. Refer to Section 02930 for plant material warranties.
3. All conditions of this Section shall also apply to warranties stated in other Sections.

C. Disclaimers and Limitations: Manufacturer's disclaimers and limitations on product warranties do not relieve the Contractor of the warranty on the Work that incorporates the products. Manufacturer's disclaimers and limitations on product warranties do not relieve suppliers, manufacturers, and subcontractors required to countersign special warranties with the Contractor.

D. Related Damages and Losses: When correcting failed or damaged warranted construction, remove and replace construction that has been damaged as a result of such failure or must be removed and replaced to provide access for correction of warranted construction.

E. Reinstatement of Warranty: When Work covered by a warranty has failed and been corrected by replacement or rebuilding, reinstate the warranty by written endorsement. The reinstated warranty shall be equal to the original warranty with an equitable adjustment for depreciation.

F. Replacement Cost: Upon determination that Work covered by a warranty has failed, replace or rebuild the Work to an acceptable condition complying with requirements of the Contract Documents. The Contractor is responsible for the cost of replacing or rebuilding defective Work regardless of whether the Owner has benefited from use of the Work through a portion of its anticipated useful service life.

G. Owner's Recourse: Expressed warranties made to the Owner are in addition to implied warranties and shall not limit the duties, obligations, rights, and remedies otherwise available under the law. Expressed warranty periods shall not be interpreted as limitations on the time in which the Owner can enforce such other duties, obligations, rights, or remedies.

1. Rejection of Warranties: The Owner reserves the right to reject warranties and to limit selection to products with warranties not in conflict with requirements of the Contract Documents.
2. Where the Contract Documents require a special warranty, or similar commitment, the Owner reserves the right to refuse to accept the Work, until the Contractor presents evidence that entities required to countersign such commitments are willing to do so.

H. Submit written warranties to the Landscape Architect prior to the date certified for Substantial Completion. If the Landscape Architect's Certificate of Substantial Completion designates a commencement date for warranties other than the date of Substantial Completion, submit written warranties upon request of the Landscape Architect.

1. When a designated portion of the Work is completed and occupied or used by the Owner, by separate agreement with the Contractor during the construction period, submit properly executed warranties to the Landscape Architect within 15 days of completion of that designated portion of the Work.

I. When the Contract Documents require the Contractor, or the Contractor and a subcontractor, supplier or manufacturer to execute a special warranty, prepare a written document that contains appropriate terms and identification, ready for execution by the required parties. Submit a draft to the Owner, through the Landscape Architect, for approval prior to final execution.

1. Refer to Specification Sections 2 through 16 for specific content requirements and particular requirements for submitting special warranties.

J. Bind warranties and bonds in heavy-duty, commercial-quality, durable 3-ring, vinyl-covered loose-leaf binders, thickness as necessary to accommodate contents, and sized to receive 8-1/2-by-11-inch (115-by-280-mm) paper.

1. Provide heavy paper dividers with celluloid covered tabs for each separate warranty. Mark the tab to identify the product or installation. Provide a typed description of the product or installation, including the name of the product, and the name, address, and telephone number of the Installer.
2. Identify each binder on the front and spine with the typed or printed title "WARRANTIES," Project title or name, and name of the Contractor.
3. When warranted construction requires operation and maintenance manuals, provide additional copies of each required warranty, as necessary, for inclusion in each required manual.

1.2 PRODUCTS (Not Applicable)

1.3 EXECUTION

A. List of Warranties: As follows:
Irrigation, Planting, Paint, Fencing, Electrical

B. Schedule: Provide warranties on products and installations as specified in the following Specifications Sections: 2, 3, 4, 9, and 16

END OF SECTION 01740

SECTION 01741

CONTRACTOR WARRANTY FORM

PROJECT:

LOCATION:

OWNER:

We_____, Contractor for the above-
(Company Name)

referenced project, do hereby warrant that all labor and materials furnished and work performed are in accord with the Contract Documents and authorized modifications thereto, and will be free from defects due to defective materials or workmanship for a period of one (1) year from Date of Substantial Completion or longer period(s) for certain components as established in the Contract Documents. This Warranty commences on _____ (Date of Substantial Completion affixed by Architect)and expires on _____ (Expiration Date).

Should any defect develop during the warranty period due to improper materials, workmanship or arrangement, the same, including adjacent work displaced, shall be made good by the undersigned at no expense to the Owner.

The Owner will give Contractor written notice of defective work. Should Contractor fail to correct defective work within 60 days after receiving written notice, the Owner may, at his option, correct defects and charge Contractor costs for such correction. Contractor agrees to pay such charges upon demand.

Nothing in the above shall be deemed to apply to work which has been abused or neglected by the Owner.

FOR:_____
(Company Name)

BY:_____

TITLE:_____

DATE:_____

END OF SECTION 01741

SECTION 01742

SUBCONTRACTOR WARRANTY FORM

PROJECT:

LOCATION:

OWNER:

GENERAL CONTRACTOR: _____

We, _____, Subcontractor for _____,
(List Trade)

as described in Specification Sections(s) _____,
(List Sections of Specs)

do hereby warrant that all labor and materials furnished and work performed are in accord with the Contract Documents and authorized modifications thereto, and will be free from defects due to defective materials or workmanship for a period of one (1) year from Date of Substantial Completion or longer period(s) for certain components as established in the Contract Documents. This Warranty commences on _____ (Date of Substantial Completion affixed by Architect) and expires on _____ (Expiration Date). Should any defect develop during the warranty period due to improper materials, workmanship or arrangement, the same, including adjacent work displaced, shall be made good by the undersigned at no expense to the Owner.

The Owner will give Subcontractor written notice of defective work. Should Subcontractor fail to correct defective work within 60 days after receiving written notice, the Owner may, at his option, correct defects and charge Subcontractor costs for such correction. Subcontractor agrees to pay such charges upon demand.

Nothing in the above shall be deemed to apply to work which has been abused or neglected by the Owner.

FOR:_____ (General Contractor)	FOR:_____ (Company Name)
BY:_____	BY:_____
TITLE:_____	TITLE:_____
DATE:_____	DATE: _____

END OF SECTION 01742

SECTION 01742

SUBCONTRACTOR WARRANTY FORM

PROJECT:

LOCATION:

OWNER:

GENERAL CONTRACTOR: _____

We, _____, Subcontractor for _____,
(List Trade)

as described in Specification Sections(s) _____,
(List Sections of Specs)

do hereby warrant that all labor and materials furnished and work performed are in accord with the Contract Documents and authorized modifications thereto, and will be free from defects due to defective materials or workmanship for a period of one (1) year from Date of Substantial Completion or longer period(s) for certain components as established in the Contract Documents. This Warranty commences on _____ (Date of Substantial Completion affixed by Architect) and expires on _____ (Expiration Date). Should any defect develop during the warranty period due to improper materials, workmanship or arrangement, the same, including adjacent work displaced, shall be made good by the undersigned at no expense to the Owner.

The Owner will give Subcontractor written notice of defective work. Should Subcontractor fail to correct defective work within 60 days after receiving written notice, the Owner may, at his option, correct defects and charge Subcontractor costs for such correction. Subcontractor agrees to pay such charges upon demand.

Nothing in the above shall be deemed to apply to work which has been abused or neglected by the Owner.

FOR:_____ (General Contractor)	FOR:_____ (Company Name)
BY:_____	BY:_____
TITLE:_____	TITLE:_____
DATE:_____	DATE: _____

END OF SECTION 01742

SECTION 02070

SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Excavation, removal, and legal disposal of items indicated on the drawings.

1.3 DEFINITIONS

A. Remove: Remove and legally dispose of items.

B. Disposal Site/Landfill: Licensed disposal facility secured by Contractor for legal disposal of items.

1.4 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Specification Sections, for information only, unless otherwise indicated.

B. Schedule of demolition activities indicating the following:

1. Detailed sequence of demolition and removal work, with starting and ending dates for each activity.

C. Landfill records indicating receipt and acceptance of any hazardous wastes by a landfill facility licensed to accept hazardous wastes, if encountered.

1.5 QUALITY ASSURANCE

A. Regulatory Requirements: Comply with hauling and disposal regulations of authorities having jurisdiction.

PART 2 - PRODUCTS (Not Applicable)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Survey existing conditions and correlate with requirements indicated for removal required.

3.2 DISPOSAL OF DEMOLISHED MATERIALS

1. General: Promptly dispose of materials. Do not allow materials to accumulate on-site.

B. Burning: Do not burn materials.

C. Disposal: Legally transport demolished materials off Owner's property and legally dispose of them, at no additional cost to the owner.

END OF SECTION 02070

SECTION 02110

CLEARING AND GRUBBING

PART 1 - GENERAL

1.1 SCOPE

A. Clearing and grubbing includes, but is not limited to, removing from the Project site, trees, stumps, roots, brush, structures, abandoned utilities, trash, debris and all other materials found on or near the surface of the ground in the construction area and understood by generally accepted engineering practice not to be suitable for construction of the type contemplated. Precautionary measures that prevent damage to existing features to remain are part of the Work.

B. The Contractor shall haul debris away from site.

C. Clearing and grubbing operations shall be coordinated with temporary and permanent erosion and sedimentation control procedures.

1.2 QUALITY ASSURANCE

A. The Contractor shall comply with applicable codes, ordinances, rules, regulations and laws of local, municipal, state or federal authorities having jurisdiction over the Project. All required permits of a temporary nature shall be obtained for construction operations by the Contractor.

B. Open burning, if allowed, shall first be permitted by the local authority having jurisdiction. The Contractor shall notify the local fire department and abide by fire department restrictions.

1.3 JOB CONDITIONS

A. Location of the Work: The area to be cleared and grubbed is all areas to the limit of grading. It includes all areas designated for construction.

PART 2 - PRODUCTS

2.1 PRODUCTS / EQUIPMENT

A. The Contractor shall furnish equipment of the type normally used in clearing and grubbing operations including, but not limited to, tractors, trucks, loaders and root rakes.

PART 3 - EXECUTION

3.1 TREE PROTECTION

A. Protect existing trees and other vegetation not indicated to be removed, against unnecessary cutting, breaking or skinning of roots, skinning and bruising of bark, smothering of trees by stockpiling construction materials or excavated materials within drip line, excess foot or vehicular traffic, or parking of vehicles within drip line.

B. Provide protection for roots over 1-1/2" diameter that are cut during construction operation. Coat any cut faces with emulsified asphalt, or other acceptable coating, especially formulated for horticultural use on cut or damaged plant tissues. Temporarily cover all exposed roots with wet burlap to prevent from drying out; provide earth cover as soon as possible.

C. Repair or replace trees and vegetation damaged by construction operations, in a manner acceptable to the Landscape Architect. Tree damage repair shall be performed by a qualified tree surgeon. Replace trees which cannot be repaired and restored to full-growth status, as determined by the tree surgeon.

3.2 CLEARING AND GRUBBING

A. Materials to be cleared, grubbed and removed from the Project site include, but are not limited to, all trees, stumps, roots, brush, trash, organic matter, rock, debris and abandoned utilities.

B. Grubbing shall consist of completely removing roots, stumps, trash and other debris from all graded areas so that topsoil is free of roots and debris and as noted on the Drawings. Topsoil is to be left sufficiently clean so that further picking and raking will not be required.

C. All stumps, roots, foundations and planking embedded in the ground shall be removed and disposed of. Piling and butts of utility poles shall be removed to a minimum depth of two feet below the limits of excavation for structures, trenches and roadways or two feet below finish grade, whichever is lower.

D. Landscaping features shall include, but are not necessarily limited to, fences, cultivated trees, property corners, man made improvements, and other signs within the right-of way and easement. The Contractor shall take extreme care in moving landscape features and promptly re-establishing these features.

E. Surface boulders shall be grubbed from the soil and stockpiled at a designated area. To be chosen on site. Boulders selected by Landscape Architect for landscape treatments shall be stored in a separate area for reuse. Other unused rocks and boulders shall be hauled off-site.

F. The entire construction area shall be grubbed by heavy tractors with root rakes. Raking shall generally proceed along the contour rather than up and down slopes so as to inhibit soil erosion.

G. Where the tree limbs interfere with utility wires, or where the trees to be felled are in close proximity to utility wires, the tree shall be taken down in sections to eliminate the possibility of damage to the utility.

H. Any work pertaining to utility poles shall comply with the requirements of the appropriate utility.

I. All fences adjoining any excavation or embankment that, in the Contractor's opinion, may be damaged or buried, shall be carefully removed, stored and replaced. Any fencing that, in the Landscape Architect's opinion, is significantly damaged shall be replaced with new fence material.

J. The Contractor shall exercise special precautions for the protection and preservation of trees, fences, etc. situated within the limits of the construction area but not directly within excavation and/or fill limits. The Contractor shall be held liable for any damage the Contractor's operations have inflicted on such property.

K. The Contractor shall be responsible for all damages to existing improvements resulting from Contractor's operations.

3.3 DISPOSAL OF DEBRIS

A. The debris resulting from the clearing and grubbing operation shall be hauled on site or to a disposal site secured by the Contractor and shall be disposed of in accordance with all requirements of federal, state, city and municipal regulations. No debris of any kind shall be deposited in any stream or body of water, or in any street or alley.

B. No debris shall be deposited upon any private property except with written consent of the property owner. In no case shall any material or debris be left on the Project, shoved onto abutting private properties or buried on the Project.

3.4 QUALITY ASSURANCE

A. QUALIFICATION OF THE WORKMEN: Provide at least one person who shall be present at all times during tree clearing and grubbing operations and who shall direct the trimming of roots and limbs where required. Provide at least one person who is qualified in the various other trades involved including demolition, protection of property and erosion control.

END OF SECTION 02110

SECTION 02125

EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SCOPE

A. The work specified in this Section consists of providing and maintaining temporary and permanent erosion and sedimentation controls during construction. This Section also specifies the subsequent removal of temporary erosion and sedimentation controls.

B. Temporary and permanent erosion and sedimentation controls include but not limited to, grassing, mulching, setting, and watering, and re-seeding on-site surfaces and spoil and borrow area surfaces and providing interceptor ditches at ends of berms and at those locations which will ensure that erosion during construction will be either eliminated or maintained within acceptable limits as established by the owner and Local, State and Federal laws.

C. Temporary sedimentation controls include, but are not limited to, silt fencing, silt dams, traps, barriers, and appurtenances at the foot of sloped surfaces which will ensure that sedimentation pollution will be either eliminated or controlled.

D. The contractor shall provide all labor, equipment and materials necessary to comply with the requirements of the Georgia National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity and the site specific Comprehensive Monitoring Program including but not limited to, site inspections and storm water sampling and testing. The contractor shall also provide a copy of all test and inspection reports to the Landscape Architect and Owner within 2 days of event.

D. Land disturbance activity shall not commence until the Land Disturbance Permit has been issued.

D. Land disturbance permit shall be obtained and paid for by the Contractor.

1.02 SUBMITTALS

A. Submit product data in accordance with the requirements of Section 01300 of these Specifications.

1.03 QUALITY ASSURANCE

A. The temporary and permanent erosion and sedimentation control measures shown on the Drawings are minimum requirements. Any additional erosion and sedimentation control measures required by the Contractor's means, methods, techniques and sequence of operation will be installed by the Contractor at no additional cost to the Owner.

B. Perform all work under this Section in accordance with all pertinent rules and regulations including, but not necessarily limited to, those stated in these Specifications. Where provisions of pertinent rules and regulations conflict with these Specifications, the more stringent provisions shall govern.

C. Provide all materials and promptly take all actions necessary to achieve effective erosion and sedimentation control in accordance with the Georgia Erosion and Sedimentation Control Act (2000), Dekalb County Standards and specifications, other permits, local enforcing agency guidelines and these Specifications.

D. Basic Principles:
1. Coordinate the land disturbance activities to fit the topography, soil types and conditions.
2. Minimize the disturbed area and the duration of exposure to erosive elements.
3. Provide temporary or permanent stabilization to all disturbed areas immediately after rough grading is complete.
4. Safely convey run-off from the site to a stable outlet to prevent flooding and damage to downstream facilities resulting from increased runoff from the site.
5. Retain sediment on-site that was generated on-site.
6. Minimize encroachment upon watercourses.
7. All areas disturbed by the contractor, even if it was not designated on the plans, shall be stabilized by the contractor.

E. Implementation:
1. The Contractor is solely responsible for the control of erosion within the Project site and the prevention of sedimentation from leaving the Project site or entering adjacent roads and waterways.
2. The Contractor shall install temporary and permanent erosion and sedimentation controls, which will ensure that runoff from the disturbed area of the Project site, shall pass through a filter system before exiting the Project site.
3. The Contractor shall provide temporary and permanent erosion and sedimentation control measures to prevent silt and sediment from entering the waterway.
4. The Contractor shall limit land disturbance activity to those areas shown on the Drawings.
5. The Contractor shall maintain erosion and sedimentation control measures within disturbed areas on the entire site at no additional cost to the Owner until the acceptance of the Project. Maintenance shall include mulching, re-seeding, clean-out of sediment barriers and sediment ponds, replacement of washed-out or undermined rip rap and erosion control materials, to the satisfaction of the Owner and Landscape Architect.
6. All fines imposed for improper erosion and sedimentation control shall be paid by the Contractor.
7. The Landscape Architect has indicated the location of silt fence and barriers on the plans. Contractor is responsible to prevent all runoff, which may require additional fencing. Some designated fence may not prove necessary where shown on the plans and can be utilized at other locations on the site.

PART 2 - PRODUCTS

2.01 SEDIMENT BARRIER

A. Silt Fence:

1. Type C Silt fence is a combination of Type A Silt fence with woven wire reinforcement. Type C silt fence woven wire reinforcement shall meet the requirement of Section 171 of the Georgia DOT's standard specifications, (2002).
2. Silt fence fabric shall be an approved product on the Georgia DOT Qualified Product List No. 36, (2002).

B. Hay Bales: Hay bales shall be clean, seed-free cereal hay, rectangular in shape and contain five cubic feet or more of material.

C. Concrete Blocks: Concrete blocks shall be hollow, non-load-bearing type.

D. Temporary Downdrain Structure: Flexible corrugated high density polyethylene (HDPE) or corrugated plastic pipe (CPP) with watertight joints.

E. Storm Drain Outlet protection:

1. Stone: Select stone from field stone or quarry stone. The stone shall be hard, angular, and highly weather resistant. The specific gravity of the individual stones should be at least 2.5. Stone size shall be minimum 4" diameter / maximum 15" diameter.
2. Geotextile underliner: A woven or nonwoven geotextile material.

2.02 CONSTRUCTION EXIT STONE

A. Use sound, tough, durable stone resistant to the action of air and water. Slabby or shaley pieces will not be acceptable. Aggregate size shall be in accordance with the National Stone Association Size R-2 (1.5 to 3.5-inch stone) or Type 3 rip rap stone conforming to Section 805.01 of the Georgia Department of Transportation Standard Specifications.

2.03 CONCRETE

A. Concrete shall conform to the requirements specified in Section 03300 of these Specifications for Class "B" concrete.

2.06 GRASSING

A. Grassing materials shall meet the requirements of the following sections of the Georgia Department of Transportation Standard Specifications, (2002):

Material	Section
Topsoil	893.01
Seed and Sod	890
Fertilizer	891.01
Agricultural Lime	882.02
Mulch	893.02
Inoculates	893.04

B. Seed species shall be provided as shown on the Drawings.

C. Mulch Binder: Mulch on slopes exceeding 3 (horizontal) to 1 (vertical) shall be held in place by the use of a mulch binder, as approved by the Landscape Architect. The mulch binder shall be non-toxic to plant and animal life and shall be approved by the Landscape Architect. Contractor may submit alternate methods if desired to the Landscape Architect for review and approval.

D. Water: Water shall be free of excess and harmful chemicals, organisms and substances which may be harmful to plant growth or obnoxious to traffic. Salt or brackish water shall not be used. Water shall be furnished by the Contractor.

PART 3 - EXECUTION

3.01 GENERAL

A. Temporary and permanent erosion and sedimentation control measures shall prevent erosion and prevent sediment from exiting the site. If, in the opinion of the Owner or Landscape Architect, the Contractor's temporary erosion and sedimentation control measures are inadequate, the Contractor shall provide additional maintenance for existing measures or additional devices to control erosion and sedimentation on the site at no additional cost to the Owner.

B. All erosion and sedimentation control devices and structures shall be inspected by the Contractor at least once a week and immediately after to each rainfall occurrence. Any device or structure found to be damaged will be repaired or replaced by the end of the day. Sediment ponds and other erosion control measures shall be cleaned out prior to the silt reaching the height as shown on the drawings or else one-half the original height, whichever distance is the lesser amount.

C. All erosion and sedimentation control measures and devices shall be constructed and maintained as indicated on the Drawings or specified herein until adequate permanent disturbed area stabilization has been provided and accepted by the Landscape Architect. Once adequate permanent stabilization has been provided and accepted by the Landscape Architect, all temporary erosion and sedimentation control structures and devices shall be removed.

3.02 SEDIMENT CONTROL

A. Construction Exit: (if necessary)

1. Construction exit(s) shall be placed as shown on the Drawings and as directed by the Landscape Architect. A construction exit shall be located at any point traffic will be leaving a disturbed area to a public right-of-way, street, alley, sidewalk or parking area.

2. Placement of Construction Exit Material: The ground surface upon which the construction exit material is to be placed shall be prepared to a smooth condition free from obstructions, depressions or debris. The plastic filter fabric shall be placed to provide a minimum number of overlaps and a minimum width of one foot of overlap at each joint. The stone shall be placed with its top elevation conforming to the surrounding roadway elevations.

3. Construction Exit Maintenance: The Contractor shall regularly maintain the exit with the top dressing of stone to prevent tracking or flow of soil onto public rights-of-way and paved surfaces as directed by the Owner and Landscape Architect.

4. Construction Exit Removal: Construction exit(s) shall be removed and properly disposed of when the disturbed area has been properly stabilized, the tracking or flow of soil onto public rights-of-way or paved surfaces has ceased and as directed by the Landscape Architect.

B. Sediment Barriers:

1. Sediment barriers shall include, but are not necessarily limited to, silt fences, hay bales, rock check dams, inlet sediment traps, and any other device, which prevents sediment from exiting the disturbed areas of the site.

2. Silt fences and hay bales shall not be used in any continuous flowing stream, creek or river.

3. Sediment barriers shall be installed as shown on the Drawings and as directed by the Owner or Landscape Architect.

4. Sediment barriers shall be maintained to ensure the depth of impounded sediment is no more than one-half of the original height of the barrier or as directed by the Landscape Architect. Torn, damaged, destroyed or washed-out barriers shall be repaired, reinforced or replaced with new material and installed as shown on the Drawings and as directed by the Owner or Landscape Architect.

5. Sediment Barrier Removal:

   a. Sediment barrier shall be removed once the disturbed area has been stabilized with a permanent vegetative cover and the sediment barrier is no longer required as directed by the Landscape Architect.
   b. Accumulated sediment shall be removed from the barrier and removed from the site.

c. All non-biodegradable parts of the barrier shall be disposed of properly.

d. The disturbed area created by barrier removal shall be permanently stabilized.

C. Sediment Boxes: All inlet grates shall be covered with sediment boxes during grading operations and shall remain so covered until all open areas are permanently stabilized against erosion.

3.03 EROSION CONTROL

A. Grassing:

1. Grassing shall meet the requirements of Section 700 of the Georgia Department of Transportation Standard Specifications, (2002), unless specified otherwise.

2. Seed rate, fertilization and other requirements shall be provided as shown on the Drawings.

3. Temporary Stabilization: Temporary stabilization shall be provided as shown on the Drawings and conforming to these Specifications to control erosion on the site. Temporary stabilization shall be provided to any area, which will not receive permanent stabilization within the next 14 calendar days. Partial payment requests may be withheld for those portions of the Project not complying with this requirement.

4. Permanent Stabilization:

a. Permanent stabilization shall be provided as shown on the Drawings and conforming to these Specifications to control erosion on the site. Permanent stabilization shall be provided to all areas of land disturbance within seven calendar days of the completion of land disturbance for any area greater than 0.25 acre. Partial payment request may be withheld for those portions of the project not complying with this requirement.

b. Where permanent stabilization cannot be immediately established because of an inappropriate season, the Contractor shall provide temporary stabilization. The Contractor shall return to the site at the appropriate season to provide permanent stabilization in areas that received only temporary stabilization.

3.04 CLEAN-UP

A. Dispose of all excess erosion and sedimentation control materials in a manner satisfactory to the Owner and Landscape Architect.

B. Final clean up shall be performed in accordance with the requirements of these Specifications and to the satisfaction of the Owner and Landscape Architect.

END OF SECTION 02125

SECTION 02200

EARTHWORK

SKATE PARK

PART 1 - GENERAL

1.01 SCOPE

A. Furnish labor, materials, and equipment for grading and construction work shown on the drawings and specified.

1.02 RELATED SECTIONS

A. Section 02050: Site Demolition - Skate Park

B. Section 02230: Sub-grade Preparation & Base Material - Skate Park

1.03 SUBMITTALS

A. Samples: Submit a one cubic foot [0.0283m³] sample of proposed import soils (if required) per Geo-Technical report for Owner's Representative's review and approval; identify location and source of import soil.

B. Test Reports:

1. Refer for Geo-Technical Report specifics.

1.04 REFERENCES AND STANDARDS

A. Work shall comply with the rules and regulations of local, state and federal agencies having jurisdiction. Nothing contained herein shall be construed as permitting work that is contrary to such rules, regulations and codes.

B. ASTM Standards.

1.05 SOILS REPORT

A. Refer for Geo-Technical Report specifics.

1.06 TESTING

A. Testing and inspection during earthwork operations, other than agricultural suitability and chemical analysis of proposed soils as required, will be scheduled and paid for by contractor. All tests performed on project soil will be given to the owner's representative for review.

B. Where reference is made to relative compaction, it shall be the in-place dry density of soil expressed as a percentage of the maximum dry density of the same material, determined by the ASTM D1557, (2002) laboratory test procedure. Optimum moisture is the water content that corresponds to the maximum dry density.

1.07 PROJECT CONDITIONS

A. Existing Conditions: The existing topographic conditions are shown on the drawings for reference only. Upon beginning the earthwork, Contractor represents that he has inspected the site and satisfied himself as to actual grades and levels and the true conditions under which the work is to be performed. Promptly notify the Owners Representative of unexpected subsurface conditions. The Contractor is required to submit a "Site Acceptance" letter before earthwork operations begin.

B. Protection

1. Protect excavations by shoring, bracing, sheeting, underpinning, or other methods, as required to prevent cave-ins or loose dirt from entering excavations. Barricade open excavations and post warning lights at work adjacent to public streets and walks.

2. Cover holes and trenches when work is not in progress. Fence or barricade changes of plane more than 45 degrees horizontally and more than 3 feet [0.91m] vertically.

3. Maintain bench marks, monuments, and other reference points. If disturbed or destroyed, replace as directed.

4. Protect existing berms and slopes from disruption. If slopes are disturbed, return to existing conditions at no additional cost to the Owner.

5. Underpin adjacent structure(s), including utility service lines, which may be damaged by excavation operations.

6. Protect existing natural areas and landscape improvements from damage.

7. Promptly repair damage to adjacent facilities caused by earthwork operations. Cost of repair at Contractor's expense.

C. Soil Classification: Excavated materials are not classified as to type.

PART 2 - MATERIALS

2.01 FILL FOR USE UNDER PAVING AND STRUCTURES

A. Per Geo-Technical Report.

2.02 FILL FOR MISCELLANEOUS LANDSCAPE WORK

A. General Landscape Construction

1. Mound Construction: Fill material similar to existing on-site soil with all rocks, etc., over 4" [10.16cm] in diameter removed prior to placement. No rocks larger than 2" [5.08cm] in diameter are allowed in top 6" [15.24cm] of mound.

2. Miscellaneous Landscape Filling: Fill material similar to existing on-site soil with all rocks, etc. over 2" [5.08cm] in diameter removed prior to placement.

3. Remove and dispose of rocks, etc. removed during soil processing offsite.

4. Imported fill material shall be inspected, tested, and approved by the owner's representative prior to use in work. Copy of tests will be given to the City.

2.03 PLANTING SOIL FOR PLANT BACKFILL

A. Native soil tilled and free of noxious weeds and chemicals. Soil must be approved as growing medium from soils lab report with any supplementary additives as directed by soils lab report. Copy of soil lab report will be given to the owner's representative.

PART 3 - EXECUTION

3.01 PREPARATION

A. Establish extent of grading and excavation by area and elevation. Designate and identify datum elevation and project engineering reference points. Set required lines, levels and elevations.

B. Do not cover or enclose work of this Section before obtaining required inspections, tests, approvals, and location recording.

3.02 EXISTING UTILITIES

A. Before starting grading and excavation, establish the location and extent of underground utilities in the work area. Exercise care to protect existing utilities during earthwork operations. Perform excavation work near utilities by hand and provide necessary shoring, sheeting, and supports as the work progresses.

B. Maintain, protect, relocate, or extend, as required, existing utility lines to remain which pass through the work area. Pay costs for this work, except as covered by the applicable utility companies.

C. Protect active utility services uncovered by excavation. Notify respective utility companies of damage caused to active utilities immediately.

D. Remove abandoned utility service lines from areas of excavation. Cap, plug, or seal abandoned lines and identify termination points at grade level with markers.

E. Accurately locate and record abandoned and active utility lines rerouted or extended on project record documents.

3.03 SITE GRADING--GENERAL

A. Perform grading within contract limits, including adjacent transition areas, to new elevations, levels, profiles, and contours indicated. Provide uniform levels and slopes between new elevations and existing grades.

B. Obtain approval of scarified subgrade surfaces by Owner's Representative prior to filling operations. Scarify, dry and compact soft and wet areas; remove and replace unsuitable subgrade materials with an approved fill material. Take corrective measures before placing fill materials.

C. Thoroughly scarify existing soil surface to a depth of 10" [25.40cm] and verify scarification with Owner's Representative prior to placing fill material in mounded areas.

D. Spread approved fill material uniformly in layers not greater than 12" [30.48cm] of loose thickness over entire fill zones of planting areas.

1. Lift thickness requirements may be modified by Owner's Representative to suit equipment and materials or other conditions when required to assure satisfactory compaction.

2. Place and compact each layer of fill before placing additional fill material. Repeat filling until proposed grade, profile or contour is attained.

3. Suspend fill operations when satisfactory results cannot be obtained because of environmental or other unsatisfactory site conditions. Do not use over-saturated fill materials. Do not place fill material on over-saturated subgrade surface.

4. Grade surfaces to assure positive drainage and to prevent ponding and pockets of surface drainage. Install drainage swales as indicated on the Drawings.

5. Protect finish graded areas from traffic and erosion. Keep free of trash and debris. Repair and reestablish grades in settled, eroded and damaged areas.

E. If, in the opinion of the Owner's Representative, the completed site grading does not reflect the Contract Documents, an independent surveyor may be hired to verify the grades. If the grades are correct, the Owner will pay for the survey. If the grades are incorrect, the cost of the survey will be deducted from the Contract price.

3.04 BACKFILLING / FILLING FOR PAVING & WALLS

A. Before filling, remove debris, large rocks, formwork and loose material.

B. Proof-roll areas to receive fill with rubber tired roller of sufficient weight. Weak areas or areas where excessive pumping is noted shall be removed and if required by Owner Representative, replaced with select fill.

C. Prior to placing fill, scarify surface to a depth of 6 inches [15.24cm]. Moisture content of loosened material shall be such that first layer of fill will readily bond to surface.

D. Top 6 inches [15.24cm] shall be free from rocks larger than 3 inches [7.62cm] diameter.

E. Place in maximum 8 inch [20.32cm] lifts and compact per ASTM D1557, (2002) at optimum moisture content (-1% to +3%). This lift and compaction requirement does not apply to planting areas.

F. Moisten fill to allow drying to correct moisture content before compaction. Do not place fill on subgrade that is over-saturated.

G. Allowing for total thickness of finish paving and base material, fill under paving to bring subgrade to proper elevation.

H. Soft areas that develop under construction operations shall be scarified, aerated or moistened. Compact to full depth required to obtain specified density for each layer.

3.05 EXCAVATING

A. It is the Contractor's responsibility to investigate the likelihood of caliche or hard rock excavation. The Owner will not provide any additional compensation to the Contractor for hard rock or caliche excavation.

3.06 FINISH GRADING

A. Grade uniformly with rounded surfaces at tops and bottoms of abrupt changes in plane. Hand grade steep slopes, areas that are inaccessible for machine work and areas around existing plants.

B. Slope graded surfaces to drain water away from structures, walls, etc.; minimum slope is 1/4 inch [6.35mm] in 12 inches [304.80mm].

C. Grade areas to elevation and slopes indicated without depressions causing pocketing of surface water or humps, producing localized runoff and gullying. Ponding of water on site is not allowed. Finish surfaces to be not more than 0.10 foot [3.05cm] above or below established grade elevation unless approved in writing by Owner's Representative.

3.07 DRAINAGE

A. Provide drainage of the working area at all times.

3.08 DISPOSAL OF WASTE MATERIALS

A. Legally dispose excess excavated material, including rock from site.

3.09 CLEANING

A. Upon completion of earthwork operation, clean areas within contract limits, remove tools and equipment.

B. Provide site clear, clean, free of debris and suitable for site work operations.

C. Remove and dispose of properly off site all rocks and other debris from grading operations.

END OF SECTION 02200

SECTION 02205

SOIL MATERIALS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Subsoil materials.

B. Topsoil materials.

1.2 RELATED SECTIONS

A. Section 02223 - Backfilling.
B. Section 02920 - Lawns and Grasses.

1.3 REFERENCES

A. AASHTO T180 (2002) - Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.

B. ANSI/ASTM D1557 (2000) - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18 inch Drop.

C. ASTM D2487 (2000)- Classification of Soils for Engineering Purposes.

PART 2 - PRODUCTS

2.1 SUBSOIL MATERIALS

A. Subsoil Type S2.
1. Select or local borrow.
2. Graded.
3. Free of lumps larger than 3 inches, and rocks larger than 2 inches.
4. Conforming to ASTM D2487 (2000) Group Symbol CL.

2.2 TOPSOIL MATERIALS

A. Soil Type S4:
1. Graded.
2. Free of roots, rocks larger than 1 inch, subsoil, debris, large weeds and foreign matter.
3. Conforming to ASTM D2487 (2000) Group Symbol OH.
4. Free of roots larger than one inch.

PART 3 - EXECUTION

3.1 STOCKPILING

A. Stockpile materials on site.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Prevent intermixing of soil types or contamination.

E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

3.2 STOCKPILE CLEANUP

A. Remove stockpile, leave area in a clean and neat condition. Grade site surface to prevent freestanding surface water.

END OF SECTION 02205

SECTION 02223

BACKFILLING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Site filling and backfilling.

B. Consolidation and compaction as scheduled.

1.2 RELATED SECTIONS

A. Section 02300 - Earthwork.

1.3 REFERENCES

A. AASHTO T180 (2002) - Moisture-Density Relations of Soils Using a 10-lb Rammer and an 18-in. Drop.

B. ASTM D3017 (2001)- Test Methods for Moisture Content of Soil and Soil-Aggregate Mixtures.

PART 2 - PRODUCTS

2.1 FILL MATERIALS

A. Fill Type S2 and S4: Utilize on-site materials or from an approved off-site source per Section 02300 Earthwork.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that existing conditions as completed in earlier phases of this project meet the compaction requirements.

3.2 BACKFILLING

A. Systematically backfill to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen or spongy subgrade surfaces.

B. Soil Fill Type S2: Place and compact material in continuous layers not exceeding 8 inches compacted depth.

C. Employ a placement method that does not disturb or damage other work.

D. Maintain optimum moisture content of backfill materials to attain required compaction density.

3.3 TOLERANCES

A. Top Surface of General Backfilling: Plus or minus 1/2 inch from required elevations.

3.4 FIELD QUALITY CONTROL

A. Compaction testing will be performed in accordance with AASHTO T180 (2002).

B. If tests indicate Work does not meet specified requirements, remove Work, replace and retest.

3.5 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of Manual for Erosion and Sediment Control in Georgia, 1992 Edition.

B. Reshape and re-compact existing grade subjected to vehicular traffic or altered during construction.

3.6 SCHEDULE

A. Fill For Trenches:
1. Fill Type S2, place and compact material in continuous layers not exceeding 8 inches compacted depth, compacted to 95 percent.

B. Fill to Correct Over-excavation:
1. Fill Type S4, flush to required elevation, compacted to 95 percent.

END OF SECTION 02223

SECTION 02230

SUBGRADE PREPARATION & BASE MATERIAL
SKATE PARK

PART 1 - GENERAL

1.01 SCOPE

A. Provide labor, material and equipment for the subgrade preparation and the base material installation.

1.02 RELATED SECTIONS

A. Section 02200: Earthwork - Skate Park

B. Section 02050: Site Demolition - Skate Park

C. Section 03300: Cast-In-Place Concrete - Skate Park

1.03 REFERENCES AND STANDARDS

A. Perform work in accordance with applicable laws, codes and regulations required by Dekalb County, and the State of Georgia.

B. ASTM Standards.

PART 2 - MATERIALS

2.01 EXISTING SOIL

A. Free from vegetative matter or other deleterious substances.

B. The percentage composition by weight of aggregate base shall conform to the Standard Specifications.

PART 3 - EXECUTION

3.01 SUBGRADE PREPARATION

A. The Owner will not provide any additional compensation to the Contractor for hard rock or caliche excavation. Refer to Geo-Technical Report for test boring information and analysis.

B. Subgrade is that area on which pavement, surfacing, base, sub-base, or a layer of other material which may be specified, is to be placed.

C. Plow or scarify subgrade to a depth of 6" [15.24cm] below the final subgrade elevation; and by harrowing, dry rolling and breaking clods, the earth shall be brought to finely divided condition. Remove boulders, hardened material, or rock encountered. The earth shall be uniform for the full depth and width of the subgrade.

D. Water loose earth to a uniform depth of 4" [10.16cm].

E. Harrow the earth to mix the wet earth with the dry beneath, until the whole mass of loose material is at the proper state of moisture for compaction.

F. The finished subgrade, immediately prior to placing subsequent material thereon, shall be in accordance with the Standard Specifications and Geo-Technical Report.

G. The finished surface of the subgrade, at any point, shall not vary more than 0.05' [1.52cm] above or 0.20' [6.10cm] below the elevation indicated on the drawings unless approved in writing by Owner's Representative.

3.02 BASE

A. Base shall be readily compacted and spread with equipment that will provide a uniform layer conforming to the planned section.

3.03 CLEANUP

A. Upon completion of the subgrade preparation and base, remove surplus construction materials, earth and debris so that the job site is left in a neat and orderly condition.

END OF SECTION 02230

SECTION 02300

EARTHWORK

SITE DEVELOPMENT

PART 1-GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Preparing subgrades for slabs-on-grade, walks, pavements, lawns, and plantings.
2. Excavating and backfilling for buildings and structures.
3. Drainage course for slabs-on-grade.
4. Subbase course for concrete walks and pavements.
5. Base course for asphalt paving.
6. Subsurface drainage backfill for walls and trenches.
7. Excavating and backfilling trenches within building lines.
8. Excavating and backfilling trenches for buried mechanical and electrical utilities and pits for buried utility structures.

B. Related Sections include the following:

1. Section "Clearing and Grubbing" for site stripping, grubbing, removing topsoil, and protecting trees to remain.
2. Section "Dewatering" for lowering and disposing of ground water during construction.
3. Section "Tree Protection and Trimming" for protecting and trimming trees to remain.
4. Section "Excavation Support and Protection."
5. Section "Foundation Drainage Systems" for drainage of footings, slabs-on-grade, and walls.
6. Section "Landscaping" for finish grading, including placing and preparing topsoil for lawns and plantings.

7. Section "Cast-in-Place Concrete" for granular course over vapor retarder.

8. Sections for excavating and backfilling buried mechanical and electrical utilities and buried utility structures.

1.3 SUBMITTALS

A. Product Data: For the following:

1. Each type of plastic warning tape.

2. Drainage fabric.

3. Separation fabric.

B. Samples: For the following:

1. 20-lb samples sealed in airtight containers, of each proposed soil material from on-site or borrow sources.

2. 12-by-12-inch sample of drainage fabric.

3. 12-by-12-inch sample of separation fabric.

C. Material Test Reports: From a qualified testing agency indicating and interpreting test results for compliance of the following with requirements indicated:

1. Laboratory compaction curve according to ASTM D 698 (2000) for each on-site or borrow soil material proposed for fill and backfill.

2. Laboratory compaction curve according to ASTM D 1557 (2000) for each on-site or borrow soil material proposed for fill and backfill.

D. Blasting plan approved by authorities having jurisdiction, for record purposes.

E. Seismic survey agency report, for record purposes.

1.4 QUALITY ASSURANCE

A. Comply with applicable requirements of NFPA 495 (2001), "Explosive Materials Code."

1.5 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify the Prime Consultant not less than two days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Landscape Architect's written permission.

3. Contact utility-locator service for area where Project is located before excavating.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 (2000) soil classification groups GW, GP, GM, SW, SP, and SM, or a combination of these group symbols; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

C. Unsatisfactory Soils: ASTM D 2487 (2000) soil classification groups GC, SC, ML, MH, CL, CH, OL, OH, and PT, or a combination of these group symbols.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Backfill and Fill: Satisfactory soil materials.

E. Subbase: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940 (2003); with at least 90 percent passing a 1-1/2- inch sieve and not more than 12 percent passing a No. 200 sieve.

F. Base: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940 (2003); with at least 95 percent passing a 1-1/2-inch sieve and not more than 8 percent passing a No. 200 sieve.

G. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940 (2003); with at least 90 percent passing a 1-1/2-inch sieve and not more than 12 percent passing a No. 200 sieve.

H. Bedding: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940 (2003); except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

I. Drainage Fill: Washed, narrowly graded mixture of crushed stone, or crushed or uncrushed gravel; ASTM D 448 (2003); coarse-aggregate grading Size 57; with 100 percent passing a 1-1/2- inch sieve and 0 to 5 percent passing a No. 8 sieve.

J. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 44 (2003); coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and 0 to 5 percent passing a No. 4 sieve.

K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

L. Site Topsoil: Filter existing site topsoil to insure that it is reasonably free of subsoil, clay, lumps, brush, weeds, and other litter, and free of roots, stumps, stones larger than 1" in any dimension, and other extraneous or toxic matter harmful to plant growth. Provide laboratory test stating that the soil samples taken from the stockpiled topsoil does not have any toxic material harmful to plant development. Submit a minimum of five samples to the laboratory in accordance with their sampling instructions.

M. Imported Topsoil: Imported Topsoil: Provide new topsoil which is fertile, friable, natural loam, surface soil, reasonably free of subsoil, clay lumps, brush, weeds, and other litter, and free of roots, stumps, stones larger than 1" in any dimension, and other extraneous or toxic matter harmful to plant growth.

1. Import topsoil from off-site to achieve the finished grades as shown on drawings.

2. Obtain topsoil from local sources or from areas having similar soil characteristics to that found at project site. Obtain topsoil only from naturally, well-drained sites where topsoil occurs in depth of not less than 4"; do not obtain from bogs or marshes.

3. Topsoil as delivered to the site shall have an acidity range of pH 5.0 – 7.0 and shall contain not less than 5% organic matter.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.

B. Protect subgrades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.

C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

3.3 EXPLOSIVES

A. Explosives: Obtain written permission from authorities having jurisdiction before bringing explosives to Project site or using explosives on Project site.

1. Do not damage adjacent structures, property, or site improvements or weaken the bearing capacity of rock subgrade when using explosives.

3.4 EXCAVATION, GENERAL

A. Unclassified Excavation: Excavation to subgrade elevations regardless of the character of surface and subsurface conditions encountered, including rock, soil materials, and obstructions.

1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.

3.5 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. Extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1. Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

2. Excavation for Underground Tanks, Basins, and Mechanical or Electrical Utility Structures: Excavate to elevations and dimensions indicated within a tolerance of plus or minus 1 inch. Do not disturb bottom of excavations intended for bearing surface.

3.6 EXCAVATION FOR WALKS AND PAVEMENTS

A. Excavate surfaces under walks and pavements to indicated cross sections, elevations, and grades.

3.7 EXCAVATION FOR UTILITY TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond building perimeter, excavate trenches to allow installation of top of pipe below frost line.

B. Excavate trenches to uniform widths to provide a working clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit, unless otherwise indicated.

1. Clearance: 12 inches on each side of pipe or conduit.

2. Clearance: As indicated.

C. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

1. For pipes and conduit less than 6 inches in nominal diameter and flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.

2. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe circumference. Fill depressions with tamped sand backfill.

3. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

D. Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe elevation to allow for bedding course. Hand excavate for bell of pipe.

1. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

3.8 APPROVAL OF SUBGRADE

A. Notify Architect when excavations have reached required subgrade.

B. If Architect determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

1. Additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.

C. Proof roll subgrade with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof roll wet or saturated subgrades.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect.

3.9 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under foundations or wall footings by extending bottom elevation of concrete foundation or footing to excavation bottom, without altering top elevation. Lean concrete fill may be used when approved by Architect.

1. Fill unauthorized excavations under other construction or utility pipe as directed by Architect.

3.10 STORAGE OF SOIL MATERIALS

A. Stockpile borrow materials and satisfactory excavated soil materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.11 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.

2. Surveying locations of underground utilities for record documents.

3. Inspecting and testing underground utilities.

4. Removing concrete formwork.

5. Removing trash and debris.

6. Removing temporary shoring and bracing, and sheeting.

7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.12 UTILITY TRENCH BACKFILL

A. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

B. Backfill trenches excavated under footings and within 18 inches of bottom of footings; fill with concrete to elevation of bottom of footings.

C. Provide 4-inch- thick, concrete-base slab support for piping or conduit less than 30 inches below surface of roadways. After installing and testing, completely encase

piping or conduit in a minimum of 4 inches of concrete before backfilling or placing roadway subbase.

D. Place and compact initial backfill of subbase material, free of particles larger than 1 inch, to a height of 12 inches over the utility pipe or conduit.

1. Carefully compact material under pipe haunches and bring backfill evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of utility system.

E. Coordinate backfilling with utilities testing.

F. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.

G. Place and compact final backfill of satisfactory soil material to final subgrade.

H. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.13 FILL

A. Preparation: Remove vegetation, topsoil, debris, unsatisfactory soil materials, obstructions, and deleterious materials from ground surface before placing fills.

B. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

C. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material and topsoil.

2. Under walks and pavements, use satisfactory soil material.

3. Under steps and ramps, use engineered fill.

4. Under building slabs, use engineered fill.

5. Under footings and foundations, use engineered fill.

3.14 MOISTURE CONTROL

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

1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.

2. Remove and replace, or scarify and air-dry, otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.15 COMPACTION OF BACKFILLS AND FILLS

A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

B. Place backfill and fill materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

C. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 1557 (2000):

D. Compact soil to not less than the following percentages of maximum dry unit weight according to ASTM D 698 (2000):

1. Under structures, building slabs, steps, and pavements, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill material at 95 percent.

2. Under walkways, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 92 percent.

3. Under lawn or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill material at 85 percent.

3.16 GRADING

A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.

2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:

1. Lawn or Unpaved Areas: Plus or minus 1 inch.

2. Walks: Plus or minus 1 inch.

3. Pavements: Plus or minus 1/2 inch.

C. Grading inside Building Lines: Finish subgrade to a tolerance of 1/2 inch when tested with a 10-foot straightedge.

3.17 SUBSURFACE DRAINAGE

A. Drainage Piping: Drainage pipe is specified in Section "Foundation Drainage Systems."

B. Subsurface Drain: Place a layer of drainage fabric around perimeter of drainage trench as indicated. Place a 6-inch course of filter material on drainage fabric to support drainage pipe. Encase drainage pipe in a minimum of 12 inches of filter material and wrap in drainage fabric, overlapping sides and ends at least 6 inches.

1. Compact each course of filter material to 95 percent of maximum dry unit weight according to ASTM D 698 (2000).

C. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade. Overlay drainage backfill with one layer of drainage fabric, overlapping sides and ends at least 6 inches.

1. Compact each course of filter material to 95 percent of maximum dry density according to ASTM D 698 (2000).

2. Place and compact impervious fill material over drainage backfill to final subgrade.

3.18 SUBBASE AND BASE COURSES

A. Install separation fabric on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.

B. Under pavements and walks, place subbase course on separation fabric according to fabric manufacturer's written instructions and as follows:

C. Under pavements and walks, place subbase course on prepared subgrade and as follows:

1. Place base course material over subbase.

2. Compact subbase and base courses at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557 (2000).

3. Shape subbase and base to required crown elevations and cross-slope grades.

4. When thickness of compacted subbase or base course is 6 inches or less, place materials in a single layer.

5. When thickness of compacted subbase or base course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

D. Pavement Shoulders: Place shoulders along edges of subbase and base course to prevent lateral movement. Construct shoulders, at least 12 inches wide, of satisfactory soil materials and compact simultaneously with each subbase and base layer to not less than 95 percent of maximum dry unit weight according to ASTM D 1557 (2000).

3.19 DRAINAGE COURSE

A. Under slabs-on-grade, install drainage fabric on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends. Place drainage course on drainage fabric and as follows:

B. Under slabs-on-grade, place drainage course on prepared subgrade and as follows:

1. Compact drainage course to required cross sections and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 698 (2000).

2. When compacted thickness of drainage course is 6 inches or less, place materials in a single layer.

3. When compacted thickness of drainage course exceeds 6 inches, place materials in equal layers, with no layer more than 6 inches thick or less than 3 inches thick when compacted.

3.20 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

C. Footing Subgrade: At footing subgrades, at least one test of each soil stratum will be performed to verify design bearing capacities. Subsequent verification and approval of other footing subgrades may be based on a visual comparison of subgrade with tested subgrade when approved by Architect.

D. Testing agency will test compaction of soils in place according to ASTM D 1556 (2000), ASTM D 2167 (2001), ASTM D 2922 (2001), and ASTM D 2937 (2001), as applicable. Tests will be performed at the following locations and frequencies:

1. Paved and Building Slab Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 2000 sq. ft. or less of paved area or building slab, but in no case fewer than three tests.

2. Foundation Wall Backfill: At each compacted backfill layer, at least one test for each 100 feet or less of wall length, but no fewer than two tests.

3. Trench Backfill: At each compacted initial and final backfill layer, at least one test for each 150 feet or less of trench length, but no fewer than two tests.

E. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil to depth required; recompact and retest until specified compaction is obtained.

3.21 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Architect; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to the greatest extent possible.

3.22 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

B. Disposal: Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Architect.

1. Remove waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 02300

SECTION 02361

TERMITE CONTROL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following for termite control:

1. Soil treatment.

2. Bait station system.

1.3 DEFINITIONS

A. EPA: Environmental Protection Agency.

B. PCO: Pest control operator.

1.4 SUBMITTALS

A. Product Data: Treatments and application instructions, including EPA-Registered Label.

B. Product Certificates: Signed by manufacturers of termite control products certifying that treatments furnished comply with requirements.

C. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

D. Soil Treatment Application Report: After application of termiticide is completed, submit report for Owner's record information, including the following as applicable:

1. Date and time of application.

2. Moisture content of soil before application.

3. Brand name and manufacturer of termiticide.

4. Quantity of undiluted termiticide used.

5. Dilutions, methods, volumes, and rates of application used.

6. Areas of application.

7. Water source for application.

E. Bait Station System Application Report: Submit report for Owner's records information, including the following as applicable:

1. Location of areas and sites conducive to termite feeding and activity.

2. Plan drawing showing number and locations of bait stations.

3. Plan drawing showing number and locations of monitoring stations and bait stations.

4. Dated report for each monitoring and inspection occurrence indicating level of termite activity, procedure, and treatment applied before time of Substantial Completion.

5. Brand name and manufacturer of termiticide.

6. Quantities of termite bait used.

F. Warranties: Special warranties specified in this Section.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: A PCO who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located and who is experienced and has completed termite control treatment similar to that indicated for this Project and whose work has a record of successful in-service performance.

B. Applicator Qualifications: A PCO who is licensed according to regulations of authorities having jurisdiction to apply termite control treatment in jurisdiction where Project is located and who is an experienced installer who employs workers trained and approved by bait station system manufacturer to install manufacturer's products.

C. Regulatory Requirements: Formulate and apply termiticides, and label with a Federal registration number, to comply with EPA regulations and authorities having jurisdiction.

1.6 PROJECT CONDITIONS

A. Environmental Limitations: To ensure penetration, do not treat soil that is water saturated or frozen. Do not treat soil while precipitation is occurring. Comply with EPA-Registered Label requirements and requirements of authorities having jurisdiction.

1.7 COORDINATION

A. Coordinate soil treatment application with excavating, filling, and grading and concreting operations. Treat soil under footings, grade beams, and ground-supported slabs, before construction.

B. Install bait station system after construction, including landscaping, is completed.

1.8 WARRANTY

A. General Warranty: Special warranty specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Warranty: Written warranty, signed by applicator and Contractor certifying that termite control work, consisting of applied soil termiticide treatment, will prevent infestation of subterranean termites. If subterranean termite activity or damage is discovered during warranty period, re-treat soil and repair or replace damage caused by termite infestation.

C. Warranty Period: Three years from date of Substantial Completion.

D. Warranty Period: Five years from date of Substantial Completion.

1.9 MAINTENANCE SERVICE

A. Continuing Service: Provide a proposal for continuing service, including monitoring, inspection, and retreatment for occurrences of termite activity, from applicator to Owner, in the form of a standard yearly (or other period) continuing service agreement, starting on the date of Substantial Completion. State services, obligations, conditions, and terms for agreement period and for future renewal options.

PART 2 - PRODUCTS

2.1 SOIL TREATMENT

A. Termiticide: Provide an EPA-registered termiticide complying with requirements of authorities having jurisdiction, in a soluble or emulsible, concentrated formulation that dilutes with water or foaming agent, and formulated to prevent termite infestation. Use only soil treatment solutions that are not harmful to plants. Provide quantity required for application at the label volume and rate for the maximum termiticide concentration allowed for each specific use, according to the product's EPA-Registered Label.

B. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. AgrEvo Environmental Health, Inc.; a Company of Hoechst and Schering, Berlin.

2. American Cyanamid Co.; Agricultural Products Group; Specialty Products Department.

3. Bayer Corp.; Garden & Professional Care.

4. DowElanco.

5. FMC Corp.; Pest Control Specialties.

6. Zeneca Professional Products.

2.2 BAIT STATION SYSTEM

A. General: Provide bait stations and, if applicable, monitoring stations, according to manufacturer's EPA-Registered Label for product, manufacturer's written instructions, and the following:

1. Provide number of stations, based on the dimensions of building perimeter indicated on Drawings, according to manufacturer's written instructions.

2. Comply with manufacturer's written instructions for termite management system. Provide not less than one cluster of stations per 20 linear feet (6 linear meters), based on the linear dimensions of building perimeter indicated on Drawings, consisting of not less than three stations per cluster.

B. Available Product: Subject to compliance with requirements, a product that may be incorporated into the Work includes, but is not limited to, the following:

C. Product: Subject to compliance with requirements, provide the following product:

1. Hexaflumuron: Sentricon System, Recruit II; DowElanco.

2. Hydramethylnon: Subterfuge; American Cyanamid Co., Agricultural Products Group, Specialty Products Department.

3. Sulfluramid: Systematic Termite Control, FirstLine GT; FMC Corp., Pest Control Specialties.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Applicator present, for compliance with requirements for moisture content of the soil, interfaces with earthwork, slab and foundation work, landscaping, and other conditions affecting performance of termite control. Proceed with application only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's written instructions for preparing substrate. Remove all extraneous sources of wood cellulose and other edible materials such as wood debris, tree stumps and roots, stakes, formwork, and construction waste wood from soil and around foundations.

B. Soil Treatment Preparation: Remove foreign matter and impermeable soil materials that could decrease treatment effectiveness on areas to be treated. Loosen, rake, and

level soil to be treated, except previously compacted areas under slabs and footings. Termiticides may be applied before placing compacted fill under slabs if recommended by termiticide manufacturer.

C. Fit filling hose connected to water source at the site with a backflow preventer, complying with requirements of authorities having jurisdiction.

3.3 APPLICATION, GENERAL

A. General: Comply with the most stringent requirements of authorities having jurisdiction and with manufacturer's EPA-Registered Label for products.

3.4 APPLYING SOIL TREATMENT

A. Application: Mix soil treatment termiticide solution to a uniform consistency. Provide quantity required for application at the label volume and rate for the maximum specified concentration of termiticide, according to manufacturer's EPA-Registered Label, to the following so that a continuous horizontal and vertical termiticidal barrier or treated zone is established around and under building construction. Distribute the treatment evenly.

1. Slabs-on-Grade and Basement Slabs: Under ground-supported slab construction, including footings, building slabs, and attached slabs as an overall treatment. Treat soil materials before concrete footings and slabs are placed.

2. Foundations: Adjacent soil including soil along entire inside perimeter of foundation walls, along both sides of interior partition walls, around plumbing pipes and electric conduit penetrating slab, and around interior column footers, piers, and chimney bases; and along entire outside perimeter, from grade to bottom of footing. Avoid soil washout around footings.

3. Crawlspaces: Soil under and adjacent to foundations as previously indicated. Treat adjacent areas including around entrance platform, porches, and equipment bases. Apply overall treatment only where attached concrete platform and porches are on fill or ground.

4. Masonry: Treat voids.

5. Penetrations: At expansion joints, control joints, and areas where slabs will be penetrated.

B. Avoid disturbance of treated soil after application. Keep off treated areas until completely dry.

C. Protect termiticide solution, dispersed in treated soils and fills, from being diluted until ground-supported slabs are installed. Use waterproof barrier according to EPA-Registered Label instructions.

D. Post warning signs in areas of application.

E. Reapply soil treatment solution to areas disturbed by subsequent excavation, grading, landscaping, or other construction activities following application.

3.5 INSTALLING BAIT STATION SYSTEMS

A. Place bait stations and, if applicable, monitoring stations, according to the EPA-Registered Label for the product and manufacturer's written instructions, in areas that are conducive to termite feeding and activity, as follows:

1. Conducive sites and locations indicated on Drawings.
2. In and around infested trees and stumps.
3. In mulch beds.
4. Where wood directly contacts soil.
5. Areas of high soil moisture.
6. Near irrigation sprinkler heads.
7. Each area where roof drainage system, including downspouts and scuppers, drains to soil.
8. Along driplines of roof overhangs without gutters.
9. Where condensate lines from mechanical equipment drip or drain to soil.
10. At plumbing penetrations through ground-supported slabs.
11. Other sites and locations as determined by the PCO.

B. Inspect and service stations from time of their application until completion of the time period established by continuing service agreement, according to the EPA-Registered Label for the product and manufacturer's written instructions for termite management system and bait products.

1. Service Frequency: Inspect monitoring stations not less than once every three months.

C. Inspect and service stations from time of their application until completion of the time period established by continuing service agreement, according to the EPA-Registered Label for the product and manufacturer's written instructions for termite bait products.

1. Service Frequency: For supplementary and preventive treatment, inspect not less than once every three months.

END OF SECTION 02361

SECTION 02510

WATER DISTRIBUTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes water-distribution piping and specialties outside the building for the following:

1. Water services.

2. Drinking Fountains

B. Utility-furnish install water meter.

1.3 DEFINITIONS

A. Fire-Service Main: Exterior fire-suppression-water piping.

B. The following are industry abbreviations for plastic materials:

1. PA: Polyamide (nylon) plastic.

2. PE: Polyethylene plastic.

3. PEX: Crosslinked polyethylene plastic.

4. PP: Polypropylene plastic.

5. PVC: Polyvinyl chloride plastic.

6. RTRF: Reinforced thermosetting resin (fiberglass) fittings.

7. RTRP: Reinforced thermosetting resin (fiberglass) pipe.

1.4 SUBMITTALS

A. Product Data: For the following:

1. Piping specialties.

2. Valves and accessories.

3. Water meters and accessories.

4. Backflow preventers and assemblies.

5. Protective enclosures.

6. Drinking fountains.

B. Operation and Maintenance Data: Include the following:

1. Water meters.

2. Valves.

3. Backflow preventers.

4. Drinking fountains.

5. Water Features.

1.5 QUALITY ASSURANCE

A. Product Options: Drawings indicate size, profiles, and dimensional requirements of piping and specialties and are based on the specific system indicated.

B. Regulatory Requirements:

1. Comply with requirements of utility company supplying water. Include tapping of water mains and backflow prevention.

2. Comply with standards of authorities having jurisdiction for potable-water-service piping, including materials, installation, testing, and disinfection.

3. Comply with standards of authorities having jurisdiction for fire-suppression water-service piping, including materials, hose threads, installation, and testing.

C. Piping materials shall bear label, stamp, or other markings of specified testing agency.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70 (2005), Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

E. Comply with ASTM F 645 (2004) for selection, design, and installation of thermoplastic water piping.

F. Comply with FM's "Approval Guide", (2006) or UL's "Fire Protection Equipment Directory", (2006) for fire-service-main products.

G. NFPA Compliance: Comply with NFPA 24 (2002) for materials, installations, tests, flushing, and valve and hydrant supervision for fire-service-main piping for fire suppression.

H. NSF Compliance:

1. Comply with NSF 61 (1988) for materials for water-service piping and specialties for domestic water.

I. Contractor Licensing: A Georgia Utility Contractor License is required to complete work described in this section.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Preparation for Transport: Prepare valves, including fire hydrants, according to the following:

1. Ensure that valves are dry and internally protected against rust and corrosion.

2. Protect valves against damage to threaded ends and flange faces.

3. Set valves in best position for handling. Set valves closed to prevent rattling.

B. During Storage: Use precautions for valves, including fire hydrants, according to the following:

1. Do not remove end protectors unless necessary for inspection; then reinstall for storage.

2. Protect from weather. Store indoors and maintain temperature higher than ambient dew-point temperature. Support off the ground or pavement in watertight enclosures when outdoor storage is necessary.

C. Handling: Use sling to handle valves and fire hydrants if size requires handling by crane or lift. Rig valves to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

D. Deliver piping with factory-applied end caps. Maintain end caps through shipping, storage, and handling to prevent pipe-end damage and to prevent entrance of dirt, debris, and moisture.

E. Protect stored piping from moisture and dirt. Elevate above grade. Do not exceed structural capacity of floor when storing inside.

F. Protect flanges, fittings, and specialties from moisture and dirt.

1.7 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Architect not less than two days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Architect's written permission.

1.8 COORDINATION

A. Coordinate connection to water main with utility company.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection:

1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.

2. Products: Subject to compliance with requirements, provide one of the products specified.

3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the manufacturers specified.

4. Manufacturers: Subject to compliance with requirements, provide products by the manufacturers specified.

2.2 PIPING MATERIALS

A. Refer to Part 3 "Piping Applications" Article for applications of pipe, tube, fitting, and joining materials.

2.3 COPPER TUBE AND FITTINGS

A. Soft Copper Tube: **ASTM B 88, Type K (2002)**, water tube, annealed temper.

1. Copper Fittings: ASME B16.18 (2002), cast-copper-alloy or ASME B16.22 (2002), wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.

B. Hard Copper Tube: **ASTM B 88, Type K (2002),** water tube, drawn temper.

1. Copper Fittings: ASME B16.18 (2002), cast-copper-alloy or ASME B16.22 (2002), wrought-copper, solder-joint pressure type. Furnish only wrought-copper fittings if indicated.

C. Bronze Flanges: ASME B16.24 (2002), Class 150, with solder-joint end. Furnish Class 300 flanges if required to match piping.

D. Copper Unions: MSS SP-123 (2003), cast-copper-alloy, hexagonal-stock body with ball-and-socket, metal-to-metal seating surfaces, and solder-joint or threaded ends.

1. Molded PE Fittings: ASTM D 3350 (2002), PE resin, socket- or butt-fusion type, made to match PE pipe dimensions and class.

2.4 JOINING MATERIALS

A. Refer to Section "Utility Materials" for commonly used joining materials.

B. Transition Couplings:

1. Underground Piping, NPS 1-1/2 and Smaller: Manufactured fitting or coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

2. Underground Piping, NPS 2 and Larger: AWWA C219 (2001), metal, sleeve-type coupling same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

3. Aboveground or Vault Piping: Pipe fitting same size as, with pressure rating at least equal to and ends compatible with, piping to be joined.

C. Brazing Filler Metals: AWS A5.8 (2002), BCuP Series.

D. Soldering Flux: ASTM B 813 (2000), water-flushable type.

E. Solder Filler Metal: ASTM B 32 (2000), lead-free type with 0.20 percent maximum lead content.

2.5 PIPING SPECIALTIES

A. Flexible Connectors:

1. Nonferrous-Metal Piping: Bronze hose covered with bronze wire braid; with copper-tube, pressure-type, solder-joint ends or bronze flanged ends brazed to hose.

2. Ferrous Piping: Stainless-steel hose covered with stainless-steel wire braid; with ASME B1.20.1 (1983), threaded steel pipe nipples or ASME B16.5 (2003), steel pipe flanges welded to hose.

B. Dielectric Fittings: Combination of copper alloy and ferrous; threaded, solder, or plain end types; and matching piping system materials.

1. Dielectric Unions: Factory-fabricated union assembly, designed for 250-psig minimum working pressure at 180 deg F. Include insulating material that isolates dissimilar metals and ends with inside threads according to ASME B1.20.1 (1983).

2. Dielectric Flanges: Factory-fabricated companion-flange assembly, for 150- or 300-psig minimum working pressure to suit system pressures.

3. Dielectric-Flange Insulation Kits: Field-assembled companion-flange assembly, full-face or ring type. Components include neoprene or phenolic gasket, phenolic or polyethylene bolt sleeves, phenolic washers, and steel backing washers.

a. Provide separate companion flanges and steel bolts and nuts for 150- or 300-psig minimum working pressure to suit system pressures.

4. Dielectric Couplings: Galvanized-steel couplings with inert and noncorrosive thermoplastic lining, with threaded ends and 300-psig minimum working pressure at 225 deg F.

5. Dielectric Nipples: Electroplated steel nipples with inert and noncorrosive thermoplastic lining, with combination of plain, threaded, or grooved end types and 300-psig minimum working pressure at 225 deg F.

2.6 GATE VALVES

A. Bronze Gate Valves:

1. Manufacturers:

a. Crane Co.; Crane Valve Group; Crane Valves.

b. Crane Co.; Crane Valve Group; Jenkins Valves.

c. Crane Co.; Crane Valve Group; Stockham Div.

d. Grinnell Corporation.

e. Hammond Valve.

f. Milwaukee Valve Company.

g. NIBCO INC.

h. Red-White Valve Corp.

2.7 GATE VALVE ACCESSORIES AND SPECIALTIES

A. Tapping-Sleeve Assemblies: Comply with MSS SP-60 (2003). Include sleeve and valve compatible with drilling machine.

1. Manufacturers:

a. American Cast Iron Pipe Co.; Waterous Co. Subsidiary.

b. East Jordan Iron Works, Inc.

c. Grinnell Corporation; Mueller Co.; Water Products Div.

d. International Piping Services Company.

e. McWane, Inc.; Clow Valve Co. Div. (Oskaloosa).

f. McWane, Inc.; Kennedy Valve Div.

g. McWane, Inc.; M & H Valve Company Div.

h. United States Pipe and Foundry Company.

2. Tapping Sleeve: Cast- or ductile-iron or stainless steel, two-piece bolted sleeve with flanged outlet for new branch connection. Include sleeve matching size and type of pipe material being tapped and with recessed flange for branch valve.

3. Valve: AWWA, cast-iron, nonrising-stem, seated gate valve with one raised face flange mating tapping-sleeve flange.

B. Valve Boxes: Comply with AWWA M44 (2000) for cast-iron valve boxes. Include top section, adjustable extension of length required for depth of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over valve, and approximately 5-inch- diameter barrel.

1. Operating Wrenches: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and socket matching valve operating nut.

C. Indicator Posts: UL 789, FM-approved, vertical-type, cast-iron body with operating wrench, extension rod, and adjustable cast-iron barrel of length required for depth of burial of valve.

D. Indicator Posts: UL 789, FM-approved, horizontal, wall-type, cast-iron body with operating wrench, extension rod, and cast-iron barrel.

2.8 CORPORATION VALVES AND CURB VALVES

A. Manufacturers:

1. Amcast Industrial Corporation; Lee Brass Co.

2. Ford Meter Box Company, Inc. (The).

3. Grinnell Corporation; Mueller Co.; Water Products Div.

4. Jones, James Company.

5. Master Meter, Inc.

6. McDonald, A. Y. Mfg. Co.

7. Red Hed Manufacturing Co.

B. Service-Saddle Assemblies: Comply with AWWA C800 (2001). Include saddle and valve compatible with tapping machine.

1. Service Saddle: Copper alloy with seal and AWWA C80 (2001), threaded outlet for corporation valve.

2. Corporation Valve: Bronze body and ground-key plug, with AWWA C800 (2001), threaded inlet and outlet matching service piping material.

3. Manifold: Copper fitting with two to four inlets as required, with ends matching corporation valves and outlet matching service piping material.

C. Curb Valves: Comply with AWWA C800 (2001). Include bronze body, ground-key plug or ball, and wide tee head, with inlet and outlet matching service piping material.

D. Service Boxes for Curb Valves: Similar to AWWA M44 (2000) requirements for cast-iron valve boxes. Include cast-iron telescoping top section of length required for depth

of burial of valve, plug with lettering "WATER," bottom section with base of size to fit over curb valve, and approximately 3-inch- diameter barrel.

1. Shutoff Rods: Steel, tee-handle with one pointed end, stem of length to operate deepest buried valve, and slotted end matching curb valve.

2.9 WATER METERS

A. Water meters will be paid for by the General Contractor and installed by utility company.

2.10 BACKFLOW PREVENTERS

A. Manufacturers:

1. Ames Co., Inc.
2. Cla-Val Co.
3. CMB Industries, Inc.; Febco Div.
4. Conbraco Industries, Inc.
5. FLOMATIC Corp.
6. Grinnell Corporation; Mueller Co.; Hersey Meters.
7. Watts Industries, Inc.; Water Products Div.
8. Zurn Industries, Inc.; Wilkins Div.

B. General: ASSE standard, backflow preventers.

1. Working Pressure: 150 psig minimum, unless otherwise indicated.
2. NPS 2 and Smaller: Bronze body with threaded ends.
3. NPS 2-1/2 and Larger: Bronze, cast-iron, steel, or stainless-steel body with flanged ends.
    a. Interior Lining: AWWA C550 (1999) or FDA-approved, epoxy coating for backflow preventers having cast-iron or steel body.
4. Interior Components: Corrosion-resistant materials.
5. Exterior Finish: Polished chrome plate if used in chrome-plated piping system.
6. Strainer: On inlet, if indicated.

C. Pipe-Applied, Atmospheric-Type Vacuum Breakers: ASSE 1001, with floating disc and atmospheric vent.

D. Double-Check-Valve Backflow Prevention Assemblies: **ASSE 1015** suitable for continuous pressure application. Include outside screw and yoke gate valves on inlet and outlet, and strainer on inlet; test cocks; and two positive-seating check valves.

1. Maximum Pressure Loss: **5 psi** through middle 1/3 of flow range.

2.11 PROTECTIVE ENCLOSURES

A. Manufacturers:

1. G&C Enclosures, Inc.
2. Hot Box, Inc.
3. HydroCowl, Inc.
4. Watts Industries, Inc.; Water Products Div.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Refer to Section "Earthwork" for excavating, trenching, and backfilling.

3.2 PIPING APPLICATIONS

A. General: Use pipe, fittings, and joining methods for piping systems according to the following applications.

B. Transition couplings and special fittings with pressure ratings at least equal to piping pressure rating may be used in applications below, unless otherwise indicated.

C. Do not use flanges, unions, or keyed couplings for underground piping.

D. Flanges, unions, keyed couplings, and special fittings may be used, instead of joints indicated, on aboveground piping and piping in vaults.

3.3 PIPING INSTALLATION

A. Water-Main Connection: Arrange with utility company for tap of size and in location indicated in water main.

B. Comply with NFPA 24 for fire-service-main piping materials and installation.

C. Install copper tube and fittings according to CDA's "Copper Tube Handbook."

D. Bury piping with depth of cover over top at least 36 inches, with top at least 12 inches below level of maximum frost penetration, and according to the following:

1. Under Driveways: With at least 36 inches cover over top.
2. In Loose Gravelly Soil and Rock: With at least 12 inches additional cover.

E. Install piping by tunneling, jacking, or combination of both, under streets and other obstructions that cannot be disturbed.

F. Extend water-service piping and connect to water-supply source and building water piping systems at outside face of building wall in locations and pipe sizes indicated.

1. Terminate water-service piping at building wall until building water piping systems are installed. Terminate piping with caps, plugs, or flanges as required for piping material. Make connections to building water piping systems when those systems are installed.

G. Sleeves are specified in Section "Utility Materials." Mechanical sleeve seals are specified in Section "Basic Mechanical Materials and Methods."

H. Install underground piping with restrained joints at horizontal and vertical changes in direction. Use restrained-joint piping, thrust blocks, anchors, tie-rods and clamps, and other supports.

I. Anchor service-entry piping to building wall.

J. See Section "Domestic Water Piping" for potable-water piping inside the building.

K. See Sections for fire-suppression water piping inside the building.

3.4 ANCHORAGE INSTALLATION

A. Install anchorages for tees, plugs and caps, bends, crosses, valves, and hydrant branches. Include anchorages for the following piping systems:

1. Gasketed-Joint, PVC Water-Service Piping: According to AWWA M23 (2002).

B. Apply full coat of asphalt or other acceptable corrosion-resistant material to surfaces of installed ferrous anchorage devices.

3.5 VALVE INSTALLATION

A. AWWA Gate Valves: Comply with AWWA C600 (1997) and AWWA M44 (2000). Install each underground valve with stem pointing up and with valve box.

3.6 WATER-METER INSTALLATION

A. By DeKalb County Water Department.

3.7 BACKFLOW-PREVENTER INSTALLATION

A. Install backflow preventers of type, size, and capacity indicated. Include valves and test cocks. Install according to requirements of plumbing and health department and authorities having jurisdiction.

B. Do not install backflow preventers with relief drain in vault or other space subject to flooding.

C. Do not install bypass piping around backflow preventers.

D. Support NPS 2-1/2 and larger backflow preventers, valves, and piping near floor and on brick or concrete piers.

E. Connect drain outlet to storm drainage piping. Refer to Section "Storm Drainage."

3.8 CONNECTIONS

A. Piping installation requirements are specified in other Sections. Drawings indicate general arrangement of piping and specialties.

B. See Section "Utility Materials" for piping connections to valves and equipment.

C. Connect water-distribution piping to utility water.

D. Ground equipment according to DeKalb County requirements.

3.9 FIELD QUALITY CONTROL

A. Piping Tests: Conduct piping tests before joints are covered and after thrust blocks have hardened sufficiently. Fill pipeline 24 hours before testing and apply test pressure to stabilize system. Use only potable water.

B. Hydrostatic Tests: Test at not less than 1-1/2 times working pressure for 2 hours.

1. Increase pressure in 50-psig increments and inspect each joint between increments. Hold at test pressure for 1 hour; decrease to 0 psig. Slowly increase again to test pressure and hold for 1 more hour. Maximum allowable leakage is 2 quarts per hour per 100 joints. Remake leaking joints with new materials and repeat test until leakage is within allowed limits.

C. Prepare reports of testing activities.

3.10 IDENTIFICATION

A. Install continuous underground detectable warning tape during backfilling of trench for underground water-service piping. Locate below finished grade, directly over piping. See Section "Earthwork" for underground warning tapes.

B. Permanently attach equipment nameplate or marker, indicating plastic water-service piping, on main electrical meter panel. See Section "Utility Materials" for identifying devices.

3.11 CLEANING

A. Clean and disinfect water-distribution piping as follows:

1. Purge new water-distribution piping systems and parts of existing systems that have been altered, extended, or repaired before use.

2. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in NFPA 24 (2001) for flushing of piping. Flush piping

system with clean, potable water until dirty water does not appear at points of outlet.

3. Use purging and disinfecting procedure prescribed by authorities having jurisdiction or, if method is not prescribed by authorities having jurisdiction, use procedure described in AWWA C651 (1999) or as described below:

   a. Fill system or part of system with water/chlorine solution containing at least 50 ppm of chlorine; isolate and allow to stand for 24 hours.

   b. Drain system or part of system of previous solution and refill with water/chlorine solution containing at least 200 ppm of chlorine; isolate and allow to stand for 3 hours.

   c. After standing time, flush system with clean, potable water until no chlorine remains in water coming from system.

   d. Submit water samples in sterile bottles to authorities having jurisdiction. Repeat procedure if biological examination shows evidence of contamination.

B. Prepare reports of purging and disinfecting activities.

C. After completing drinking fountain installation, inspect unit. Remove paint splatters and other spots, dirt, and debris. Repair damaged finish to match original finish.

D. Clean drinking fountains, on completion of installation, according to manufacturer's written instructions.

END OF SECTION 02510

SECTION 02530

SANITARY SEWER SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Construction of sanitary sewer system including excavation, trenching, backfilling, materials, and testing for pipes, manholes, and other structures.

B. Related Sections include the following:

1. Section "Earthwork" for excavating, trenching, and backfilling.

1.3 DEFINITIONS

A. The following are industry abbreviations for materials:

1. PVC – Polyvinyl Chloride Pipe.

1.4 SUBMITTALS

1. Sewer main pipe
2. Sewer service line
3. Sewer saddle
4. Manhole frame and cover, and steps
5. Pre-cast manhole sections and base

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver products on manufacturer's original skids or in unopened protective packaging.

B. Protect stored pipes, flanges, fittings, and piping specialties to prevent physical damage.

C. Protect materials during on-site transportation and installation to avoid physical damage.

1.6 SEQUENCING AND SCHEDULING

A. Coordinate equipment installation with other components.

B. Coordinate installation of required supporting devices and other structural components as they are constructed.

C. Sequence, coordinate, and integrate installations of materials and equipment for efficient flow of the Work.

D. Coordinate connection of piping systems with other exterior underground and overhead utilities and services. Comply with requirements of authorities having jurisdiction, franchised service companies, and controlling agencies.

1.7 QUALITY ASSURANCE

A. Contractor Licensing: A Georgia Utility Contractor License is required to complete work described in this section.

PART 2 - PRODUCTS

2.1 PIPE AND PIPE FITTINGS

A. Pipe and fittings shall be in accordance with the following:

1. Polyvinyl Chloride, PVC Sewer Pipe: Sanitary sewer pipe shall conform to ASTM D-3034-83 SDR-35 (2000) including but not limited to the minimum wall thickness, minimum impact strength and minimum pipe stiffness required for each diameter of pipe installed.
2. Sewer Service Line Pipe: PVC pipe shall have a 3mm minimum wall thickness and conform to ASTM D-3034 (2000).

B. Manholes:

1. Pre-cast sections and base shall conform to ASTM C- 478 (2002), latest revision.
2. Cast-iron manhole steps shall conform to ASTM – A29 (1999).
3. Wrought-iron manhole shall conform to ASTM – A29 (1999).
4. Brick shall conform to ASTM – C32 (1999), Grade MA shall be used only for invert construction and ring and cover adjustment.
5. Mortar for laying brick shall be composed of one part cement to two parts sand, with approximately 20 pounds hydrated lime added for each sack.
6. Frames and covers shall be of the type and duty shown on details. Iron castings shall conform to ASTM A29 (1999), Class 20. All casting shall be true to pattern in form and dimensions, free from faults, sponginess, cracks, blowholes, and other defects affecting their strength. Bearing surface between cast frames and covers shall be fitted together and match-marked to prevent rocking.

PART 3 - EXECUTION

3.1 PIPING SYSTEMS - COMMON REQUIREMENTS

A. General Locations and Arrangements: Drawing plans, schematics, and diagrams indicate general location and arrangement of piping systems. Install piping as indicated, unless deviations to layout are approved.

B. All sewers shall be laid true to line and grade with bells upgrade. The section of pipe shall be laid and fitted together that when complete, the sewer will have a smooth and uniform invert.

C. Water shall not be allowed in the trenches while the pipes are being laid.

D. The excavation of the trenches shall be fully completed a sufficient distance in advance of the laying of the sewer, and the exposed end of all pipes shall be fully protected with a board or other approved stopper to prevent earth or other substances from entering the pipe.

E. The interior of the sewer shall be carefully freed from all dirt, and superfluous material of every description as the work progresses. Pipes shall be thoroughly flushed at the completion of laying and jointing prior to inspection. All water used in flushing will not be allowed to enter sewer connected to the City system.

F. All connections, such as sewer stub-outs, which are for future use shall be capped.

G. No pipe shall be cut for connections except when permitted by the City Engineer.

H. Piping Joint Construction: Join pipe and fittings as follows and as specifically required in individual piping Sections:

1. Remove scale, slag, dirt, and debris from inside and outside pipe and fittings before assembly.

3.2 MANHOLE INSTALLATION - COMMON REQUIREMENTS

A. Manholes shall be constructed of pre-cast concrete with cast-iron frames and covers as shown on the details. Rubber boots shall be used with pre-cast manholes.

B. Manholes shall be constructed only when temperature is above 40 degrees F. All work shall be protected against freezing.

C. Drop manholes shall be constructed when the invert of the incoming pipe is 24 inches or more, higher than the invert of the outgoing pipe.

D. Invert channels shall be smooth, accurately shaped, and in accordance with the detail.

E. Invert may be formed directly in the concrete of the manhole base; be built up of brick-work and mortar; consist of half tile laid in the concrete base; or be constructed by laying full section sewer pipe straight through the manhole and cutting out the top half after the concrete base is constructed and sufficiently set.

F. Cast-iron or galvanized wrought-iron steps shall be installed as shown.

G. Damage and Touchup: Repair marred and damaged factory-painted finishes with materials and procedures to match original factory finish.

H. Construct concrete bases of dimensions indicated, but not less than 4 inches larger in both directions than supported unit.. Use 4000 psi , 28-day compressive strength concrete and reinforcement as specified.

3.3 TESTING OF GRAVITY SEWERS

A. Visual Tests

1. Upon completion of the construction or earlier if the City Engineer deems advisable, the City Engineer will make visual inspection of the sewer and the construction site. Immediately repair all leaks and defects of this project.
2. In addition to general cleanup and leakage, the following standards shall be used to determine failure or defects of this project.
3. Sewers shall be built so as to remain true to line and grade. The inclining grade of the bottom of the sewer shall be such that, after flooding, the flood water drains off so that no remaining puddle of water is deeper than ½" inch on pipe 36 inches internal diameter or smaller and ¾" on pipe larger than 36 inches internal diameter. Any section of pipe that does not comply with the specifications at any time previous to final acceptance of the work shall be replaced or re-laid at the Contractor's expense.
4. The Contractor will be held strictly responsible that all parts of the work bear the load of the backfill. If cracks 1/100 inch develop in the pipe within one year from the date of final acceptance of the work, the Contractor will be required to replace, at his expense, all such cracked pipe. To this end, the Contractor is advised to purchase pipe under a guarantee from the manufacturer, guaranteeing proper service of sewer pipe under conditions established by the drawings, specifications, and local conditioning at the site of the work.

B. Air Testing for Sewers 24 Inches and Smaller

1. Perform low pressure air testing as follows:

a. Furnish all equipment, facilities, and personnel necessary to conduct the test. The test shall be observed by a representative of the Owner.

b. Make air test after all services have been installed and backfilling has been completed and compacted.

c. Perform the first series of air tests after 2,000 LF but before 4,000 LF of sewer has been laid. The purpose of this first series of tests is to assure both the Contractor and the Owner that the materials and method of installation meet the intent of these specifications. Conduct the remainder of the tests after approximately each 10,000 LF has been laid.

d. Plug all tees and ends of sewer services with flexible joint plugs or caps securely fastened to withstand the internal pressures. Such plugs or caps shall be readily removable, and their removal shall provide a socket suitable for making jointed lateral connection or extension.

e. Prior to testing, check the pipe to see that it is clean. If not, clean it by passing a full-gauge through the pipe. It shall be the Contractor's responsibility to have the pipe cleaned.

f. Immediately following this check or cleaning, test the pipe installation with low pressure air. Supply the air slowly to the plugged pipe installation until the internal air pressure reaches 4.0 psi more than the average back pressure of any ground water that may submerge the pipe. Allow at least 2 minutes for temperature stabilization.

g. The pipeline shall be considered acceptable when tested at an average pressure of 3.0 psi more than the average back pressure of any ground water that may submerge the pipe, if the section under test does not lose air at a rate greater than 0.0015 cfm per square foot of the internal pipe surface area. Calculate the pressure drop as the number of seconds for the air pressure to drop from a stabilized pressure of 3.5 to 2.5 psi more than the average back pressure of any ground water that my submerge the pipe. Calculate time as described in ASTM C-828, (2003).

h. The requirements of this specifications shall be considered satisfied if the time required in seconds for the pressure to decrease from 3.5 to 2.5 psi more than the average back pressure of any ground water that may submerge the pipe is not less than that shown in the following table:

Pipe Size	Time in Seconds
6 inches	42
8 inches	72
10 inches	90
12 inches	108
15 inches	126
18 inches	144
21 inches	180
24 inches	216

i. If the pipe installation fails to meet these requirements, the Contractor shall determine at his expense the source or sources of leakage and repair or replace all defective materials or workmanship. The completed pipe installation shall meet the requirements of this test before considered acceptable.

j. The recommended procedure for conducting acceptable tests are as follows:

1) Clean pipe that is to be tested.
2) Plug all pipe outlets with suitable test plugs, and brace each plug securely.
3) Increase gauge pressure in the test by the amount of ground water pressure at the crown of the pipe.
4) Add air slowly to the portion of the pipe installation being tested until the internal air pressure is raised to 4.0 psi more than the average back pressure above the crown of the pipe.
5) After the above internal pressure is obtained, allow at least 2 minutes for air temperature to stabilize, adding only the amount of air required to maintain pressure.
6) After 2 minutes disconnect the air supply.
7) When pressure decreases to 3.5 psi either by leaking down or by bleeding down with a release valve, start the stopwatch, and determine the time in seconds that is required for the internal air pressure to reach 2.5 psi. Compare this time interval as calculated above. If the time is more than that calculated, the test shall be assumed to be acceptable.

k. Plugs used to close the sewer pipe for the air test must be securely braced to prevent the unintentional release of a plug, which can become a high velocity projectile. Locate gauges, air piping manifolds, and valves at the top of the ground. No one shall be permitted to enter a manhole where a plugged pipe is under pressure. Four pounds air pressure (gauge) develops a force against the plug in a 12 inch pipe of approximately 450 pounds. Pipes more than 30 inches in diameter shall not be air tested because of the difficulty of adequately blocking the plugs. Provide a safety release devise set to release at 10 psi between the air supply and the sewer under test.

l. Regardless of the outcome of the tests, repair any noticeable leak.

3.4 VISUAL INSPECTION OF MISCELLANEOUS MATERIAL

A. All materials used on this project will be visually inspected by the Project Inspector at the site for conformance to the required specifications. When reasonable doubt exists that said material meet the specifications, the Project Manager may require certified mill tests, samples, and/or tests by an independent laboratory or other suitable form of verification that the materials meet the required specifications.

3.5 CLEANUP

A. After completing each section of the sewer line, remove all debris, construction materials, and equipment from the site of the work, grade and smooth over the surface on both sided of the line, and leave the entire right-of-way in a clean neat, and serviceable condition.

B. All sewer structures shall be thoroughly cleaned and maintained in workable condition until final acceptance.

END OF SECTION 02530

SECTION 02630

STORM DRAINAGE

SITE DEVELOPMENT

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes storm drainage system including all related appurtenances.

1.3 DEFINITIONS

A. RCP: Reinforced Concrete Pipe

B. PVC: Poly Vinyl Chloride

C. HDPE: High Density Polyethylene

D. CPP: Corrugated Plastic Pipe

1.4 SUBMITTALS

A. Product Data: For the following:

1. Stormwater disposal systems.

B. Shop Drawings: Include plans, elevations, details, and attachments for the following:

1. Structures, including frames, manholes, covers, and grates.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Do not store plastic structures, pipe, and fittings in direct sunlight.

B. Protect pipe, pipe fittings, and seals from dirt and damage.

E. Handle structures according to manufacturer's written instructions.

1.6 PROJECT CONDITIONS

A. Site Information: Perform site survey, and verify existing utility locations.

B. Locate existing structures to be adjusted in elevation.

C. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:

1. Notify Owner's Representative not less than two days in advance of proposed utility interruptions.

2. Do not proceed with utility interruptions without Owner's Representative written permission.

1.7 QUALITY ASSURANCE

A. Contractor Licensing: A Georgia Utility Contractor License is required to complete work described in this section.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following or approved equal:

1. Stormwater Disposal Systems:

a. Advanced Drainage Systems, Inc.
b. NDS
c. C.P.P. Inc.

2.2 PIPES AND FITTINGS

A. Corrugated PE Drainage Tubing and Fittings: AASHTO M 252 (2002), Type S, with smooth waterway for coupling joints.

1. Soil tight Couplings: AASHTO M 252 (2002), corrugated, matching tube and fittings to form soil tight joints.

2.3 STORMWATER INLETS

A. Inlets: as indicated on detail. Must meet DeKalb County Standards.

B. Frames and Grates: Dimensions, opening pattern, free area, and other attributes indicated.

1. Material: ASTM A 47 (1999), Class 30 minimum, gray-iron casting.
2. Grate Free Area: Approximately 50 percent, unless otherwise indicated.

2.4 CONCRETE

A. General: Cast-in-place concrete according to ACI 318 (2003), ACI 350R (2002), and the following:

1. Cement: ASTM C 150 (2002), Type II.
2. Fine Aggregate: ASTM C 33 (2002), sand.
3. Coarse Aggregate: ASTM C 33 (2002), crushed gravel.
4. Water: Potable.

B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water-cementitious ratio.

PART 3 - EXECUTION

3.1 EARTHWORK

A. Excavating, trenching, and backfilling are specified in Section "Earthwork."

3.2 IDENTIFICATION

A. Materials and their installation are specified in Division 2 Section "Earthwork." Arrange for installing green warning tapes directly over piping and at outside edges of underground structures.

1. Use warning tape or detectable warning tape over piping.

3.3 PIPING APPLICATIONS

A. General: Include watertight soil tight joints.

B. Refer to Part 2 of this Section for detailed specifications for pipe and fitting products listed below. Use pipe, fittings, and joining methods according to applications indicated.

C. Gravity-Flow Piping: Use the following:

1. Corrugated PE drainage tubing and fittings, soil tight couplings, and coupled joints in sizes indicated on the drawings.

3.4 INSTALLATION, GENERAL

A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.

B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.

B. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.

C. Install gravity-flow piping of sizes and in locations indicated. Terminate piping as indicated.

1. Install piping pitched down in direction of flow, at minimum slope of 1 percent, unless otherwise indicated.

3.5 PIPE JOINT CONSTRUCTION AND INSTALLATION

A. General: Join and install pipe and fittings according to installations indicated.

B. Install with top surfaces of components, except piping, flush with finished surface.

C. PE & HDPE Pipe and Fittings: As follows:

1. Join pipe, tubing, and fittings with couplings for soil tight joints according to manufacturer's written instructions.
2. Install according to ASTM D 2321 (2000) and manufacturer's written instructions.
3. Install corrugated piping according to the Corrugated Polyethylene Pipe Association's "Recommended Installation Practices for Corrugated Polyethylene Pipe and Fittings."

D. System Piping Joints: Make joints using system manufacturer's couplings, unless otherwise indicated.

3.6 STORM INLET INSTALLATION

A. Order inlets to sizes and shapes indicated.

B. Set frames and grates to elevations indicated.

C. Adjust (lower) rim elevations of existing inlets as indicated on drawings.

3.7 CONCRETE PLACEMENT

A. Place cast-in-place concrete according to ACI 318 (2002) and ACI 350R (2002).

3.8 FIELD QUALITY CONTROL

A. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.

1. In large, accessible piping, brushes and brooms may be used for cleaning.
2. Place plug in end of incomplete piping at end of day and when work stops.
3. Flush piping between manholes and other structures to remove collected debris, if required by authorities having jurisdiction.

B. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.

1. Submit separate reports for each system inspection.
2. Defects requiring correction include the following:

a. Alignment: Less than full diameter of inside of pipe is visible between structures.
b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
c. Crushed, broken, cracked, or otherwise damaged piping.
d. Infiltration: Water leakage into piping.
e. Exfiltration: Water leakage from or around piping.

3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
4. Re-inspect and repeat procedure until results are satisfactory.

C. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.

1. Do not enclose, cover, or put into service before inspection and approval.
2. Test completed piping systems according to authorities having jurisdiction.
3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
4. Submit separate reports for each test.
5. Leaks and loss in test pressure constitute defects that must be repaired.
6. Replace leaking piping using new materials, and repeat testing until leakage is within allowances specified.

END OF SECTION 02630

SECTION 02710

STORM DRAINAGE

SKATE PARK

PART 1 - GENERAL

1.01 SCOPE

Provide storm water drainage system consisting of drain lines, inlets, trenching, bedding, back-fill and out-fall connection for entire skate park as shown within the construction drawings.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 03310: Cast-In Place Concrete - Skate Park

1.03 PROTECTIONS

Protect all existing tree roots, shrubs, paving and utilities from damage due to drainage excavations. Re-route piping if necessary to avoid excessive damage to existing conditions as directed by the owner's representative to avoid damage. Provide protective barrier from all open trenches per city requirements.

1.04 COORDINATION

Coordinate all work affected by drainage operations.

1.05 QUALITY ASSURANCE

A. Contractor Licensing: A Georgia Utility Contractor License is required to complete work described in this section.

PART 2 - PRODUCTS

2.01 MATERIALS

A. PVC Drain Pipe: Manufacture in accordance with standards noted herein.

1. Marking and Identification: continuously and permanently marked with manufacturer's name, pipe size, type of pipe and material, SDR number, ASTM standard number and the NSF (National Sanitation Foundation) seal.

2. PVC pipe fittings shall be of the same material as the PVC pipe specified and shall be compatible with PVC pipe furnished.

3. All drain pipe shall be SDR-35.

B. Drain Inlets

1. Floor Drain - Zurn Z415B-100, body assembly with custom "Type B" strainer. Strainer diameter shall be 8" [20.32cm]. Body assembly shall accommodate a 6" [15.24cm] SDR-35 drainline connection.

2. Materials & Finish - Body shall be Dura-Coated cast iron with bottom outlet, combination invertible membrane clamp and adjustable collar. Strainer shall be stainless steel.

PART 3 - EXECUTION

3.01 EXCAVATION

Excavate ditch no greater in width or depth than is necessary to permit construction.

3.02 BEDDING

Provide a firm foundation of uniform density throughout the entire length of the pipe. The exterior of the pipe for not less than 1/4 of its circumference shall be bedded in an earth foundation of uniform density accurately shaped to fit the outside of the pipe. The material used for bedding shall be material from on-site excavation. When rock is encountered at grade, the rock shall be removed to a depth of six inches [15.24cm] below grade and tamped, clean fill, rock free over 1/2" [12.70mm], earth from the excavation shall be used to bring the elevation up to grade.

3.03 LAYING

A. Do not place pipe in a wet trench. Keep trenches free from water.

B. No pipe shall be laid until it has been inspected and approved by the City inspector. Lay and joint pipes in the dry. Lay pipe up-grade beginning at the lower end of the line.

C. Coupling: Use approved solvent weld joint or pressure coupling. Clean pipe and fittings thoroughly of dirt, dust and moisture. Apply a light uniform coat of solvent to pipe (or compression fitting if applicable) fitting and immediately make the connection.

3.04 BACKFILL

After the pipe has been installed and the joints completely set, material from the on-site excavation at a moisture content with which the required density can be obtained, shall be

placed equally along both sides of the pipe in layers not exceeding six inches loose depth. Compact each layer thoroughly by hand or pneumatic tampers to finish grade.

3.05 CONNECTION TO EXISTING DRAINAGE SYSTEM:

Bore into the surface. Do not extend the pipe into structure. Construct a concrete collar material not less than six inches [15.24cm] greater in diameter than pipe and six inches [15.24cm] long, and bond to the structure.

3.06 CLEAN UP:

A. Clean site daily of trash and debris resulting from construction operations.

B. Upon completion of the work, remove spoil piles, surplus material, and equipment from the site. Restore ground surface to original condition.

END OF SECTION 2710

SECTION 02741

HOT-MIX ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Hot-mix asphalt paving.
2. Pavement-marking paint.
3. Wheel Stops.

B. Related Sections include the following:

1. Section "Earthwork" for aggregate subbase and base courses.

1.3 SYSTEM DESCRIPTION

A. Provide hot-mix asphalt pavement according to the materials, workmanship, and other applicable requirements of the Georgia Department of Transportation (GDOT) Standard Specifications for Construction of Roads and Bridges (2002).

1.4 SUBMITTALS

A. Product Data: For each product specified. Include technical data and tested physical and performance properties.

B. Job-Mix Designs: For each job mix proposed for the Work.

C. Material Test Reports: Indicate and interpret test results for compliance of materials with requirements indicated.

D. Material Certificates: Certificates signed by manufacturers certifying that each material complies with requirements.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced installer who has completed hot-mix asphalt paving similar in material, design, and extent to that indicated for this Project and with a record of successful in-service performance.

B. Manufacturer Qualifications: Engage a firm experienced in manufacturing hot-mix asphalt similar to that indicated for this Project and with a record of successful in-service performance.

1. Firm shall be a registered and approved paving mix manufacturer with the GDOT.

C. Testing Service: The Contractor shall coordinate with the Owner's testing service.

D. Regulatory Requirements: Conform to applicable standards of GDOT Standard Specifications – 2001 for asphalt paving work.

E. Pre-installation Conference: Conduct conference at Project site to comply with requirements of Section "Project Meetings" Review methods and procedures related to asphalt paving including, but not limited to, the following:

1. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.

2. Review condition of substrate and preparatory work performed by other trades.

3. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

4. Review and finalize construction schedule for paving and related work. Verify availability of materials, paving Installer's personnel, and equipment required to execute the Work without delays.

5. Review inspection and testing requirements, governing regulations, and proposed installation procedures.

6. Review forecasted weather conditions and procedures for coping with unfavorable conditions.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.

B. Store pavement-marking materials in a clean, dry, protected location and within temperature range required by manufacturer. Protect stored materials from direct sunlight.

1.7 PROJECT CONDITIONS

1. Environmental Limitations: Weather and temperature limitations must comply with GDOT Standard Specifications – (2005).

B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 40 degrees F for oil-based materials, 50 degrees F for water-based materials, and not exceeding 95 degrees F, unless otherwise specified by manufacturer.

PART 2 - PRODUCTS

2.1 ASPHALT MATERIALS

A. Parking Lot Asphalt Surface Course: Shall be of uniform quality throughout and conform to the requirements of the Standard Specifications-Section 828.03,(20030, Type E.

B. Binder or Base Course: Shall be of uniform quality throughout and conform to the requirements of the GDOT Standard Specifications-Section 828.03, (2003), Type B-modified.

C. Graded Aggregate Base Course: Shall be of uniform quality throughout and shall conform to the requirements of GDOT Standard Specifications – Section 815, Group I.

2.2 AUXILIARY MATERIALS

A. Pavement-Marking Paint: Alkyd-resin type, lead and chromate free, ready mixed, complying with ASTM -FS TT-P-115 (2002), Type II or AASHTO M 248, Type F (2002).

1. Color: As indicated on drawings.

2.3 MIXES

A. Hot-Mix Asphalt: Provide dense, hot-laid, hot-mix asphalt plant mixes approved by GDOT; designed according to procedures in AI's "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types".

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to support paving and imposed loads.

B. Proof-roll subbase using heavy, pneumatic-tired rollers to locate areas that are unstable or that require further compaction.

C. Notify Owner's Representative in writing of any unsatisfactory conditions. Do not begin paving installation until these conditions have been satisfactorily corrected.

3.2 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

1. Sweep loose granular particles from surface of unbound-aggregate base course. Do not dislodge or disturb aggregate embedded in compacted surface of base course.

3.3 HOT-MIX ASPHALT PLACING

A. Machine place hot-mix asphalt mix on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness, when compacted.

1. Place hot-mix asphalt base course in number of lifts and thickness indicated.

2. Place hot-mix asphalt surface course in single lift.

3. Spread mix at minimum temperature of 250 deg F.

4. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes, unless otherwise indicated.

5. Regulate paver machine speed to obtain smooth continuous surface.

B. Place paving in consecutive strips not less than 10 feet wide, except where in-fill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete asphalt base course for a section before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.4 JOINTS

A. Construct joints to ensure continuous bond between adjoining paving sections. Construct joints free of depressions with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces.

2. Offset longitudinal joints in successive courses a minimum of 6 inches.

3. Offset transverse joints in successive courses a minimum of 24 inches.

4. Construct transverse joints by bulkhead method or sawed vertical face method as described in AI's "The Asphalt Handbook" (2000).

5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.

6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.5 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F.

B. Breakdown Rolling: Accomplish breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indi-

cated crown, grade, and smoothness. Repair surfaces by loosening displaced material, filling with hot-mix asphalt, and rerolling to required elevations.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling, while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:

1. Average Density: 96 percent of reference laboratory density according to ASTM D 1559 (2000), but not less than 94 percent nor greater than 100 percent.

2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041 (2000), but not less than 90 percent nor greater than 96 percent.

D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.

E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while still hot, with back of rake or smooth iron. Compact thoroughly using tamper or other satisfactory method.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials. Remove paving course over area affected and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.6 INSTALLATION TOLERANCES

A. Thickness: Compact each course to produce the thickness indicated within the following tolerances:

1. Parking Lot

a. Base Course: Plus or minus 1/2 inch.

b. Binder or Base Course: Plus or Minus 1/2 inch.

c. Surface Course: Plus 1/4 inch, no minus.

B. Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot straightedge applied transversely or longitudinally to paved areas:

1. Parking Lot

a. Base Course: Plus or minus 1/2 inch.

b. Binder or Base Course: Plus or Minus 1/4 inch.

c. Surface Course: Plus 1/8 inch, no minus.

d. Crowned Surfaces: Test with crowned template centered and at right angle to crown. Maximum allowable variance from template is 1/4 inch.

3.7 PAVEMENT MARKING

A. Do not apply pavement-marking paint until layout, colors, and placement have been verified with Owner's Representative. Allow paving to cure for 30 days before starting pavement marking.

B. Sweep and clean surface to eliminate loose material and dust.

C. Apply paint with mechanical equipment to produce pavement markings of dimensions indicated with uniform, straight edges. Apply at manufacturer's recommended rates to provide a minimum wet film thickness of 15 mils.

3.8 FIELD QUALITY CONTROL

A. Testing Service: Owner will engage a qualified independent testing agency to perform field inspections and tests and to prepare test reports.

1. Testing service will conduct and interpret tests and state in each report whether tested Work complies with or deviates from specified requirements.

B. Additional testing, at Contractor's expense, will be performed to determine compliance of corrected Work with specified requirements.

C. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549 (2000).

D. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

E. In-Place Density: Samples of uncompacted paving mixtures and compacted pavement will be secured by testing agency according to ASTM D 979 (2001).

1. Reference laboratory density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 155 (2000), and compacted according to job-mix specifications.

2. Reference maximum theoretical density will be determined by averaging results from 4 samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041 (2000), and compacted according to job-mix specifications.

3. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 (2000) or ASTM D 2726 (2000).

a. One core sample will be taken for every 1000 sq. yd. or less of installed pavement, but in no case will fewer than 3 cores be taken.

b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 (1997) and correlated withASTM D 1188 (2002) or ASTM D 2726 (2000).

F. Remove and replace or install additional hot-mix asphalt where test results or measurements indicate that it does not comply with specified requirements.

END OF SECTION 02741

SECTION 02770

CONCRETE WALKS, CURBS, AND GUTTERS

PART 1 - GENERAL

1.1 SCOPE

A. This section shall cover the work and equipment to install and construct concrete sidewalks, ramps, curbs, gutters, and plaza areas. The Contractor shall furnish all labor, materials and equipment necessary to perform the work as specified on the Drawings.

B. The contractor shall construct the concrete pavement to the lines, grades and dimensions indicated on the Drawings and described in the Specifications.

C. Related Sections include the following:

1. Division 2 Section "Earthwork" for subgrade preparation, grading, and subbase course.

1.2 REFERENCE DOCUMENTS

A. American Concrete Institute

1. ACI 211.1 (2002) – Standard Practice for Selecting proportions for Normal, Heavyweight, and Mass Concrete
2. ACI 304R (2000) – Guide for Measuring, Mixing, Transporting, and Placing Concrete
3. ACI 305R (1999) – Hot Weather Curing
4. ACI 325.9R (1997) – Guide for Construction of Concrete Pavements and Concrete Bases
5. ACI 306.1 (2002)– Standards for Cold Weather Curing

B. American Society for Testing and Materials

1. ASTM A 185 – (1997) Standard Specification for Welded Wire Fabric, Plain, or Concrete Reinforcement
2. ASTM C 31 (2000) Standard Practice for Making and Curing Concrete Test Specimens in the Field
3. ASTM C 33 (2001) Standard Specification for Concrete Aggregates
4. ASTM C 39 (2001) Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens
5. ASTM C 94 (2000) Standard for Ready-Mixed Concrete
6. ASTM C 143 (2000) Standard Test Method for Slump of Hydraulic Cement Concrete
7. ASTM C 150 (2000) Standard Specification for Portland Cement

8. ASTM C 156 (1998) Standard Test for Method for Water Retention by Concrete Curing Materials
9. ASTM C 171 (1997) Standard Specification for Sheet Materials for Curing Concrete
10. ASTM C 172 (1999) Standard Practice for sampling freshly Mixed Concrete
11. ASTM C 173 (2001) Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method
12. ASTM C 231 (1997) Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
13. ASTM C 920 (2001) Standard Specification for Elastomeric Joint Sealants
14. ASTM D 1751 (2004) Standard Specification for preformed Expansion Joint Filler for Concrete Paving.

1.3 SUBMITTALS

A. Quality Control Submittals: Submit the following information related to quality assurance requirements specified:
   1. Design Data: Submit proposed mix designs and test data before concrete operation s begin. Identify for each mix submitted the method by which proportions have been selected.
      a. For mix designs based on field experience, include individual strength test results, standard deviation, and required average compressive strength f(cr) calculations.
      b. For Mix designs based on trial mixtures, include trial mix proportions, test results, and geographical analysis and show required average compressive strength f(cr)
      c. Indicate quantity of each ingredient per cubic yard of concrete.

B. Certifications: Submit affidavits from an independent testing agency certifying that all materials furnished under this section conform to specifications.
   1. Delivery Tickets: Submit copies of delivery tickets complying with ASTM C 94 (2005) for each load of concrete delivered to the site.

1.4 QUALITY ASSURANCE

A. Testing Agency Services:

   1. Owner will engage testing agency to conduct tests and perform other services for quality control during construction.
   2. Contractor will engage an independent testing agency to conduct testing necessary for design mix and material certification submittals.

B. Source of Materials: Obtain materials of each type from same source for the entire project.

1.5 WEATHER LIMITATIONS

A. Placing during Cold Weather

1. Concrete placement shall not take place when the air temperature reaches 40 degrees F and is falling, or is already below that point. Placement may begin when the air temperature reaches 35 degrees F and is rising, or is already above 40 degrees F.
2. Provisions shall be made to protect concrete from freezing during the temperature of the air, aggregates, or water is below 35 degrees F, placement and protection shall be approved in writing. Approval will be contingent upon full conformance with the following provisions.
   a. The underlying material shall be prepared and protected so that it is entirely free of frost when the concrete is deposited.
   b. Mixing water and aggregates shall be heated as necessary to result in the temperature of the in-place concrete being between 50 and 85 degrees F. Methods and equipment for heating shall be approved.
   c. The aggregates shall be free of ice, snow, and frozen lumps before entering the mixer.
   d. Covering and other means shall be provided for maintaining the concrete at the temperature of at least 50 degrees F for not less than 72 hours after placing, and at a temperature above freezing for the remaining of the curing period.

B. Placing during Warm Weather

1. The temperature of the concrete as placed shall not exceed 85 degrees F except where an approved retarder is used.
2. The mixing water and or aggregates shall be cooled, if necessary, to maintain satisfactory placing temperature.
3. The placing temperature shall not exceed 95 degrees F at any time.

1.6 EQUIPMENT, MACHINES, AND TOOLS

A. Equipment, machines, and tools used in the work shall be subject to approval and shall be maintained in satisfactory working condition at all times. The equipment shall have the capability of producing the required product, meeting grade controls, thickness control and smoothness requirements as specified. Use of the equipment shall be discontinued if it produces unsatisfactory results.

1.7 UTILITY PROTECTION

A. Forty-eight (48) hours prior to excavation, the contractor shall cal the Utilities Protection Center to locate and protect existing utilities. Any damage to these utilities is to be repaired at no additional cost to the owner. The contractor is responsible for locating all utilities, either private or public.

PART 2 - PRODUCTS

2.1 CONCRETE

A. Portland cement shall conform to ASTM specifications C150 (2005). The concrete shall have a minimum compressive strength of 3000 psi at the end of 28 days. Maximum size of aggregate shall be 1-1/2 inches

B. Concrete slump shall be 2 inches plus or minus 1 inch where determined in accordance with ASTM C 143 (2005).

2.2 FORMS

A. Form work shall be designed and constructed to ensure that the finished concrete will conform accurately to the indicated dimensions, lines, and elevations, and within the tolerances specified.

B. Forms shall be of wood or steel, straight, of sufficient strength to resist springing during depositing and consolidating concrete. Wood forms shall be surfaced plank, 2 inches nominal thickness, straight, and free from warp, twist, lose, knots, splits, or defects. Wood forms shall have a nominal length of 10 feet. Radius bends may be formed with 3/4-inch boards, laminated to the required thickness.

C. Steel forms shall be channel-formed sections with a flat top surface and with welded braces at each end and at not less than two intermediate points. Ends of steel forms shall be interlocking and self-aligning. Steel forms shall include flexible forms for radius forming, corner forms, form spreaders, and fillers. Steel forms shall have a nominal length of 10 feet with a minimum of 3 welded stake pockets per form. Stake pins shall be solid steel rods with chamfered heads and pointed tips designed for use with steel forms.

D. Sidewalk forms shall be of a height equal to the full depth of the finished sidewalk.

E. Curb and gutter outside forms shall have a height equal to the full depth of the curb or gutter. The inside form of the curb shall have a batter as indicated and shall be securely fastened to and supported by the outside form. Rigid forms shall be provided for curb returns, except that benders or thin plank forms may be used for curb or curb returns with a radius of 10 feet or more, where grade changes occur in the return, or where the central angle is such that the a rigid form with a central angle of 90 degrees cannot be used. Back forms for curb returns may be made of 1-1/2 inch benders, for the full height of the curb, cleated together.

2.3 CURING MATERIALS

A. Burlap: AASHTO M 182 (2002), Class 2 jute or kenaf cloth.
B. Moisture-Retaining Cover: AASHTO M 171 (2005), and as follows:
   1. White waterproof Paper
   2. Opaque-white polyethylene sheet, 0.006 inch thick.
C. Sealers: ASTM C156 (2003) and ASTM C309 (2005), Type I. Material shall become integral part of concrete and leave slab free of residue or film.
D. Membrane Curing Compound: Liquid membrane-forming compounds shall meet the requirements of AASHTO M148 (2001).

2.4 JOINT FILLER STRIPS

A. Contraction Joint filler for curb and gutter shall consist of hard-pressed ¾ inch thick mineral fiberboard, asphalt impregnated, conforming to ASTM D1751 (2004)
B. Expansion joint filler, premolded, shall conform to ASTM D 1751 (2004) or ASTM D 1752 (2004), 3/8 inch thickness, unless otherwise indicated

2.5 JOINT SEALANTS

A. Joint sealant, cold applied shall conform to ASTM C1193 (2005).
B. Joint Sealant, hot poured shall conform to ASTM C1193 (2005)

PART 3 - EXECUTION

3.1 SUBGRADE PREPARATION

A. The subgrade shall be constructed to the specified grade and cross section prior to concrete placement. Subgrade shall be placed and compacted in conformance with section 02300 EARTHWORK.
B. Sidewalk subgrade shall be tested for grade and cross section with a template extending the full width of the sidewalk and supported between side forms.
C. Curb and gutter subgrade shall be tested for grade and cross section by means of a template extending the full width of the curb and gutter.

3.2 FORM SETTING

A. Forms shall be set to the indicated alignment, grade and dimensions. Forms shall be held rigidly in place by a minimum of 3 stakes per form placed at intervals not to exceed 4 feet. Corners, deep sections, and radius bends shall have additional stakes and braces as required.
B. Forms shall be removed without injuring the concrete. Bars or heavy tools shall not be used against the concrete in removing the forms. Any concrete found defective after form removal shall be promptly and satisfactorily repaired.
C. Forms shall be cleaned and coated with form oil each time before concrete is placed. Wood forms may, instead, be thoroughly wetted with water before concrete is place, except that with probable freezing temperatures, oiling is mandatory.
D. Forms for sidewalks shall be set with the upper edge true to line and grade with an allowable tolerance of 1/8 inch in any 10-foot long section. After forms are set, grade and alignment shall be checked with a 10-foot straightedge. Forms shall have a transverse slope of ¼ inch per foot with the low side adjacent to the roadway unless noted otherwise. Side forms shall not be removed for 12 hours after finishing has been completed.
E. The forms of the front of the curb shall be removed not less than 2 hours or more than 6 hours after the concrete has been placed. Forms back of curb shall remain in place until the face and top of the curb have been finished, as specified for concrete finishing. Gutter forms shall not be removed while the concrete is sufficiently plastic to slump in any direction.

3.3 SIDEWALK CONCRETE PLACEMENT AND FINISHING

A. Place concrete in forms in one layer of thickness indicated. Use a strike-off guide by side forms to bring surface to proper section. Tamp and consolidate concrete with tamping bars, finish with wood float, and apply a brush finish across width of pavement using a medium-hair brush. All corners and edges shall be edged and troweled with 1/2" radius. The finished surface shall not vary more than 3/16" in 10' - 0". . Completed surface shall be uniform in color, and free of surface blemishes and tool marks.

B. Contractor shall provide a mock up of approximately 25 square feet. If the work is acceptable to the Owner and the Landscape Architect it may remain as part of the finished work.

3.4 CURB AND GUTTER CONCRETE PLACEMENT AND FINISHING

A. Concrete shall be placed to the section required in a single lift. Consolidation shall be achieved by using approved mechanical vibrators.

B. Exposed surfaces shall be floated and finished with a smooth wood float until true to grade and section and uniform in texture. Floated surfaces shall then be brushed with a fine-hair brush with longitudinal strokes. The edges of the gutter and top of the gutter shall be rounded with an edging tool to radius of ½ inch. Immediately after removing the front curb form, the face of the curb shall be rubbed with a wood or concrete rubbing block and water until blemishes, form marks, and tool marks have been removed. The front curb surface, while still wet, shall be brushed in the same manner as the gutter and the curb top. The top surface of gutter and entrance shall be finished to grade with a wood float.

C. Curb edges at formed joints shall be finished as indicated

D. Finished surfaces shall not vary more than ¼ inch from the testing edge of a 10-foot straightedge. Permissible deficiency in section thickness will be up to ¼ inch.

3.5 SIDEWALK JOINTS

A. Saw Cut Joints shall be used in lieu of tooled joints. Joints shall be cut in fresh concrete by cutting a grove in the top surface to a depth of one inch, using a cutting blade not more than 1/8" thick. An ample supply of saw blades shall be available in the job before concrete placement is started, and at least one standby sawing unit in good working order shall be available at the jobsite at all times during the sawing operations.

B. Sidewalk joints shall be constructed to divide the surface into rectangular areas. Transverse contraction joints shall be spaced at a distance equal to the sidewalk or

5 feet on centers, whichever is less, and shall be continuous across the slab. Longitudinal contraction joints shall be constructed the centerline of all sidewalks or plaza areas 10 feet or more in width. Transverse expansion joints shall be installed at the sidewalk returns and opposite expansion joints in adjoining curbs. Where the sidewalk is not in contact with the curb, transverse expansion joints shall be installed as indicated. Expansion joints shall be formed about structures and features which project through or into the sidewalk pavement, using joint filler of the type, thickness, and width indicated.

C. The contraction joints shall be formed in the fresh concrete by cutting a groove in the top portion of the slab to the depth of at least one-fourth of the sidewalk slab thickness, using a jointer to cut the groove, or by sawing a groove in the hardened concrete with a power-driven saw, unless otherwise approved.

D. Expansion joints shall be formed with ½ inch joint filler strips. Joint filler shall be placed with the top edge ¼ inch below the surface and shall be held in place with steel pins or other devices to prevent warping of the filler during floating and finishing. Immediately after finishing operations are completed, joint edges shall be rounded with an edging tool having a radius of 1/8 inch and concrete over the joint filler shall be removed. At the end of the curing period, expansion joints shall be cleaned and filled with joint sealant.

3.6 CURB AND GUTTER JOINTS

A. Curb and gutter joints shall be constructed at right angles to the line of curb and gutter.

B. Contraction joints shall be constructed directly opposite contraction joints in abutting Portland cement concrete pavements and spaced so that monolithic sections between curb returns will not be less than 5 feet nor greater than 15 feet in length. Contraction joints shall be constructed by means of 1/8 inch thick separators and of a section conforming to the cross section of the curb and gutter. Separators shall be removed as soon as practicable after concrete has set sufficiently to preserve the width and shape of the joint and prior to finishing.

C. Expansion joints shall be formed by means of preformed expansion joint filler material cut and shaped to the cross section of curb and gutter. Expansion joints shall be provided in curb and gutter directly opposite expansion joints of abutting Portland cement pavement, and shall be of the same type and thickness as joints in the pavement, expansion joints at least ½ inch in width shall be provided at intervals not exceeding 10 feet.

3.7 CURING AND PROTECTION

A. Concrete shall be protected against loss of moisture and rapid temperature changes for at least 7 days fro the beginning of the curing operation. Unhardened concrete shall be protected from rain and flowing water. All equipment needed for adequate curing and protection of the concrete shall be on hand and ready to use before actual concrete

placement begins. Protection shall be provided as necessary to prevent cracking of the pavement due to temperature changes during the curing period.

B. Mat Method: The entire exposed surface shall be covered with 2 or more layers of burlap. Mats shall overlap each other at least 6 inches. The mat shall be thoroughly wetted with water prior to placing on concrete surface and shall be kept continuously in a saturated condition and in intimate contact with the concrete for not less than 7 days.

C. Impervious Sheeting Method: The entire exposed surface shall be wetted with a fine spray of water then covered with impervious sheeting material. Sheets shall be laid directly on the concrete surface with the light colored side up and overlapped 12 inches when a continuous sheet is not used. The curing medium shall not be less than 18-inches wider than the concrete surface to be cured, and shall be securely weighted down by heavy wood planks, or a bank of moist earth placed along the edges and laps in the sheets. Sheets shall be satisfactorily repaired or replaced if torn or otherwise damaged during curing. The curing medium shall remain on the concrete surface to be cured for not less than 7 days.

D. Curing compound: Apply rate stated by manufacturer to conform with moisture-retention requirements specified, using second, immediate application right angle first, if necessary, and reapply if damaged by rain.

E. After curing, debris shall be removed from the area adjoining the concrete shall be backfilled, graded, and compacted to conform to the surrounding area in accordance with lines and grades indicated.

F. Completed concrete shall be protected from damage until accepted. The contractor shall repair damaged concrete and clean concrete discolored during construction at no additional cost to the Owner. Concrete that is damaged shall be removed and reconstructed for the entire length between regularly scheduled joints. Refinishing the damaged portion will not be acceptable. Removed damaged portions shall be disposed of as directed.

3.8 FIELD QUALITY CONTROL

A. The contractor shall perform the inspection and tests described and meet the specified requirements for inspection details and frequency of testing. Based upon the results of these inspections and tests, the Contractor shall take the action and submit reports as required below, and any additional tests to insure that the requirements of these specifications are met.

B. The Contractor shall provide molded concrete specimens for strength tests. Samples of concrete paced each day shall be taken not less than once a day not less than once every 250 cubic yards of concrete. Concrete specified on the basis of compressive strength will be considered satisfactory if the averages of all sets of three consecutive strength test results equal or exceed the specified strength, and no individual strength test result falls below the specified strength by more than 500 psi.

C. Air content shall be determined in accordance to ASTM C 173 (2001) or ASTM C 231 (2004).

D. Two slump tests shall be made on randomly selected batches of each class of concrete every 250 cubic yards, or fraction thereof, of concrete placed during each shift. Additional tests shall be performed when excessive variation in the workability of the concrete is noted or when excessive crumbling or slumping is noted along the edges.

E. The finished surface of each category of the completed work shall be uniform in color and free of blemishes and form or tool marks.

3.9 SURFACE DEFICIENCIES AND CORRECTIONS

A. When measurements indicate that the completed concrete section is deficient in thickness by more than ¼ inch the deficient section will be removed, between regularly scheduled joints, and replaced.

B. In areas not meeting surface smoothness and plan grade requirements, high areas shall be reduced either by rubbing the freshly finished concrete with carborundum brick and water when the concrete is less than 36 hours old or by grinding the hardened concrete with an approved surface grinding machine after the concrete is 36 hours old or more. The area corrected by grinding the surface of the hardened concrete shall not exceed ¼ inch. Pavement areas requiring grade or surface smoothness corrections in excess of the limits specified above shall be removed and replaced.

C. The Owner will inspect exposed surfaces of the finished work and any deficiencies in appearance will be identified. Areas which exhibit excessive cracking, discoloration, form marks, tool marks, graffiti, or which are otherwise inconsistent with the overall appearances of the work shall be removed and replaced at no additional cost to the Owner.

END OF SECTION 02770

SECTION 02810

Underground Irrigation System

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Scope of Work: The scope of work consists of designing an irrigation system, preparing construction shop drawings and installing a complete underground irrigation system operated by an electronic control system. Work also includes but shall not be limited to the furnishing, installing, and testing of all mains, laterals, risers and fittings, sprinkler heads, gate valves, control valves, valve boxes, controllers, electric wire, controls, backflow preventers, hot box enclosure, meter, and other necessary specialties and the removal and/or restoration of existing improvements, excavating and backfill, and all other work in accordance with the plans and specifications required for a complete system.

1.3 SYSTEM DESCRIPTION

A. The sprinkler system shall include sprinklers, valves, piping fittings, controller, wiring, all of sizes and types as shown on the drawings and specified. The system shall be constructed to grades and conform to areas and locations as shown on the staking and grading drawings.

1.4 PERFORMANCE REQUIREMENTS

A. Design 100 percent water-coverage irrigation system for the turf and planting bed areas indicated on the landscape plan. The spacing of the sprinkler heads shall not exceed the performance radius of the sprinkler head. Match precipitation rates for each zone.

B. Location of Sprinklers and Specialties: Turf areas and planting bed areas shall be watered on separate zones. Minor adjustments necessary to avoid plantings and obstructions such as signs, fence posts and light standards may be allowed as long as 100 percent water coverage is maintained. Spacing of sprayheads in planting beds shall not exceed 15'. Drip irrigation of planting beds is encouraged.

C. Sleeves: Sleeves shall be schedule 80 pvc in area of vehicular traffic. Schedule 40 in all other areas.

D. Dekalb County Water Meter: Contractor shall be responsible for acquiring a water meter and tap for the irrigation system per the requirements of Dekalb County. Contractor shall pay Dekalb County tap and meter fees.

1.5 SUBMITTALS

A. Shop Drawings and Equipment Product Information:

1. Prior to purchasing materials, submit 5 sets of product information on all sprinkler heads, automatic valves, quick coupling valves, controller, and pipe to be used on the project and construction shop drawing.

B. Record Drawings and Instructions

1. Upon completion of installation, furnish one set of reproducible and one set of printed record drawings showing all sprinkler heads, valves, drains, and pipelines to scale with dimensions. These drawings shall have dimensions from easily located stationary points as they relate to all valves, mainlines, and wire. Clearly note all approved substitutions of size, material, etc. Complete, concise instruction sheets and parts lists covering all operating equipment and weathering techniques shall be bound into folders and furnished to the Owner in three (3) copies. Submission of this information is a requirement for final acceptance.
2. The Landscape Architect shall review the shop drawing for compliance with these specifications and shall stamp the drawing in one of the following ways:
   a. Reviewed (this means the contractor may proceed with the work as indicated on the drawing)
   b. Reviewed and Noted (this means the contractor may proceed with the work as indicated on the drawing and noted by the Landscape Architect)
   c. Unacceptable - Resubmit (this means that the drawings are unacceptable and must be resubmitted as noted by the Landscape Architect)
3. Superintendents resume, showing a minimum of three years experience supervising the installation of landscape irrigation systems.

1.6 QUALITY ASSURANCE

A. Conference: Before any work is started a conference shall be held between the Contractor and the Owner concerning the work under this contract.

B. The Contractor shall maintain continuously a competent superintendent, satisfactory to the Owner, on the work during progress with authority to act or him in all matter pertaining to the work. The superintendent must have a minimum of three years experience in supervising irrigation system installation.

C. Adjustment of the sprinkler heads and automatic equipment will be done by the Contractor upon completion of installation, to provide optimum performance.

1.7 EXTRA MATERIALS

A. Furnish extra materials described below that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Sprinkler Units: Five of each type and size indicated.

PART 2 - PRODUCTS

2.1 PIPE AND FITTINGS

A. All pipe damaged or rejected because of defects shall be removed from the site at the time of said rejection.

B. All piping (2 1/2) two and one half and larger will be equipped with gaskets.

C. All fittings for pipes two and one half (2 1/2) inches or larger will be equipped with gaskets.

D. All piping downstream of electric valves, sizes (3) inches and smaller, shall be rigid unplasticized PVC 200 PSI working pressure extruded from virgin parent material of the type specified on the drawings. The pipe shall be homogeneous throughout and free from visible cracks, holes, foreign materials, blisters, wrinkles and permanently marked with the manufacture's name, material, size, and schedule type. Pipe must bear the NFS seal.

E. All mainline piping and underground piping under continuous pressure shall be rigid unplasticized PVC-Class 200 PSI working pressure extruded from virgin parent material of the type specified on the drawings. The pipe shall be homogeneous throughout and free from visible cracks, holes, and foreign materials, blisters, wrinkles and dents.

F. All plastic fittings to be installed shall be molded fittings manufactured of the same material as the pipe and shall be suitable for solvent weld, slip joint ring tight seal, or screwed connections NO fitting made of other material shall be used except as hereinafter specified.

G. Slip fitting socket tapers shall be so sized that a dry unsoftened pipe end conforming to these special provisions can be inserted no more than halfway into the socket. Plastic saddle and flange fittings will not be permitted. Only Schedule 80 pipe may be threaded.

2.2 SLEEVES

A. All sleeves shall be Class 200 PVC or stronger.

B. All sleeves shall be installed under proposed pavement areas prior to subgrade and base construction.

C. Sleeves shall have a minimum horizontal separation of 18" and a maximum of twenty-four (24) inch clearance below bottom of curb.

D. All sleeves shall have a minimum horizontal separation of twenty-four (24) and maximum of thirty-six inches from center to center.

E. Stub up sleeve pipe twelve (12) inches above ground surface and cap. Paint cap with fluorescent orange paint for easy identification.

F. The contractor shall make any adjustments necessary to accommodate existing vegetation, utilities, or other existing conditions.

G. If the road crossings are designated as being bore locations the bore must be ample size to accommodate the size sleeve specified.

2.3 CONTROL SYSTEM

A. The automatic controllers shall be made by the same manufacturer as valves.

B. Install Rain Check or Mini-Click type shut off device to override the control timer in the event of rain.

2.4 CONTROL WIRE

A. Control wire shall be type UF, UL approved, for direct burial and shall be gauge 14 or larger for the control wire and gauge 12 or larger for common wire.

B. Joining of underground wires shall be made with watertight connectors in valve boxes. No splicing between boxes is acceptable.

C. All wire connections in valve boxes; first example shall stay open until the Designer approves.

2.5 IRRIGATION VALVES

A. Zone Control Valves

1. Globe-type diaphragm valves of normally closed design, with bronze bodies or heavy-duty plastic and covers (type noted on drawings). Operation accomplished by means of an integrally mounted heavy-duty 24 volt AC solenoid complying with National Electrical Code, Class II Circuit, solenoid coil potted in epoxy resign within a plastic-coated stainless steel housing. Solenoids shall be completely waterproof, suitable for direct underground burial. Provide a flow stem adjustment in each valve.

2.6 VALVE BOXES

A. All valves shall be installed in thermoplastic valve access boxes of the size required to permit access to the valve. Valve boxes shall include black thermoplastic locking covers. Manufacturer - Ametek or approved equal.

B. All valve boxes shall be installed on at least a two (2) cubic foot gravel base to provide foundation and drainage.

C. All valve box elevations shall be ½" below finished grade.

2.7 THRUST BLOCKS

A Place one cubic ft. of concrete for each inch of pipe diameter for thrust block. Thrust shall not allow vertical or horizontal movement of pipe in any direction unless otherwise noted on design. Thrust blocking shall be provided on all piping three (3) inch diameter and larger.

PART 3 - EXECUTION

3.1 IRRIGATION SYSTEM

A. Install a complete irrigation system with head to head coverage in accordance with the approved shop drawing submittal.

PART 4 - CODES, PERMITS, WARRANTY, AND GUARANTEE

4.1 CODES AND ORDINANCES

A. All materials and operations shall conform to all applicable codes and ordinances. It is the Contractor's responsibility to investigate and follow all regulations.

4.2.1 PERMITS AND FEES

B. The Contractor shall obtain, at his expense, all required permits and shall pay all required fees. Any penalties imposed due to failure to obtain any permit or pay any fee shall be the responsibility of the Contractor.

4.3 WARRANTY AND GUARANTEE

The Contractor shall furnish a certificate of warranty registration and a written guarantee of work and materials for a one-year period from the date of Substantial Completion of the project

END OF SECTION 02810

SECTION 02920

LAWNS AND GRASSES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Fine grading and preparing lawn areas.
2. Furnishing and applying new topsoil.
3. Furnishing and applying soil amendments.
4. Furnishing and applying fertilizers.
5. Seeding new lawns.
6. Sodding new lawns.
7. Replanting unsatisfactory or damaged lawns.

B. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section "Site Clearing" for protection of existing trees and planting, topsoil stripping and stockpiling, and site clearing.
2. Section "Earthwork" for excavation, filling, rough grading, and subsurface aggregate drainage and drainage backfill.
3. Section "Erosion and Sedimentation Control" for erosion control blanket.

1.3 SUBMITTALS

A. General: Submit each item in this Article according to the Conditions of the Contract and Specification Sections.

B. Product data for the following:

1. Aluminum sulfate.
2. Fertilizers.

C. Certification of grass seed from seed vendor for each grass-seed mixture stating the botanical and common name and percentage by weight of each species and variety, and per-

centage of purity, germination, and weed seed. Include the year of production and date of packaging.

1. Certification of each seed mixture for sod, identifying sod source, including name and telephone number of supplier.

D. Certification by product manufacturer that the following products supplied comply with requirements:

1. Limestone.

2. Fertilizers.

E. Qualification data for firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

F. Material test reports from qualified independent testing agency indicating and interpreting test results relative to compliance of the following materials with requirements indicated.

1. Analysis of existing surface soil.

2. Analysis of imported topsoil.

G. Planting schedule indicating anticipated dates and locations for each type of planting.

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed landscaping work similar in material, design, and extent to that indicated for this Project and with a record of successful grass establishment.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on the Project site during times that grass planting is in progress.

B. Topsoil Analysis: The Contractor at his expense shall furnish a soil analysis made by a qualified independent soil-testing agency stating percentages of organic matter, inorganic matter (silt, clay, and sand), deleterious material, pH, and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for lawn growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and any limestone, aluminum sulfate, or other soil amendments to be added to produce a satisfactory topsoil.

1.5 DELIVERY, STORAGE, AND HANDLING

1. Seed: Deliver seed in original sealed, labeled, and undamaged containers.

2. Sod: Harvest, deliver, store, and handle sod according to the requirements of the American Sod Producers Association's (ASPA) "Specifications for Turfgrass Sod Materials and Transplanting/Installing" (2005).

3. Topsoil: Stockpile reusable surface soil on site and surround with type "A" silt fence. Deliver imported topsoil and spread in the same day.

1.6 COORDINATION AND SCHEDULING

A. Planting Season: Sow lawn seed and install sod during normal planting seasons for type of lawn work required. Correlate planting with specified maintenance periods to provide required maintenance from date of Substantial Completion.

B. Weather Limitations: Proceed with planting only when existing and forecast weather conditions are suitable for work.

1.7 MAINTENANCE

A. Begin maintenance of lawns immediately after each area is planted and continue until acceptable lawn is established, but for not less than the following periods:

1. Seeded Lawns: 90 days after date of Substantial Completion.

2. Sodded Lawns: 90 days after date of Substantial Completion.

B. Maintain and establish lawns by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.

1. Replant bare areas with same materials specified for lawns.

C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment to convey water from sources and to keep lawns uniformly moist to a depth of 4 inches.

1. Activate automatic Irrigation System or lay out temporary lawn-watering system and arrange watering schedule to prevent wilting, puddling, erosion, and displacement of seed or mulch as required. Lay out temporary watering system to avoid walking over muddy or newly seeded areas.

2. Water lawn at the minimum rate of 1 inch per week.

D. Mow lawns as soon as there is enough top growth to cut with mower set at specified height for principal species planted. Repeat mowing as required to maintain specified height without cutting more than 40 percent of the grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain grass height:

E. Postfertilization: Apply fertilizer to lawn after first mowing and when grass is dry.

1. Use fertilizer that will provide actual nitrogen of at least 1 lb per 1000 sq. ft of lawn area.

F. Guarantee For Permanent Grass: The Contractor shall guarantee for one (1) full year a live and vigorous stand of permanent grass at the time of final acceptance of the contract work .

G. Owner's Responsibility: It is the Owner's responsibility to properly maintain the grass and lawn after the completion of the Contractor's responsibilities stated herein.

H. Care and Maintenance Instructions: The Contractor shall furnish the Owner a written and detailed description for the care and maintenance of the grass. Such instructions shall include, but not limited to, specific instructions for the methods, frequency, and types of products for weed control, fertilization, insect and disease control, mulching, watering, mowing for various times of the growing season and spot seeding. Such instructions shall accompany the Contractor's request for final review, for establishing date of acceptance of the planted grass, shall be subject to Owner's Representative's review and shall be in the possession of the Owner prior to the date of Substantial Completion of the Work.

PART 2 -PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with the Association of Official Seed Analysts' "Rules for Testing Seeds" for purity and germination tolerances.

B. Seed Mixture: Provide seed of grass species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated on Schedules at the end of this Section.

2.2 SOD

A. Sod: Certified turfgrass sod produced under the rules and regulations of the Georgia Crop Improvement Association, Inc. and complying with ASPA specifications for machine-cut thickness, size, strength, moisture content, and mowed height, and free of weeds and undesirable native grasses. Provide viable sod of uniform density, color, and texture of the specified turfgrass species, strongly rooted, and capable of vigorous growth and development when planted.

1. Species: Provide sod of grass species and varieties, proportions by weight, and minimum percentages of purity, germination, and maximum percentage of weed seed as indicated on Schedules at the end of this Section.

2.3 TOPSOIL

A. Topsoil: ASTM D 5268 (1997), pH range of 5.5 to 7, 4 percent organic material minimum, free of stones, roots, and branches, 1 inch or larger in any dimension, and other extraneous materials harmful to plant growth.

1. Supplement with imported topsoil. Clean topsoil free of roots, plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth. Provide certificate of origination signed by the owner of the borrow pit, ½ c.f. sample and analysis by the independent testing agency for approval from the topsoil source prior to delivery to the site.

2.4 SOIL AMENDMENTS

A. Lime: ASTM C 602, (2001) Class T, agricultural limestone containing a minimum 80 percent calcium carbonate equivalent, with a minimum 99 percent passing a No. 8 sieve and a minimum 75 percent passing a No. 60 sieve.

1. Provide lime in the form of dolomitic limestone.

B. Aluminum Sulfate: Commercial grade, unadulterated.

C. Herbicides: EPA registered and approved, of type recommended by manufacturer.

D. Water: Potable.

2.5 FERTILIZER

A. Superphosphate: Commercial, phosphate mixture, soluble; minimum of 20 percent available phosphoric acid.

B. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea-form, phosphorous, and potassium in the following composition:

1. Composition: 1 lb per 1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

2. Slow-Release Fertilizer: Granular fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

a. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2.6 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Fiber Mulch: Biodegradable dyed-wood cellulose-fiber mulch, nontoxic, free of plant growth- or germination-inhibitors, with maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.

C. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application, nontoxic and free of plant growth- or germination-inhibitor.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and for conditions affecting performance of work of this Section. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

B. Protect adjacent and adjoining areas from hydroseed overspraying.

C. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

3.3 PLANTING SOIL PREPARATION

A. Limit subgrade preparation to areas that will be planted in the immediate future.

B. Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter.

C. Mix soil amendments and fertilizers with topsoil at rates indicated by an independent testing service. Delay mixing fertilizer if planting does not follow placing of planting soil within a few days. Either mix soil before spreading or apply soil amendments on surface of spread topsoil and mix thoroughly into top 4 inches of topsoil before planting.

D. Spread planting soil mixture to depth required to meet thickness, grades, and elevations shown, after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen.

1. Place approximately 1/2 the thickness of planting soil mixture required. Work into top of loosened subgrade to create a transition layer and then place remainder of planting soil mixture.

2. Allow for sod thickness in areas to be sodded.

E. Preparation of Unchanged Grades: Where lawns are to be planted in areas unaltered or undisturbed by excavating, grading, or surface soil stripping operations, prepare soil as follows:

1. Remove and dispose of existing grass, vegetation, and turf. Do not turn over into soil being prepared for lawns.

2. Till surface soil to a depth of at least 6 inches. Apply required soil amendments and initial fertilizers and mix thoroughly into top 4 inches of soil. Trim high areas and fill in depressions. Till soil to a homogenous mixture of fine texture.

3. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.

4. Remove waste material, including grass, vegetation, and turf, and legally dispose of it off the Owner's property.

F. Grade lawn and grass areas to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future. Remove trash, debris, stones larger than 1 inch in any dimension, and other objects that may interfere with planting or maintenance operations.

G. Moisten prepared lawn areas before planting when soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

H. Restore prepared areas if eroded or otherwise disturbed after fine grading and before planting.

3.4 HYDROSEEDING NEW LAWNS

A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogenous slurry suitable for hydraulic application.

1. Mix slurry with nonasphaltic tackifier.

2. Apply slurry uniformly to all areas to be seeded in a 2-step process. Apply first slurry application at the minimum rate of 500 lb per acre dry weight but not less than the rate required to obtain specified seed-sowing rate. Apply slurry cover coat of fiber mulch at a rate of 1000 lb per acre.

3.5 SODDING NEW LAWNS

A. Lay sod within 24 hours of stripping. Do not lay sod if dormant or if ground is frozen.

B. Remove plastic netting from roll sod while placing sod. Discard netting in a legal manner. Do not burn on site.

C. Lay sod to form a solid mass with tightly fitted joints. Butt ends and sides of sod; do not stretch or overlap. Stagger sod strips or pads to offset joints in adjacent courses. Avoid damage to subgrade or sod during installation. Tamp and roll lightly to ensure contact with subgrade, eliminate air pockets, and form a smooth surface. Work sifted soil or fine sand into minor cracks between pieces of sod; remove excess to avoid smothering sod and adjacent grass.

1. Lay sod across angle of slopes exceeding 1:3.

D. Saturate sod with fine water spray within 2 hours of planting. During first week, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below the sod.

E. Apply seed and protect with straw mulch as required for new lawns.

F. Water newly planted areas and keep moist until new grass is established.

3.6 SATISFACTORY LAWN

A. Seeded lawns will be satisfactory provided requirements, including maintenance, have been met and a healthy, uniform, close stand of grass is established, free of weeds, bare spots exceeding 5 by 5 inches, and surface irregularities.

B. Sodded lawns will be satisfactory provided requirements, including maintenance, have been met and healthy, well-rooted, even-colored, viable lawn is established, free of weeds, open joints, bare areas, and surface irregularities.

C. Replant lawns that do not meet requirements and continue maintenance until lawns are satisfactory.

3.7 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto surface of roads, walks, or other paved areas.

B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period until lawn is established.

3.8 PLANTING SOIL AMENDMENTS SCHEDULE

A. Lawns: Provide soil amendments in weights or ratio as recommended by soil analysis report:

3.9 SEED MIXTURES & SOD SCHEDULE

A. Sod: Tifway (T-419) provided by a Turfgrass Grower registered and certified in the state of Georgia. Contractor shall submit certification data upon delivery of sod to the site.

B. Partial Shade Mixture: Provide certified grass-seed blends or mixes, proportioned by weight, as follows:

Proportion	Name	Min. Pct. Germ.	Min. Pct. Pure Sd.	Max. Pct. Weed Sd.
	March 15-Nov. 15			
100 pct.	Rebell II Fescue 40 lbs. per acre	80	85	0.50
	Nov. 15 – March 15			
60 pct.	Rebell II Fescue 40 lbs. per acre	80	85	0.50
40 pct.	Common Bermuda (un-hulled) 10 lbs/ac	80	85	0.50

END OF SECTION 02920

SECTION 02930

EXTERIOR PLANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes the following:

1. Trees.

2. Shrubs.

3. Groundcover.

B. Related Sections include the following:

1. Section "Earthwork"

1.3 DEFINITIONS

A. Balled and Burlapped Stock: Exterior plants dug with firm, natural balls of earth in which they are grown, with ball size not less than diameter and depth recommended by ANSI Z60.1 (1986) for type and size of tree or shrub required; wrapped, tied, rigidly supported, and drum-laced as recommended by ANSI Z60.1 (2004).

B. Bare-Root Stock: Exterior plants with a well-branched, fibrous-root system developed by transplanting or root pruning, with soil or growing medium removed, and with not less than minimum root spread according to ANSI Z60.1 (2004) for kind and size of exterior plant required.

C. Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 (2004) for kind, type, and size of exterior plant required.

D. Finish Grade: Elevation of finished surface of planting soil.

E. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

F. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

G. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated.

B. Samples for Verification: For each of the following:

1. 5 lb of mineral mulch for each color and texture of stone required, in labeled plastic bags.

2. Edging materials and accessories, of manufacturer's standard size, to verify color selected.

C. Product Certificates: For each type of manufactured product, signed by product manufacturer, and complying with the following:

1. Manufacturer's certified analysis for standard products.

2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.

D. Qualification Data: For landscape Installer.

E. Material Test Reports: For existing surface soil and imported topsoil.

F. Planting Schedule: Indicating anticipated planting dates for exterior plants.

G. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year. Submit before expiration of required maintenance periods.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.

1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when exterior planting is in progress.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for plant growth. State recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce a satisfactory topsoil.

D. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in "American Standard for Nursery Stock.", ANSI Z60.1, (2004).

E. Tree and Shrub Measurements: Measure according to ANSI Z60.1, (2004) with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.

F. Observation: Landscape Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Landscape Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

1. Notify Landscape Architect of sources of planting materials seven days in advance of delivery to site.

G. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section "Project Management and Coordination."

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver exterior plants freshly dug.

1. Immediately after digging up bare-root stock, pack root system in wet straw, hay, or other suitable material to keep root system moist until planting.

B. Do not prune trees and shrubs before delivery, except as approved by Landscape Architect. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery.

C. Handle planting stock by root ball.

D. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants trees in shade, protect from weather and mechanical damage, and keep roots moist.

1. Heel-in bare-root stock. Soak roots in water for two hours if dried out.

2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.

3. Do not remove container-grown stock from containers before time of planting.

4. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition.

1.7 COORDINATION

A. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

B. Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns, unless otherwise acceptable to Landscape Architect.

1. When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

1.8 WARRANTY

A. Special Warranty: Warrant the following exterior plants, for the warranty period indicated, against defects including death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, or abuse by Owner, or incidents that are beyond Contractor's control.

1. Warranty Period for Trees and Shrubs: One year from date of Substantial Completion.

2. Warranty Period for Ground Cover and Plants: One year from date of Substantial Completion.

3. Remove dead exterior plants immediately. Replace immediately unless required to plant in the succeeding planting season.

4. Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.

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

1.9 MAINTENANCE

A. Trees and Shrubs: Maintain for the following maintenance period by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, tightening and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray as required to keep trees, shrubs and ground covers free of insects and disease. Restore or replace damaged tree wrappings.

1. Maintenance Period: 3 months from date of Substantial Completion.

B. Ground Cover and Plants: Maintain for the following maintenance period by watering, weeding, fertilizing, and other operations as required to establish healthy, viable plantings:

1. Maintenance Period: 3 months from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 TREE AND SHRUB MATERIAL

A. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1 (2004), with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

B. Grade: Provide trees and shrubs of sizes and grades complying with ANSI Z60.1 (2004) for type of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.

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

D. Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.

E. If formal arrangements or consecutive order of trees or shrubs is shown, select stock for uniform height and spread, and number label to assure symmetry in planting.

2.2 SHADE AND FLOWERING TREES

A. Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 (2004) for type of trees required.

1. Provide balled and burlapped trees.

2. Branching Height: One-third to one-half of tree height.

B. Small Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1 (2004); stem form as follows:

1. Provide balled and burlapped trees.

C. Multi-stem Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1 (2004); stem form as follows:

1. Provide balled and burlapped trees.

2.3 TOPSOIL

A. Topsoil: Refer to Section 02300 Earthwork.

2.4 INORGANIC SOIL AMENDMENTS

A. Lime: ASTM C 602 (2001), agricultural limestone containing a minimum 80 percent calcium carbonate equivalent and as follows:

1. Provide lime in form of dolomitic limestone.

B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum 99 percent passing through No. 6 sieve and a maximum 10 percent passing through No. 40 sieve.

C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.

D. Aluminum Sulfate: Commercial grade, unadulterated.

E. Perlite: Horticultural perlite, soil amendment grade.

F. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.

G. Sand: Clean, washed, natural or manufactured, free of toxic materials.

H. Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.

I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

2.5 ORGANIC SOIL AMENDMENTS

A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch sieve; soluble salt content of 5 to 10 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:

1. Organic Matter Content: 50 to 60 percent of dry weight.

2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.

B. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.

C. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.

1. In lieu of decomposed wood derivatives, mix partially decomposed wood derivatives with at least 0.15 lb of ammonium nitrate or 0.25 lb of ammonium sulfate per cubic foot of loose sawdust or ground bark.

D. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

2.6 FERTILIZER

A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 20 percent phosphoric acid.

B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.

C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:

1. Composition: 1 lb/1000 sq. ft. of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.

2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:

1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.

2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

2.7 MULCHES

A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:

1. Type: Pine needles .

2.8 STAKES AND GUYS

A. DeepRoot Arbortie polypropylene material with wooden stakes, or equal.

2.9 MISCELLANEOUS PRODUCTS

A. Trunk-Wrap Tape: Two layers of crinkled paper cemented together with bituminous material, 4-inch- wide minimum, with stretch factor of 33 percent.

2.10 PLANTING SOIL MIX

A. Planting Soil Mix: Mix topsoil with the following soil amendments as recommended by the soils test results.

1. Compost

2. Loose Peat

3. Loose Wood Derivatives

4. Sulfur

5. Agricultural Gypsum

6. Sand Plus 10 Percent Diatomaceous Earth

7. Bonemeal

8. Superphosphate

9. Commercial Fertilizer

10. Slow-Release Fertilizer

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive exterior plants for compliance with requirements and conditions affecting installation and performance. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Lay out individual tree and shrub locations and areas for multiple exterior plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before planting. Make minor adjustments as required.

D. Lay out exterior plants at locations directed by Landscape Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

E. Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks, branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

1. If deciduous trees or shrubs are moved in full leaf, spray with antidesicant at nursery before moving and again two weeks after planting.

3.3 PLANTING BED ESTABLISHMENT

A. Loosen subgrade of planting beds to a minimum depth of 8 inches. Remove stones larger than 1-1/2 inches in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Apply superphosphate (if required by soils test) fertilizer directly to subgrade before loosening.

2. Spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.

   a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.

   b. Mix lime with dry soil before mixing fertilizer.

3. Spread planting soil mix to a depth of 8 inches but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

   a. Spread approximately one-half the thickness of planting soil mix over loosened subgrade. Mix thoroughly into top 4 inches of subgrade. Spread remainder of planting soil mix.

B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.

C. Restore planting beds if eroded or otherwise disturbed after finish grading and before planting.

3.4 TREE AND SHRUB EXCAVATION

A. Pits and Trenches: Excavate circular pits with sides sloped inward. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.

   1. Excavate approximately three times as wide as ball diameter for balled and burlapped stock.

   2. Excavate at least 12 inches wider than root spread and deep enough to accommodate vertical roots for bare-root stock.

B. Subsoil removed from excavations may be used as backfill.

C. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

   1. Hardpan Layer: Drill 6-inch- diameter holes into free-draining strata or to a depth of 10 feet, whichever is less, and backfill with free-draining material.

D. Drainage: Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.

E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

3.5 TREE AND SHRUB PLANTING

A. Set balled and burlapped stock plumb and in center of pit or trench with top of root ball 1 inch above adjacent finish grades.

1. Remove burlap and wire baskets from tops of root balls and partially from sides, but do not remove from under root balls. Remove pallets, if any, before setting. Do not use planting stock if root ball is cracked or broken before or during planting operation.

2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

B. Set container-grown stock plumb and in center of pit or trench with top of root 1 inch above adjacent finish grades.

1. Carefully remove root ball from container without damaging root ball or plant.

2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

C. Set and support bare-root stock in center of pit or trench with root collar or trunk flare flush with adjacent finish grade. Spread roots without tangling or turning toward surface, and carefully work backfill around roots by hand. Puddle with water until backfill layers are completely saturated. Plumb before backfilling, and maintain plumb while working backfill around roots and placing layers above roots. Tamp final layer of backfill. Remove injured roots by cutting cleanly; do not break.

D. Organic Mulching: Apply 3-inch average thickness of organic mulch extending 12 inches beyond edge of planting pit or trench. Do not place mulch within 3 inches of trunks or stems.

3.6 TREE AND SHRUB PRUNING

A. Prune, thin, and shape trees and shrubs as directed by Landscape Architect.

B. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by Landscape Architect, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character. Shrub sizes indicated are sizes after pruning.

3.7 GUYING AND STAKING

A. Upright Staking and Tying: Stake trees of 2- through 5-inch caliper. Stake trees of less than 2-inch caliper only as required to prevent wind tip-out. Use a minimum of 2 stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend at least 72 inches above grade. Set vertical stakes and space to avoid penetrating root balls or root masses. Support trees with two strands of tie wire encased

in hose sections at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree. Use the number of stakes as follows:

1. Use 2 stakes for trees up to 12 feet high and 2-1/2 inches or less in caliper; 3 stakes for trees less than 14 feet high and up to 4 inches in caliper. Space stakes equally around trees.

3.8 PLANTING BED MULCHING

A. Mulch backfilled surfaces of planting beds and other areas indicated.

1. Organic Mulch: Apply 3-inch average thickness of organic mulch, and finish level with adjacent finish grades. Do not place mulch against plant stems.

3.9 CLEANUP AND PROTECTION

A. During exterior planting, keep adjacent paving and construction clean and work area in an orderly condition.

B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged exterior planting.

3.10 DISPOSAL

A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION 02930

SECTION 03110

CONCRETE FORMWORK

SKATE PARK

PART 1 - GENERAL

1.01 DESCRIPTION

Provide formwork and accessories for construction of cast-in-place concrete work.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 03210: Concrete Reinforcement - Skate Park

B. Section 03310: Cast-in-Place Concrete - Skate Park

C. Section 03370: Shotcrete - Skate Park

1.03 QUALITY ASSURANCE

A. Design Criteria: Conform to ACI 347-68, Chapter I, (2000).

B. Allowable Tolerances: Conform to ACI 347-68, 2.4 (2000).

C. Provide at least one person thoroughly familiar with the specification requirements, completely trained, qualified to do the work, who shall be present at all times on the project site directing the work. Provide additional skilled personnel to insure installation is in strict conformance with the design documents.

1.04 STORAGE OF MATERIALS

A. Store materials on and under protective sheeting.

1.05 COORDINATION

A. Notify responsible trades of schedules of concrete pours to allow time for installation and coordination.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Forms:

1. Flatwork and Bond Beam: 1" [2.54cm] Exterior Masonite Siding for all Tangents. 7/16" [11.11mm] Exterior Masonite Siding for all Radii. Create true arc to tangent connections as per layout plan. No kinks will be accepted.

2. Vertical and Custom Work: Exterior grade Standard Douglas Fir (or equal plywood), minimum three ply, one smooth side sufficiently thick to sustain loads, or steel forms.

B. Form Oil: Non staining, paraffin-base oil having a specific gravity of between 0.8 and 0.9.

C. Form Ties: Bolts, rods, or patented devices having tensile strength of 3000 lbs. [1360.78kg], adjustable length, free of lugs which would leave a hole larger than 5/8" [15.88mm] diameter and having a full one-inch [2.54cm] depth of break-back.

PART 3 - EXECUTION

3.01 CONSTRUCTION AND ERECTION

A. Construct forms in accordance with ACI 347-68, (2000).

B. Build forms to shapes, lines and dimensions of detailed members of concrete construction. Set to line and grade, brace and secure to withstand placing of concrete and maintain their shape and position.

C. Construct forms with care to produce concrete surfaces without unsightly or objectionable form marks in exposed concrete surfaces.

D. Thoroughly clean surfaces of form material and remove nails before reuse. Do not reuse damaged or worn forms. Coat contact surfaces of forms with non-staining form oil prior to placing metal reinforcement.

E. Immediately before placing concrete, clean forms of chips, sawdust, and debris. Immediately after removal of forms, remove form ties, wires, and defects and patch.

3.02 INSERTS AND ACCESSORIES

A. Make provisions for required installation of accessories, bolts, hangers, sleeves, anchor slots and inserts cast in concrete. Obtain suitable templates or instructions for installation of items. Place expansion joints where detailed and required.

3.03 REMOVAL OF FORMS AND SHORING

A. Remove forms and shores in accordance with ACI 347-68, (2000).

3.04 CLEANUP

A. Remove debris and trash.

END OF SECTION 03110

SECTION 03210

CONCRETE REINFORCEMENT
SKATE PARK

PART 1 - GENERAL

1.01 DESCRIPTION:

Provide steel reinforcement for cast-in-place concrete.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

A. Section 03110: Concrete Formwork - Skate Park

B. Section 03310: Cast-in-Place Concrete - Skate Park

C. Section 03370: Shotcrete - Skate Park

1.03 DELIVERY AND STORAGE:

A. Stack reinforcing steel in tiers. Mark each length, size, shape and location. Maintain reinforcement free of dirt, mud, paint or rust.

1.04 REFERENCE STANDARDS:

A. American Concrete Institute (ACI):

1. ACI 315-80, Manual of Standard Practice for Detailing Reinforced Concrete Structures (2005).
2. ACI 318-77, Building Code Requirements for Reinforced Concrete (1999).

B. American Society for Testing and Materials (ASTM):

1. ASTM A233, (1999), Mild Steel Arc Welding Electrodes.
2. ASTM A615, (2006), Deformed Billet-Steel Bars for Concrete Reinforcement.
3. ASTM A706, (2006), Low-Alloy Steel Deformed Bars for Concrete Reinforcement.

C. Concrete Reinforcing Steel Institute (CRSI): Manual of Standard Practice (2002).

D. American Welding Society (AWS): Reinforcing Steel Welding Code, D12.1-75, (2003), including latest revisions.

1.05 SUBMITTALS:

A. Shop Drawings: Indicate complete reinforcing method for each concrete member including materials, sizes, bends, dimensions, stirrup spacing, and placing details not shown on drawings.

1.06 QUALITY ASSURANCE

A. Provide at least one person thoroughly familiar with the specification requirements, completely trained, qualified to do the work, who shall be present at all times on the project site directing the work. Provide additional skilled personnel to insure installation is in strict conformance with the design documents.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Steel Reinforcement: Deformed billet steel, ASTM A615 (2006), Grade 60.

B. Welded Steel Reinforcement: Deformed low-alloy steel, ASTM A706, (2006), carbon content not exceeding 0.30% and manganese content not exceeding 0.60%. Identify and tag with manufacturer's heat identification number.

2.02 FABRICATION:

A. Fabricate to sizes, shapes, and lengths detailed in accordance with requirements of ACI 318-71 (2002) and ACI 315-65, (2002).

PART 3 - EXECUTION

3.01 INSTALLATION:

A. Accurately place reinforcing steel in accordance with drawings. Thoroughly clean reinforcement of any coating which would reduce bonding. Do not heat, cut, or bend bars without Landscape Architect's approval. Do not splice reinforcement at points of maximum stress. Stagger splices in adjacent bars and provide a minimum overlap of 30-bar diameters at splices unless specifically noted otherwise on Drawings.

B. Securely saddle tie intersections with No. 18 ga. black annealed wire. Rigidly secure reinforcement in place. Provide concrete coverage as shown on Drawings.

3.02 WELDING REINFORCEMENT:

A. Weld deformed steel reinforcement bars in strict accordance with AWS 12.1, (2005) using recommended pre-heat temperature and electrode for type of steel being welded.

B. Do not weld steel reinforcement bars without proper heat identification of bars.

3.03 CLEANUP:

A. Remove debris and trash resulting from specified work.

END OF SECTION 03210

SECTION 03300

CAST-IN-PLACE CONCRETE BUILDING

1PART - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Extent of concrete work is shown on drawings. Concrete paving, walks, curbs and gutter, equipment foundations and other miscellaneous concrete shall comply with this section unless noted otherwise.

B. Granular base or drainage fill course for support of slabs or grade is specified in this Section.

C. Quality control testing during construction is specified in this Section. (Furnished by the Owner).

D. Sealing expansion and control joints in concrete is specified in Section 07900 Joint Sealers.

E. Membrane vapor barriers are specified in Division 7.

1.3 SUBMITTALS

A. Product Data: Submit data for proprietary materials and items, including reinforcement and forming accessories, admixtures, patching compounds, waterstops, joint systems, curing compounds, finish materials, and (if requested by Architect) other products.

B. Shop Drawings: Reinforcement: Submit original shop drawings prepared by for fabrication, bending, and placement of concrete reinforcement. Comply with ACI 315, (1980) "Manual of Standard Practice for Detailing Reinforced Concrete Structures," showing bar schedules, stirrup spacing, diagrams of bent bars, arrangement of concrete reinforcement. Include special reinforcement for openings through concrete structures. Show location of proposed construction joints. Locate all openings, sleeves, trenches, depressions, joints, inserts, and other items affecting the reinforcement and placing of concrete.

C. Samples: Submit samples of materials as requested by Architect, including names, sources, and descriptions.

D. Submit a complete description of proposed curing methods for all types of conditions.

E. Laboratory Test Results: Submit laboratory test reports for concrete materials and mix design test. Submit reinforcing steel products certificates of mill analysis.

1.4 QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of the dates of the following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. ACI 301, (2001) "Specifications for Structural Concrete for Buildings."
2. ACI 318-95, (2001) "Building Code Requirements Structural Concrete." The term "Building Official" used in this Standard shall also be interpreted to mean the Architect.
3. ACI 304, (2000) "Recommended Practice for Measuring, Mixing, Transporting and Placing Concrete."
4. ACI 305R, (1991) "Hot Weather Concreting."
5. ACI 306R, (2001) "Cold Weather Concreting."
6. ACI 309R, (1996) "Identification and Control of Consolidation Related Surface Defects in Formed Concrete."
7. ACI 315, (1980) "Details and Detailing of Concrete Reinforcement."
8. Concrete Reinforcing Steel Institute (CRSI), "Manual of Standard Practice" (2002).
9. ACI 305R, (1991) Guide for Measuring, Mixing, Transporting and Placing Concrete.
10. Standard Building Code (Adopted Edition).

B. Concrete Design Testing Service: Engage a testing laboratory acceptable to Architect to design and test proposed concrete mixes.

C. Quality Control Testing Service: A testing laboratory selected by the Architect shall perform quality control testing in accordance with Part 3. This service shall be employed by the Owner.

D. Materials and installed work may require testing and retesting at anytime during progress of work. Tests, including retesting of rejected materials for installed work, shall be done at Contractor's expense.

E. Exposed surfaces throughout the project shall have the same texture and color for like locations.

F. Installer Qualifications: Provide at least one person thoroughly familiar with specification requirements, completely trained, qualified to perform the work, who shall be present at all times on the project site directing the work. Provide additional skilled personnel to ensure installation in strict accordance with design documents.

G. Allowable tolerances for concrete placement:

1. Variation from level or grades specified or indicated; unless otherwise noted:

a) Slabs

(1) In any 10 foot length ¼ inch

(2) In any bay or in any 20 foot length

and maximum for the entire length δ inch

2. Variation of the linear building lines from established position in plan and related position of columns, walls and partitions:

a) In any bay ¼ inch
b) In any 20 foot length δ inch
c) Maximum for the entire length ½ inch

3. Variation in the sizes and location of sleeves, floor openings, and wall openings ¼ inch

4. Variation in the thickness of slabs ¼ inch

5. Footings, variations in:

a) Dimensions in plan 1 inch
b) Misplacement of eccentricity: 2 percent of the footing width in the direction of misplacement but not more than 2 inches
c) Thickness:
(1) Decrease 5% or maximum 2 inches
(2) Increase No limit

6. Steps, variations in:

a) Each flight:
(1) Rise χ inch
(2) Run ¼ inch
b) Consecutive steps:
(1) Riser 1/16 inch
(2) Tread χ inch

1.5 PROJECT CONDITIONS

A. Protection of Footings Against Freezing: Cover completed work at footing level with temporary or permanent cover to protect footings and adjacent subgrade against freezing; maintain cover for time period as necessary.

B. Protect adjacent finish materials against spatter during concrete placement. Promptly remove any spatter and restore finishes.

2PART - PRODUCTS

2.1 FORM MATERIALS

A. Forms for Exposed Finish Concrete: Plywood, metal, metal-framed plywood faced, or other acceptable panel-type materials, to provide continuous, straight, smooth, exposed surfaces.

Furnish in largest practicable sizes to minimize number of joints and to conform to joint system shown on drawings. Use plywood complying with U.S. Product Standard PS-1, (2005), "B-B (Concrete Form) Plywood", Class I, Exterior Grade or better, mill-oiled and edge-sealed, with each piece bearing legible inspection trademark.

B. Forms for Unexposed Finish Concrete: Plywood, lumber, metal, or other acceptable material. Provide lumber dressed on at least 2 edges and one side for tight fit.

C. 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.

D. Form Ties: Factory-fabricated, adjustable-length, removable or snap off metal form ties, designed to prevent form deflection and to prevent spalling concrete upon removal. Provide units which will leave no metal closer than 1-1/2" to surface. Provide ties which, when removed, will leave holes not larger than 1" diameter in concrete surface.

E. Design and erection of formwork is the Contractor's responsibility.

2.2 REINFORCING MATERIALS

A. Reinforcing Bars: ASTM A615, Grade 60, (2006) deformed.

B. Steel Wire: ASTM A82, (2005) plain, cold-drawn steel.

C. Welded Wire Fabric: ASTM A185, (2006) welded steel wire fabric.

D. Supports for Reinforcement: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded wire fabric in place. Use wire bar type supports complying with CRSI specifications. 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 1) or stainless steel protected (CRSI, Class 2). Do not use wood, brick, driven rebars, whole or broken CMU, or other unspecified materials.

2.3 CONCRETE MATERIALS

A. Portland Cement: ASTM C150, (2005) Type I or II. Use one brand of cement.

B. Normal Weight Aggregates: ASTM C33 (2003) and as herein specified. Provide aggregates from a single source for exposed concrete. Maximum size shall be 1" for slabs, 1½" for footings, and not more than 20% of the narrowest dimension between the sides of the forms or 75% of the minimum distance between parallel reinforcing, whichever is smaller.

C. Lightweight Aggregates: ASTM C330. (2005)

D. Water: Drinkable.

E. Air-Entraining Admixture: ASTM C260, (2001) certified by manufacturer to be compatible with other admixtures.

F. Water-Reducing Admixture: ASTM C494, (2005) Type A, and containing not more than 0.1 percent chloride ions and compatible with other admixtures.

G. All other materials not specifically described but required for a complete and proper installation shall be as selected by the Contractor subject to the Architect's approval.

H. Prohibited Admixtures: Calcium chloride thyocyanates or admixtures containing more than 0.1 percent chloride ions are not permitted.

2.4 RELATED MATERIALS

A. Liquid Membrane-Forming Curing Compound: Liquid type membrane-forming curing compound complying with ASTM C309, (2003) Type I, Class A. Moisture loss not more than 0.055 gr./sq.cm. when applied at 200 sq.ft./gal.

1. Subject to compliance with requirements, provide products of one of the following:

Master Builders
Euclid Chemical Company
The Burke Company
Sonneborn-Rexnord
Upco Chemical/USM Corporation
L&M Construction Chemicals
Gifford-Hill & Company
Protex Industries, Inc.
W.R. Meadows Company

2. Application:

a) Exterior surfaces and final application and on interior slabs which will be left exposed: 30% solids water emulsion acrylic curing and sealing compound.
b) Interior surfaces: 20% solids water emulsion acrylic curing and sealing compound.
c) Surfaces to receive ceramic tile, pavers, quarry tile, painted coating, or other material not compatible with curing and sealing compound: Dissipating type water emulsion curing compound, compatible with subsequent surface finish.

B. Sheet materials shall conform to ASTM C171 (2003).

C. Burlap cloth made from jute or kenaf and weighing approximately 9 oz. per sq.yd. for moist curing. Provide two layers.

2.5 GRANULAR FILL

A. Provide 4" compacted thickness crusher run aggregate under all slabs on grade.

2.6 PROPORTIONING AND DESIGN OF MIXES

A. Prepare design mixes for each type and strength of concrete by either laboratory trial batch or field experience methods as specified in ACI 318 (1998).

B. Submit written reports (including all laboratory tests or historical test data, including calculations) to Architect and Structural Engineer for each proposed mix for each class of concrete at least 15 days prior to start of work. Do not begin concrete production until mixes have been reviewed by Architect.

C. Design mixes to provide normal weight concrete with the following properties as indicated.

General Concrete: **Normal weight, 3000 psi,** 28-day compressive strength. Minimum 5.3 bags or 498 lbs. cement, slump 3"-5" w/c ratio of 0.50 maximum. For pump mix add 47 lbs., 0.5 bag, of cement. Slump for pump mix not to exceed 6".

D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant; at no additional cost to Owner and as accepted by Architect. Laboratory test data for revised mix design and strength results must be submitted to and accepted by Architect before using in work.

E. Admixtures:

Use non-chloride accelerating admixture in concrete slabs placed at ambient temperatures below 50EF (10EC).

Use high-range water-reducing admixture in pumped concrete, concrete for industrial slabs, architectural concrete, parking structure slabs, concrete required to be watertight, and concrete with water/cement ratios below 0.50.

Use air-entraining admixture in all concrete except footings. Add air- entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having total air content with a tolerance of plus-or-minus 1½ percent within following limits:

Concrete structures and slabs exposed to freezing and thawing, deicer chemicals, or subjected to hydraulic pressure: 5%

Other Concrete: 3%

Use admixtures in strict compliance with manufacturer's directions.

F. Fly Ash (Pozzolans) ASTM C618 (2005) may be partially substituted for cement not to exceed

25% of cement content. Adjust amount of fly ash depending on the weather conditions.

2.7 CONCRETE MIXING

Ready-Mix Concrete: Comply with requirements of ASTM C94, (2005) and as herein specified. During hot weather, or under conditions contributing to rapid setting of concrete, a shorter mixing time than specified in ASTM C94 (2005) may be required.

Water shall not be added to the mix at the job site except as directed by the laboratory that designed the mix. If water is added then an amount of cement shall be added to maintain the water/cement ratio. The mix shall then be turned 50 revolutions after adding water and cement. A slump test shall be taken of all concrete to which water was added. **All concrete in excess of slump shall not be used.**

3PART - EXECUTION

3.1 GENERAL

A. Coordinate the installation of joint materials, embedded items, and vapor retarders with placement of forms and reinforcing steel.

B. Notify Architect at least 72 hours in advance of placing concrete to permit inspection of forms and reinforcing. All embedded items of whatever nature shall be in place at least 24 hours prior to scheduled concrete pour and prior to inspection.

3.2 FORMS

A. 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. (2005) The design and engineering shall be the sole responsibility of the Contractor.

B. Design formwork to be readily removable without impact, shock, or damage to cast-in-place concrete surfaces and adjacent materials.

C. 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 back-up at joints to prevent leakage of cement paste.

D. 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.

E. 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.

F. Chamfer exposed corners and edges exposed to view, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

G. 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.

H. 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 to eliminate mortar leaks and maintain alignment.

3.3 VAPOR RETARDER INSTALLATION

Following leveling and tamping of subgrade base, place vapor retarder sheeting with longest dimension parallel with direction of pour.

3.4 PLACING REINFORCEMENT

A. 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. Avoiding cutting or puncturing vapor retarder during reinforcement placement and concreting operations.

B. Clean reinforcement of loose rust and mill scale, earth, ice, and other materials which reduce or destroy bond with concrete.

C. 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.

D. 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. Concrete coverage shall be as shown on the Project Drawings. Do not splice main reinforcing unless shown on the drawings. Continuous bars shall be lapped in accordance with ACI 318 (1998) Class B lap splices, unless noted otherwise, and corner bars shall be provided.

E. Install welded wire fabric in as long lengths as practicable. Lap adjoining pieces at least one

full mesh and lace splices with wire. Offset end laps in adjacent widths to prevent continuous laps in either direction.

3.5 JOINTS

A. Construction Joints: Locate and install construction joints as indicated or, if not indicated, locate so as not to impair strength and appearance of the structure, as acceptable to Architect. **Permanent metal or plastic construction joints are not acceptable.** Dowel joints where indicated.

B. Provide keyways at least 1½" deep in construction joints in walls, slabs, and footings.

C. Waterstops: Provide waterstops in construction joints as indicated. Install waterstops to form continuous diaphragm in each joint. Make provisions to support and protect exposed waterstops during progress of work. Fabricate field joints in waterstops in accordance with manufacturer's printed instructions.

D. Isolation Joints in Slabs on Grade: Provide isolation joints in slabs-on-grade at points of contact between slabs on grade and vertical surfaces, such as column pedestals, foundation walls, grade beams, and elsewhere as indicated.

E. Contraction (Control) Joints in Slabs-on-Grade: Construct contraction joints in slabs on grade to form panels of patterns as shown. Use saw cuts χ" x α slab depth. Form contraction joints in floor slabs by saw cuts as soon as possible after slab finishing as may be safely done without dislodging aggregate. If joint pattern is not shown, provide joints not exceeding 25' in either direction and located as acceptable to the Architect. Provide control joints in walks at 5'-0" o.c. and in curbs and gutters at 10'-0" o.c.

F. Expansion Joints: Provide expansion joints as indicated in exterior slabs-on grade but not less than ¾" wide joints at 75'-0" maximum on center each way. Provide ½" expansion joints in sidewalks and curbs and gutters at 50'-0" on center. Provide ½" expansion joints where exterior slabs abut walls or columns. Expansion joints shall be sealed with traffic sealant as specified in Division 7 Section.

3.6 INSTALLATION OF EMBEDDED ITEMS

A. General: Set and build into work anchorage devices and other embedded items required for other work that is attached to, or supported by, cast-in-place concrete. Use setting drawings, diagrams, instructions, and directions provided by suppliers of items to be attached thereto.

B. Edge Forms and Screed Strips for Slabs: Set edge forms or bulkheads and intermediate screed strips for slabs to obtain required elevations and contours in finished slab surface. Provide and secure units sufficiently strong to support types of screed strips by use of strike-off templates or accepted compacting type screeds.

C. Conduit Work: Coordinate operations with Division 16, Electrical.

1. Slab on Grade: Conduits shall be located below slabs on grade and shall maintain same cross sectional concrete area. Install conduits below vapor barrier in aggregate base or fill.

2. Seal vapor barrier penetrated by conduit.

3.7 PREPARATION OF FORM SURFACES

A. Clean re-used forms of concrete matrix residue, repair and patch to return forms to acceptable surface condition. Coat contact surfaces of forms with a form-coating compound before reinforcement is placed.

B. Thin form-coating compounds only with thinning agent of type, amount, and under conditions of form-coating compound manufacturer's directions. Do not allow excess form-coating material to accumulate in forms or to come into contact with in-place concrete surfaces against which fresh concrete will be placed. Apply in compliance with manufacturer's instructions.

C. Coat steel forms with a non-staining, rust-preventative form oil or otherwise protect against rusting. Rust-stained steel form work is not acceptable.

3.8 CONCRETE PLACEMENT

A. Placement Inspection: Before placing concrete, inspect and complete formwork installation, reinforcing steel, and items to be embedded or cast-in. Notify other crafts to permit installation of their work; cooperate with other trades in setting such work. Moisten wood forms immediately before placing concrete where form coatings are not used. Apply temporary protective covering to lower 2' of finished walls adjacent to poured floor slabs and similar conditions, and guard against spattering during placement.

B. General: Comply with ACI 304 (2000) "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. **DO NOT PLACE CONCRETE THAT DOES NOT MEET SLUMP REQUIREMENTS** or that has become nonplastic, unworkable, does not meet the standards, or that has become contaminated by foreign materials. Place concrete in forms within 90 minutes of the time of initial batching.

C. 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.

D. Consolidate placed concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures for consolidation of concrete in accordance with ACI 309. (1996)

E. 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.

F. Placing Concrete Slabs: Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed. Consolidate concrete during placing operations so that concrete is thoroughly worked around reinforcement and other embedded items and into corners.

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.

G. Maintain reinforcing in proper position during concrete placement.

H. Cold Weather Placing: Protect concrete work from physical damage or reduced strength which could be caused by frost, freezing actions, or low temperatures, in compliance with ACI 306 and as herein specified.

When air temperature has fallen to or is expected to fall below 40EF (4EC), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50EF (10EC), and not more than 80EF (27EC) at point of placement.

Do not use frozen materials or materials containing ice or snow. 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.

I. Hot Weather Placing: When hot weather conditions exist that could seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and as herein specified.

Cool ingredients before mixing to maintain concrete temperature at time of placement below 90EF (32EC). 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.

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.

Use water-reducing retarding admixture (Type D) when required by high temperatures, low humidity, or other adverse placing conditions.

3.9 FINISH OF FORMED SURFACES

A. 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 by 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.

B. Smooth Form Finish (Rubbed Finish): For formed concrete surfaces exposed-to-view, or that are to be covered with a material applied directly to concrete, such as waterproofing, dampproofing, veneer plaster, 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.

Provide grout cleaned finish to concrete surfaces which have received smooth form finish treatment unless otherwise specified.

Combine one part portland cement to 1½ parts fine sand by volume, and mix with water to consistency of thick paint. Blend standard portland cement and white portland cement, amounts determined by trial patches, so that final color of dry grout will match adjacent surfaces.

Thoroughly wet concrete surfaces and apply grout to coat surfaces and fill small holes. Remove excess grout by scraping and rubbing with clean burlap. Do not build up grout or leave a thin layer on the surface. Keep damp by fog spray for at least 36 hours after rubbing.

3.10 MONOLITHIC SLAB FINISHES

A. Scratch Finish: Apply scratch finish to monolithic slab surfaces that are to receive concrete floor topping or mortar setting beds for tile, portland cement terrazzo, and other bonded applied cementitious finish flooring material, and as otherwise indicated.

After placing slabs, plane surface to tolerances for floor flatness (F) of 15 and floor levelness (F) of 13. Slope surfaces uniformly to drains where required. After leveling, roughen surface before final set, with stiff brushes, brooms, or rakes.

B. 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, or sand-bed terrazzo, and as otherwise indicated.

After screening, 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 to tolerances of F18 - F15. Cut down high spots and fill low spots. Uniformly

slope surfaces to drains. Immediately after leveling, refloat surface to a uniform, smooth, granular texture.

C. Trowel Finish: Apply trowel finish to monolithic slab surfaces to be exposed-to-view, and slab surfaces to be covered with resilient flooring, carpet, paint, or other thin film finish coating system. After floating, trowel finish 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 surface leveled to tolerances of F 20 - F 17.

D. Trowel and Fine Broom Finish: Where ceramic or quarry tile is to be installed with thin-set mortar, apply trowel finish as specified, then immediately follow with slightly scarifying surface by fine brooming.

E. Non-Slip Broom Finish: Apply non-slip broom finish to exterior concrete platforms, steps, and ramps, and elsewhere as indicated. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route. Coordinate required final finish with Architect before application.

3.11 CONCRETE CURING AND PROTECTION

A. 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.

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 (1999) procedures. Avoid rapid drying at end of final curing period.

B. 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.

1. Provide moisture curing by following methods.

Keep concrete surface continuously wet by covering with water, or

Continuous water-fog spray, or

Covering concrete surface with moisture-retaining cover, thoroughly saturating with water and keeping continuously wet. Place cover to provide coverage of concrete surfaces and edges, with 4" laps.

2. Provide curing and sealing compound to exposed interior slabs and to exterior slabs, walks, and curbs. Apply curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain

continuity of coating and repair damage during curing period.

Do not use curing compounds on surfaces which are to be covered with coating material applied directly to concrete, liquid floor hardener, waterproofing, dampproofing, membrane roofing (ceramic or quarry tile, pavers), painting, and other coatings and finish materials, unless otherwise acceptable to Architect.

C. 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.

D. Curing Unformed Surfaces: Cure unformed surfaces, such as slabs, floor topping, and other flat surfaces by application of appropriate curing method. Final cure concrete surfaces to receive finish flooring by use of curing and sealing compound, unless otherwise indicated.

E. Sealer and Dustproofer: Apply a second coat of curing and sealing compound to exposed concrete surfaces given a first coat immediately prior to substantial completion.

3.12 REMOVAL OF FORMS

A. Form work 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 50EF (10EC) for 24 hours after placing concrete, provided concrete is sufficiently hard to not be damaged by form removal operations, and provided curing and protection operations are maintained.

B. Formwork supporting weight of concrete, such as beam soffits, joists, slabs, and other structural elements, may not be removed in less than 14 days and until concrete has attained 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.

C. Form facing material may be removed 4 days after placement, only if shores and other vertical supports have been arranged to permit removal of form facing material without loosening or disturbing shores and supports.

3.13 RE-USE OF FORMS

Clean and repair surfaces of forms to be re-used in work. Split, frayed, delaminated, or otherwise damaged form facing material will not be acceptable for exposed surfaces. Apply new form coating compound as specified for new formwork.

When forms are re-used, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints. Align and secure joint to avoid offsets. Do not use "patched" forms for exposed concrete surfaces, except as acceptable to Architect.

3.14 MISCELLANEOUS CONCRETE ITEMS

A. 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 to complete work.

B. Curbs: Provide monolithic finish to curbs by stripping forms while concrete is still green and steel-troweling surfaces to a hard, dense finish with corners, intersections, and terminations slightly rounded.

C. Equipment Bases and Foundations: Provide machine and equipment bases and foundations, as shown on drawings or specified. Set anchor bolts for machines and equipment to template at correct elevations, complying with certified diagrams or templates of manufacturer furnishing machines and equipment.

D. Grout base plates and foundations as indicated, using specified non-shrink grout. Use non-metallic grout for exposed conditions, unless otherwise indicated.

3.15 CONCRETE SURFACE REPAIRS

A. Patching Defective Areas: Repair and patch defective areas with cement mortar immediately after removal of forms, when acceptable to Architect.

Cut out honeycomb, rock pockets, voids over ¼" 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 to the extent specified by the manufacturer.

B. 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.

C. Repair of Exposed Formed Surfaces: Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Architect. Surface defects, 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.

D. Repair concealed formed surfaces, where possible, that contain defects that affect the durability of concrete. If defects cannot be repaired, remove and replace concrete.

E. 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.

1. 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.

2. Correct high areas in unformed surfaces by grinding, after concrete has cured at least 14 days.

3. 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. Proprietary patching compounds may be used when acceptable to Architect.

F. 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 ¾" 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 same manner as adjacent concrete.

G. 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 2½ 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.

H. Perform structural repairs with prior approval of Architect or Structural Engineer for method and procedure, using approved epoxy adhesive and mortar.

I. Repair methods not specified above may be used, subject to acceptance of Architect and demonstration of satisfactory results.

3.16 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. Sampling Fresh Concrete: A testing laboratory shall perform tests and submit test reports. ASTM C172, (2004) except modified for slump to comply with ASTM C94. (2005) The technicians performing field sampling and tests shall be certified equivalent to ACI CP-2 (1997) Concrete Field Testing Technicians - Grade I. Sampling and testing for quality control during placement of concrete shall include the following:

1. Slump: ASTM C143 (2005); one test at point of discharge for each set of compression test cylinders; additional tests when concrete consistency seems to have changed. Concrete not meeting slump limits shall not be placed without direction of the Architect. Remove and replace concrete not passing slump test placed without Architect's direction.

2. Air Content: ASTM C173, (2001) volumetric method for lightweight or normal weight concrete; ASTM C231 (2004) pressure method for normal weight concrete; one for each day's pour of each type of air-entrained concrete.

3. Concrete Temperature: Test hourly when air temperature is 40EF (4EC) and below, and when 80EF (27EC) and above; and each time a set of compression test specimens made.

4. Compression Test Specimen: ASTM C31 (2003); one set of four 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. Numerically number cylinders.

5. Compressive Strength Tests: ASTM C39 (2005); one set for each day's pour exceeding 5 cu.yd. plus additional sets for each 50 cu.yd. over and above the first 25 cu.yd. of each concrete class placed in any one day; one specimen tested at seven days, two specimens tested at 28 days, and one specimen retained in reserve for later testing if required.

   When frequency of testing will provide less than five strength tests for a given class of concrete, conduct testing from at least five randomly selected batches or from each batch if fewer than five are used.

   When total quantity of a given class of concrete is less than 50 cu.yd., strength test may be waived by Architect if, in his judgment, adequate evidence of satisfactory strength is provided.

   When strength of field-cured cylinders is less than 85 percent 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 strength by more than 500 psi.

B. Test results shall be reported in writing to Architect, Structural Engineer and Contractor within 24 hours after tests. Reports of compressive strength tests shall contain the following:

1. project identification name and number
2. date of concrete placement
3. name of concrete testing service
4. concrete type and class
5. location of concrete batch in structure

6. design compressive strength at 28 days
7. air content
8. slump
9. weather conditions (air temperature)
10. temperature of concrete
11. concrete mix proportions and materials
12. compressive breaking strength and type of break for both 7-day tests and 28-day tests
13. name of technician performing sampling

C. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted as follow up test but shall not be used as the sole basis for acceptance or rejection.

D. The Contractor shall schedule testing labs work with minimum 24 hours notice. The Contractor shall provide testing cylinders and shall store cylinders at project site in a storage box for 24 hours after molding in accordance with ASTM requirements, as stated in 3.16, "Quality Control Testing During Construction". The Contractor shall maintain one complete set of concrete test reports available to the building inspector and Architect for review. The Contractor shall notify the testing lab of changes in schedules. If the Contractor fails to do so, he will be responsible for any additional cost.

E. 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 C42, (2004) or by other methods as directed.

END OF SECTION 03300

SECTION 03310

CAST-IN PLACE CONCRETE
SKATE PARK

PART 1 - GENERAL

1.01 DESCRIPTION:

Provide cast-in-place concrete for all **skate park** area's designated in the construction documents. Refer to drawings for specific locations of cast-in-place concrete.

1.02 RELATED WORK SPECIFIED ELSEWHERE:

A. Section 03110: Concrete Formwork - Skate Park

B. Section 03210: Concrete Reinforcement - Skate Park

C. Section 03370: Shotcrete - Skate Park

D. Section 03380: Concrete Curing - Skate Park

1.03 SUBMITTALS:

A. Design of Concrete Mixes:

1. Contractor shall be responsible for and pay for design of concrete mixes. Design of concrete mixes shall be performed by a Testing Laboratory selected by Contractor. Design methods to be in accordance with ACI 318-71 (2002).

2. Make three trial mixes using aggregate proposed.

3. Make advance tests of trial mixes with proposed materials. Test four cylinders in accordance with ASTM C-39 (2005) at 7 days and 28 days. Do not place concrete on project until laboratory reports and breaks of confirmation cylinders indicate that proposed mixes will develop required strengths.

4. Check mix design and revise, if necessary, wherever changes are made in aggregate or in surface water content of aggregate or workability of concrete. Slump shall be the minimum to produce workable mix. Laboratory shall prescribe minimum quantity of water.

5. If Portland Cement reducers or other additives are used, submit control mix design without reducers or additives as well as mix exactly proposed

to be used. Submit W.R. Grace Co. recommendations for retarder and shrinkage compensation of slab on grade.

6. Sample of Workmanship: Test panel shall be at least 4'-0" [1.22m] x 4'-0" [1.22m] x 4" [10.16cm] (not part of finished project) with the same reinforcement as in the proposed structure. Provide one test panel on site for each type of concrete finish.

7. Forward two copies of design mix to Owner's Representative for approval.

8. Soils Investigation Report.

1.04 COORDINATION:

A. Notify responsible trades of schedules of concrete pours so as to allow adequate time for installation of work and inspection prior to pour. Obtain all materials and other miscellaneous steel items to be cast into concrete. Verify all measurements and layout to avoid any delay.

1.05 REFERENCE STANDARDS:

A. ACI 211.1-81 - Recommended Practice for Selecting Proportions for Normal-Weight Concrete (1991).

B. ACI 211.3-81 - Recommended Practice for Selecting Proportions for Lightweight Concrete (2002).

C. ACI 301-73 - Specifications for Structural Concrete for Buildings (1999).

D. ACI 305-77 - Recommended Practice for Hot Weather Concreting (1999).

E. ACI 306-72 - Recommended Practice for Cold Weather Concreting (1990).

F. ACI 318-77 - Building Code Requirements for Reinforced Concrete (1999).

G. ASTM C33 - Concrete Aggregates (2003).

H. ASTM C94 - Ready-Mixed Concrete (2005).

I. ASTM C143 - Test for Slump of Portland Cement Concrete (2005).

J. ASTM C150 - Portland Cement (2005).

K. ASTM C260 - Air-Entraining Admixtures for Concrete (2001).

L. ASTM C494 - Chemical Admixtures for Concrete (2005).

M. ASTM C618 - Fly Ash and Raw or Calcined Natural Pozzalans for Use in Portland Cement Concrete (2005).

1.06 JOB CONDITIONS:

A. Environmental Conditions: Submit plan to monitor wind velocity, relative humidity, temperature, and concrete temperature in order to maintain specified maximum rate of evaporation.

B. Coordination:

1. Coordinate schedules of concrete pours to allow adequate time for installation of other related work.

2. Verify that anchor bolts and other embedded steel items to be cast into concrete are properly placed.

3. Coordinate size and location of mechanical and electrical equipment concrete pads.

4. Coordinate earthwork and soils report requirements with placement requirements.

5. Coordinate with form-work and finishes sections to provide finish floor levelness and flatness as specified herein. Slope to drains at grades and percent slope shown on contract documents.

1.07 QUALITY ASSURANCE

A. Provide at least one person thoroughly familiar with the specification requirements, completely trained, qualified to do the work, who shall be present at all times on the project site directing the work. Provide additional skilled personnel to insure installation is in strict conformance with the design documents.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Portland Cement: ASTM C150, Type I or II, one brand only (2005).

B. Fly Ash: Do not use fly ash in mix design.

C. Fine Aggregate: Clean, hard, durable, uncoated natural sand, free from silt, loam or clay, meeting requirements of ASTM C-33 (2003).

D. Coarse Aggregate: Class ll-Hard durable, un-coated crushed limestone meeting requirements of ASTM C-33 (2003). Unless otherwise noted in aggregate size 1" [25.4mm] maximum, No. 5, 56 or 57. Base rock shall conform to local city code.

E. Water: Fresh, clean, potable, and free of deleterious acids, mixing, and curing water, as available from Owner. Transport as required.

F. Admixtures: Use only accepted admixtures meeting the following requirements:

1. Chemical Admixtures: ASTM C494 (2005).

2. Water reducing, retarding or accelerating admixtures shall conform to ASTMC.

3. Air-entraining Admixtures: ASTM C1141,(2005). Air entraining shall be 1.5% - 3%.

4. The use of Calcium Cloride shall not be permitted. The contractor shall submit details of proposed admixtures with the concrete mix design.

2.02 PROPORTIONS AND MIXING:

Proportions and design in accordance with approved mix design.

A. Portland Cement: 480 pounds [217.72kg] minimum per 27 cubic foot [0.76m ^{3}] design.

B. 28-Day Compression Strength: 4000 p.s.i. [27.56MPa]. Selected mix proportions on the basis of compressive strength tests of specimens shall be cut from the concrete test panels not earlier than 5 days after concrete placement. For mix acceptance purposes, average core strengths shall be least equal to f'c for cores with L/D of 2.0. For cores with L/D between 1.0 and 2.0, use correction factors given in ASTM C42 (2004).

C. Slump: 4" [10.16cm]

D. Admixture: No admixtures without approval. Introduce admixtures in quantities and according to methods recommended by admixture manufacturer. Add air-entraining agent to concrete as scheduled.

E. Mixing: Ready mixed concrete in accordance with ASTM C-94 (2005). Do not transport or use concrete after 1-1/2 hours have elapsed from time of initial mixing. Supplier of transit-mixed concrete shall have a plant of sufficient capacity, and adequate transportation facilities to assure continuous delivery at required rate, to provide continuous concrete placement throughout a pour.

F. Grout and Dry Pack: Non-Shrink, Non-Metallic: U.S. Grout Corp. "Five Star Grout" ASTM C-877 (2001), C-191,(2004) and C-109 (2005), 5,000 PSI.

G. Test Data: Submit for acceptance proportioning and test data from prior experience if available. If data from prior experience are not available or accepted, make and have tested specimens from three or more different mix proportions in accordance with pre-construction testing requirements of this Specification.

H. Review: Mix design shall be reviewed for acceptance by Owner's Representative.

PART 3 - EXECUTION

3.01 INSPECTION:

A. Inspect subgrade, forms, reinforcing steel, pipes, conduits, sleeves, hangers, anchors, inserts, and other work required to be built into concrete and report any discrepancies. Notify Owner's Representative at least 5 working days in advance of scheduled pour.

B. Correct unsatisfactory work prior to pouring concrete.

C. Remove rubbish from formwork immediately prior to placing concrete.

3.02 INSTALLATION:

A. Placing Concrete:

1. Convey and place concrete allowing no separation of ingredients in accordance with ACI 304 (2001), and as specified below.

2. Maximum height of concrete free fall - five feet [1.52m].

3. Regulate rate of placement to maintain plasticity and flow into position.

4. Deposit concrete continuously until panel or section is completed.

5. Place concrete in horizontal layers 18 inches [45.72cm] maximum thickness.

B. Consolidation:

1. Use mechanical vibrating equipment for consolidation.

2. Vertically insert and remove hand-held vibrators at 18 inches [45.72cm] o.c. for 10 to 15 seconds.

3. Do not use vibrators to transport concrete in forms.

4. Provide vibrators with minimum speed of 8000 RPM and with amplitude to consolidate effectively.

5. Thoroughly consolidate concrete and work around reinforcement, embedded items and into corners of forms. Thoroughly consolidate layers of concrete with previous layers.

C. Construction Joints:

1. Unless otherwise shown on Drawings, each footing, wall, beam, and slab shall be considered as a single unit of operation and shall be monolithic in construction.

2. Where construction joints are absolutely unavoidable, locate joints at or near quarter points of spans where approved by Owner's Representative and/or shown on plan.

3. Saw Cut joints, Expansion Joints and Key Joints as detailed in contract documents

D. Expansion Joint Fillers:

1. Refer to Drawings for Expansion Joint locations and details.

2. Finish joint material flush with concrete surface.

E. Hot Weather Placement:

1. Prevent high temperature in fresh concrete during hot weather in accordance with ACI 305 (1999).

2. Use water reducing set retarding admixtures in such quantities as especially recommended by manufacturer to assure that concrete remains workable and lift lines will not be visible.

F. Flatwork:

1. Cast slabs-on-grade in alternate sections, unless permanent forms are used. Wait 48 hours between all adjacent concrete castings.

2. Plane Surface Tolerance: Exterior- Class AX, 3/16 inches [4.76mm] in 10 feet [3.05m] with no ponding.

3. Maximum 1:500 slope from indicated plane at any point.

G. Finish:

1. Smooth Trowel. (See sample requirements under submittals).

H. Cracking:

1. Cracking from inadequate curing is not allowed. Sawcut joints and construction joints are shown on drawings. Contractor may, with approval of Owner's Representative, recommend and detail other joints required to prevent cracking.

3.03 CLEAN UP:

Clean all debris, excess concrete and miscellaneous material associated with work.

END OF SECTION 03310

SECTION 03331

CONCRETE COUNTER TOPS

PART 1 - GENERAL

1.1 SECTION INCLUDES:

A. Concrete Counter tops.

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

1.2 SUBMITTALS

A. Submit fabricator's qualifications indicating satisfactory compliance.

B. Submit: Finish samples showing available appearances, edge treatments and colors. Submit product data of proposed sealer and maintenance instructions.

1.3 QUALITY ASSURANCE

A. Fabricator shall be experienced in fabrication and finishing of concrete counter tops for a period of not less than two years.

B. Allowable Tolerances:

1. Variation in level: 1/4 inch in 10 feet.
2. Variation in line: 1/4 inch in 10 feet.
3. Variation in thickness: 1/4 inch.

1.4 CODES AND STANDARDS

A. Comply with provisions of the latest editions of the following standards.

1. Act 304 - "Recommended Practice For Measuring, Mixing, Transporting and Placing Concrete".

2PART - PRODUCTS

2.1 MATERIALS

A. Concrete: Fabricator recommended concrete mix with light weight aggregate, plasticizers, integral coloring agent with minimum 28 day compressive strength of

3,000 PSI.

B. Reinforcing: ASTM A615 (2006), Grade 60 deformed reinforcing steel. Do not use fiber reinforcing for finish surface.

C. Sealer: Waterborne penetrating and film building gloss clear sealer. USDA (2006 regulations) approved for food contact.

3PART - EXECUTION

A. Site cast or shop cast in one piece not to exceed 8' lengths. Surface shall be rubbed and polished and free of pits, pockets and other imperfections. Edges shall be radiused. Seal surfaces and protect from damage. Do not allow loading for a period of 28 days. Cure with polyethylene cover.

B. Coordinate support spacing with length of shop cast slabs.

C. Obtain accurate field measurements.

D. Joints shall be smooth accurately aligned and sealed with silicone sanitary sealants.

END OF SECTION 03331

SECTION 03370

SHOTCRETE

SKATE PARK

PART 1 - GENERAL

1.01 SUMMARY

A. Related Work:

1. Section 03110: Concrete Formwork - Skate Park
2. Section 03210: Concrete Reinforcement - Skate Park
3. Section 03310: Cast-In-Place Concrete - Skate Park
4. Section 03380: Concrete Curing - Skate Park

B. Unit Pricing: Per face foot

1.02 QUALITY ASSURANCE

A. Standards: Comply with the requirements of the current edition of the following codes and standards, except as herein modified:

UBC "Uniform Building Code" (1997)

American Concrete Institute (ACI): 506, Chapter 13, Wet Method. Chapter 5, Shotcrete Crew (1995).

American Society for Testing Materials (ASTM):

1. Concrete Testing:

a. Prepare test specimens by each application crew using the equipment, materials and mix proportions proposed for the Project. Owner's Representative shall observe preparation of test panels noting placement of shotcrete by applications crew.

b. Test panel shall be at least 4'-0" [1.22m] x 4'-0" [1.22m] x 6" [15.24cm] sample (not part of finished project) with a 7'-0" [2.13m] radius and the same reinforcement as in the proposed structure. Provide one test panel

on site for each type of concrete finish. A Testing Agency shall take at least three (3) cores from the specimen and test them in accordance with ASTM C42 (2004).

2. Secure and protect Test Panels during construction and test for compliance with Specifications.

3. Test strength of the shotcrete as work progresses as follows:

   a. Test concrete cylinders in accordance with ASTM C42 (2004). A set of three (3) cylinders shall be made not less than once each shift or less than one for each 50 cubic yards [38m³] of shotcrete placed through the nozzle. Cylinders shall be soaked in water for a minimum of 40 hours before testing.

   b. When the length of a cylinder is less than twice the diameter, apply the correction factors given in ASTM C42 (2004) to obtain the compressive strength of individual cylinders. The average compressive strength of three cylinders taken, representing a shift or 50 cubic yards [38m³] of shotcrete, must equal or exceed 0.85f'c with no individual cylinder less than 0.75f'c.

4. Shotcrete cylinders grade 2 required.

B. Acceptance: Final acceptance of the shotcrete will be based upon the results obtained from cylinders per ACI 506.2. (1995) A mean cylinders grade of 2.5 or less is acceptable. Individual shotcrete cylinders with a grade greater than 3 are unacceptable. Use of data obtained from impact devices will not be permitted for final acceptance of the shotcrete. However, these data may be useful for determining uniformity of the shotcrete.

C. Certification: Nozzleman certification shall be in accordance with ACI 506.3R (2006).

D. Provide at least one person thoroughly familiar with the specification requirements, completely trained, qualified to do the work, who shall be present at all times on the project site directing the work. Provide additional skilled personnel to insure installation is in strict conformance with the design documents.

1.03 SUBMITTALS

A. Manufacturer's Data: Current printed specifications with application and installation instruction for proprietary materials including concrete admixtures.

B. Shop Drawings: Radial templates cut to exact radii shown on drawings to insure exact radii from flat bottom of skate park to face of coping. Template shall be fabricated from steel or 3/4" [19.05mm] Plywood.

C. Mix Design: Concrete mix proportions.

D. Concrete Samples: Representative samples of materials for materials testing, mix proportion testing, and finish. Provide on site, minimum (1) 4'-0" [1.22m] x 4'-0" [1.22m] x 6" [15.24cm] sample (not part of finished project) of shotcrete with a 7'-0" [2.13m] radius radius and the same reinforcement as in the proposed structure for finish inspection and approval.

E. Pour Schedule: Contractor to indicate on plans locations to be shot within a days work and sequence of pours for review by Owner's Representative.

1.04 DELIVERY, HANDLING, AND STORAGE

A. Properly deliver and handle materials to prevent contamination, segregation or damage to materials.

B. Store cement in weathertight enclosures to protect against dampness and contamination.

C. Prevent segregation and contamination of aggregates by proper arrangement and use of stockpiles.

D. Store admixtures properly to prevent contamination, evaporation, or other damage.

1.05 REFERENCE STANDARDS:

A. ACI 211.1-81 - Recommended Practice for Selecting Proportions for Normal-Weight Concrete (1991).

B. ACI 211.3-81 - Recommended Practice for Selecting Proportions for Lightweight Concrete (2002).

C. ACI 301-73 - Specifications for Structural Concrete for Buildings (1996).

D. ACI 305-77 - Recommended Practice for Hot Weather Concreting (1999).

E. ACI 306-72 - Recommended Practice for Cold Weather Concreting (1990).

F. ACI 318-77 - Building Code Requirements for Reinforced Concrete (1999).

G. ASTM C33 - Concrete Aggregates (2003).

H. ASTM C94 - Ready-Mixed Concrete (2005).

I. ASTM C143 - Test for Slump of Portland Cement Concrete (2005).

J. ASTM C150 - Portland Cement (2005).

K. ASTM C260 - Air-Entraining Admixtures for Concrete (2001).

L. ASTM C494 - Chemical Admixtures for Concrete (2005).

M. ASTM C618 - Fly Ash and Raw or Calcined Natural Pozzalans for Use in Portland Cement Concrete (2005).

1.06 JOB CONDITIONS:

A. Environmental Conditions: Submit plan to monitor wind velocity, relative humidity, temperature, and concrete temperature in order to maintain specified maximum rate of evaporation.

B. Coordination:

1. Coordinate schedules of concrete pours to allow adequate time for installation of other related work.

2. Verify that anchor bolts and other embedded steel items to be cast into concrete are properly placed.

3. Coordinate size and location of mechanical and electrical equipment concrete pads.

4. Coordinate earthwork and soils report requirements with placement requirements.

5. Coordinate with form-work and finishes sections to provide finish floor levelness and flatness as specified herein. Slope to drains at grades and percent slope shown on contract documents.

PART 2 - PRODUCTS

2.01 MATERIALS:

A. Portland Cement: ASTM C150, (2005), Type I or II, one brand only.

B. Fly Ash: ASTM C618 (2005).

C. Fine Aggregate: Clean, hard, durable, uncoated natural sand, free from silt, loam or clay, meeting requirements of ASTM C-33 (2003).

D. Coarse Aggregate: Class ll-Hard durable, un-coated crushed limestone meeting requirements of ASTM C-33 (2003). Unless otherwise noted in aggregate size 3/8" [9.53mm] maximum, No. 5, 56 or 57. Base rock shall conform to local city code.

E. Water: Fresh, clean, potable, and free of deleterious acids, mixing, and curing water, as available from Owner. Transport as required.

F. Admixtures: Use only accepted admixtures meeting the following requirements:

1. Chemical Admixtures: ASTM C494 (2005).

2. Water reducing, retarding or accelerating admixtures shall conform to ASTM C494 (2005).

3. Air-entraining Admixtures: ASTM C1141 (2001). Air entraining prior to shooting shall be 1.5% - 3%.

4. The use of Calcium Cloride shall not be permitted. The contractor shall submit details of proposed admixtures with the concrete mix design.

2.02 PROPORTIONS AND MIXING:

Proportions and design in accordance with approved mix design.

A. Portland Cement: 600 pounds [272.16kg] minimum per 27 cubic foot [0.76m ^{3}] design.

B. Fly Ash: Maximum 20% by weight of the combined total weight of the cement and fly ash.

C. 28-Day Compression Strength: 4000 p.s.i. [27.56MPa]. Selected mix proportions on the basis of compressive strength tests of specimens shall be cut from the concrete test panels not earlier than 5 days after concrete placement. For mix acceptance purposes, average core strengths shall be least equal to f'c for cores with L/D of 2.0. For cores with L/D between 1.0 and 2.0, use correction factors given in ASTM C42 (2004).

D. Slump: 2" [5.08cm]

E. Admixture: No admixtures without approval. Introduce admixtures in quantities and according to methods recommended by admixture manufacturer. Add air-entraining agent to concrete as scheduled.

F. Mixing: Ready mixed concrete in accordance with ASTM C-94 (2005). Do not transport or use concrete after 1-1/2 hours have elapsed from time of initial

mixing. Supplier of transit-mixed concrete shall have a plant of sufficient capacity, and adequate transportation facilities to assure continuous delivery at required rate, to provide continuous concrete placement throughout a pour.

G. Grout and Dry Pack: Non-Shrink, Non-Metallic: U.S. Grout Corp. "Five Star Grout" ASTM C-877 (2001), C-191 (2004), and C-109 (2005), 5,000 PSI.

H. Test Data: Submit for acceptance proportioning and test data from prior experience if available. If data from prior experience are not available or accepted, make and have tested specimens from three or more different mix proportions in accordance with pre-construction testing requirements of this Specification.

I. Review: Mix design shall be reviewed for acceptance by Owner's Representative.

2.05 CONCRETE APPLICATION EQUIPMENT

A. For Wet Mix Shotcrete:

1. Mixing Equipment: Capable of thoroughly mixing aggregate, cement and water in sufficient quantity to maintain continuous placement.

2. Ready-mixed Concrete: ASTM C94 (2005), except that it may be delivered to the site in the dry state if the equipment is capable of adding the water and mixing it satisfactorily with the dry ingredients.

3. Air Supply: Clean air adequate for maintaining sufficient nozzle velocity for parts of work, and for simultaneous operation of blow pipe for cleaning away rebound.

4. Delivery Equipment: Capable of discharging aggregate-cement-water mixture accurately, uniformly, and continuously through delivery hose.

2.04 CURING MATERIALS:

A. Water: Domestic Quality, clear and potable with no chemical content.

B. Sheet Material: ASTM C171 (2003). Moisture loss maximum 0.055 g/cm². Color: White.

C. Curing Compounds/Sealer: Curecrete Ashford Formula or equal.

PART 3 - EXECUTION

3.01 INSPECTION

A. Examination: Examine concrete formwork and verify that it is true to line and dimension, adequately braced against vibration, and constructed to permit escape of air and rebound but to prevent leakage during shotcreting. Correct deficiencies.

B. Inspection: Inspect reinforcement steel and items to be embedded in concrete. Correct any deviations from the accepted shop drawings.

C. Notification: Notify other trades involved in ample time to permit the proper installation of their work. Cooperate in setting such work.

D. Existing Surfaces: Examine existing concrete surfaces for unsound material. Correct deficiencies.

3.02 PREPARATION FOR INSTALLATION OF CONCRETE

A. Forms: Use a form-coating material on removable forms to prevent absorption of moisture and to prevent absorption of moisture and to prevent bond with shotcrete.

3.03 CONCRETE BATCHING AND MIXING

A. Proportions: Mix proportions shall be controlled by weight batching. Contractor's Testing Laboratory shall maintain quality control records during shotcrete production and make those records available to Owner's Representative.

3.04 CONCRETE PLACEMENT

A. Placement: Use suitable delivery equipment and procedures that will result in shotcrete in place meeting the requirements of this Specification. Determine operating procedures for placement in, extended distances, and around any obstructions where placement velocities and mix consistency must be adjusted.

B. Placement Techniques: Do not place shotcrete if drying or stiffening of the mix takes place at any time prior to delivery to the nozzle.

1. Control thickness, method of support, air pressure, and/or water content of shotcrete to preclude sagging or sloughing off. Discontinue shotcreting or provide suitable means to screen the nozzle stream if wind or air currents cause separation of the nozzle stream during placement.

2. Hold nozzle as perpendicular to surface as work will permit, to secure maximum compaction with minimum rebound.

3. In shotcreting walls, begin application at bottom. Ensure work does not sag.

4. Layering:

a. Build up layers by making several passes of nozzle over work area.

b. Broom or scarify the surface of freshly placed shotcrete to which, after hardening, additional layers of shotcrete are to be bonded. Dampen surface just prior to application of succeeding layers.

c. Allow each layer of shotcrete to take initial set before applying succeeding layers.

d. Use radial templates to insure exact radii from flat bottom of skate park to face of coping. Template shall be fabricated from steel or 3/4" [19.05mm] Plywood. Check every horizontal foot [30.48cm] when applying shotcrete for conformance of intended wall radii. Brace template and place levels at arc to tangent connections to insure no kinks will be formed. Kinks at the bottom of bowls will not be acceptable. Slumping of the shotcrete causing coping setback will not be acceptable.

5. Placement Around Reinforcement:

a. Hold the nozzle at such distance and angle to place materials behind reinforcement before any material is allowed to accumulate on its face. In the dry-mix process, additional water may be added to the mix when encasing reinforcement to facilitate a smooth flow of material behind the bars.

b. Test to ascertain if any void or sand pockets have developed around or behind reinforcement by probing with an awl or other pointed tool after the shotcrete has achieved its initial set, by removal of randomly selected bars, or coring or other suitable standards.

C. Access: Allow easy access to shotcrete surfaces for screening and finishing, to permit uninterrupted application.

3.05 REMOVAL OF SURFACE DEFECTS IN CONCRETE

A. General: Remove and replace shotcrete which lacks uniformity, exhibits segregation honeycombing, or lamination, or which contains any dry patches, slugs, voids, or pockets. Remove defective areas.

B. Sounding: Sound work with hammer for voids. Remove and replace damaged in-place shotcrete.

3.06 CONCRETE FINISH

A. Finish-General: Smooth form finish shall consist of a smooth, hard, uniform texture with a minimum of seams.

B. Radial/Banked Wall Finish: Float finish on radial/banked face of wall shall consist of a smooth, hard, uniform surface of smooth steel trowel. Level to a tolerance of ¼ inch [6.35mm] in 10 feet [3.05m] when tested with a 10 foot [3.05m] steel straightedge placed on the surface horizontally, and vertically with radial/bank template with the appropriate radii/angle. Grinding the surfaces will not be an acceptable means of achieving the intended radii/angle. Concrete finish work shall match the approved sample poured on site.

3.07 CONCRETE JOINTS

A. Cleaning: The entire joint shall be thoroughly cleaned and wetted prior to the application of additional shotcrete.

B. Reinforcement: Make joints perpendicular to the main reinforcement. Continue reinforcement across joints.

3.08 CONCRETE CURING AND PROTECTION

A. Curing Agent: Apply Clear Spray on cure agent after final finish is achieved. Submit proposed product to Owner's Representative. Contractor to remove cure agent at end of cure period and power wash all walls prior to final acceptance.

END OF SECTION 03370

SECTION 03380

CONCRETE CURING
SKATE PARK

PART 1 - GENERAL

1.01 DESCRIPTION

Provide curing material for cast-in-place concrete flatwork, and shotcrete walls (radial and angled).

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Section 03110: Concrete Formwork - Skate Park

B. Section 03310: Cast-In-Place Concrete - Skate Park

C. Section 03370: Shotcrete - Skate Park

1.03 SUBMITTALS

A. Submit detailed technical data of products proposed for curing use for Owner's Representative's approval.

B. Submit certification that materials meet specification requirements.

1.04 DELIVERY AND STORAGE

Deliver materials in original sealed containers with seal and labels intact. Store in dry place. Use materials out of original containers only.

1.05 QUALITY ASSURANCE

A. Provide at least one person thoroughly familiar with the specification requirements, completely trained, qualified to do the work, who shall be present at all times on the project site directing the work. Provide additional skilled personnel to insure installation is in strict conformance with the design documents.

PART 2 - PRODUCTS

2.01 MATERIALS

A. Curing Agent: Burke Aqua Cure, or Equal. Apply immediately to final finished concrete.

Submit product information to Owner's Representative for review for prior to starting concrete work.

PART 3 - EXECUTION

3.01 CURING

A. Protect concrete surfaces against rapid drying. Keep sealed with cure agent for necessary amount of time to reach concrete strength and inhibit moisture loss after placing per manufacturers recommendation.

B. Curing Method: Spray entire surface immediately after final finish work. Protect surface from water, adjacent shotcrete work and debris.

3.02 CLEANUP

A. Contractor to remove all cure agent from concrete surface with power washing equipment and soft brush not causing abrasion to finish work surface prior to final inspection. No Cure Agent shall be present on any surfaces for final inspection acceptance. Remove debris and trash resulting from specified work.

END OF SECTION 03380

SECTION 05120

STRUCTURAL STEEL - BUILDING

1PART - GENERAL

1.1RELATED DOCUMENTS

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

1.2SUMMARY

A. Extent of structural steel work is shown on drawings, including schedules, notes and details to show size and location of members, typical connections, and type of steel required.

B. Structural steel is that work defined in American institute of Steel Construction (AISC) "Code of Standard Practice" (2005), and as otherwise shown on drawings.

C. Miscellaneous metal fabrications are specified elsewhere in Division 5. Refer to Division 3 for anchor bolt installation in concrete; Division 4 for masonry.

D. Source Quality Control: Materials and fabrication procedures are subject to inspection and tests in mill, shop, and field, conducted by a qualified inspection agency. Such inspections and tests will not relieve Contractor of responsibility for providing materials and fabrication procedures in compliance with specified requirements. Fabrication Plant shall be an "Approved Fabricator" in accordance with IBC Chapter 17 requirement.

E. 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.

Promptly notify Architect whenever design of members and connections for any portion of structure are not clearly indicated.

1.3SUBMITTALS

A. Shop Drawings: Submit shop drawings prepared under supervision of a registered professional engineer, including complete details, dimensions, and schedules for fabrication and assembly of structural steel members, procedures and diagrams. **DO NOT USE REPRODUCTION OF CONTRACT DRAWINGS AS SHOP DRAWINGS.** Independently check and verify all dimensions. Clearly show dimensions and relationships to column lines and bearing walls.

Include details of cuts, connections, camber, holes, and other pertinent data. Indicate welds by standard AWS A2.1 and A2.4 symbols, and show size, length, and type of each weld.

Provide setting drawings, templates, and directions for installation of anchor bolts and other anchorages to be installed as work of others sections.
Clearly mark any proposed changes in design drawing to call attention to them for approval.

B. Test Reports: Submit copies of reports of tests conducted on shop and field bolted and welded connections. Include data on type(s) of tests conducted and test results. See plans and referenced standards for testing requirement if a conflict exists the more stringent shall apply.

1.4QUALITY ASSURANCE

A. Codes and Standards: Comply with provisions of following, except as otherwise indicated:

1. AISC "Code of Standard Practice for Steel Buildings and Bridges"(2005).

   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 Structural Steel Buildings Allowable Stress Design and Plastic Design, June 1, 1989," including "Commentary" and Supplements thereto as issued.

3. AISC "Specifications for Structural Joints using ASTM A325 (2004) or A490 Bolts (2004)" approved by the Research Council on Structural Connections of the Engineering Foundation.

4. American Welding Society (AWS) D1.1 "Structural Welding Code - Steel" (2005).

5. ASTM A6, "General Requirements for Delivery of Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use." (2005)

6. International Building Code 2000 Edition.

B. Qualifications for Welding Work: Qualify welding processes and welding operators in accordance with AWS "Standard Qualification Procedure" (2005).

   Provide certification that welders to be employed in work have satisfactorily passed AWS qualification tests (2005). If recertification of welders is required, retesting will be Contractor's responsibility.

1.5DELIVERY. STORAGE AND HANDLING

A. Deliver materials to site at such intervals to insure uninterrupted progress of work.

B. Store materials to permit easy access for inspection and identification. Keep steel members off ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.

C. Do not store materials on structure in a manner that might cause distortion or damage to members or supporting structures. Repair or replace damaged materials or structures as directed.

SECTION 05120

STRUCTURAL STEEL - BUILDING

2PART - PRODUCTS

2.1MATERIALS

A. Metal Surfaces, General: For fabrication of work which will be exposed to view, use only materials which are smooth and free of surface blemishes including pitting, rust and scale seam marks, roller marks, rolled trade names and roughness. Remove such blemishes by grinding, or by welding and grinding, prior to cleaning, treating and application of surface finishes.

B. Wide Flange Structural Steel Shapes: ASTM A572, Grade 50 (2006).

Miscellaneous Steel Shapers, Plates and Bars: ASTM A36 (2005).

C. Cold-Formed Steel Tubing: ASTM A500, Grade B (2003).

D. Hot-Formed Steel Tubing: ASTM A501 (2005).

E. Steel Pipe: ASTM A53 (2006), Type E or Ss, Grade B; or ASTM A501 (2003).

Finish: Black, except where indicated to be galvanized.

F. Steel Castings: ASTM A27 (2005), Grade 65-35, medium-strength carbon steel.

G. Headed Stud-Type Shear Connectors: ASTM A108, (2003) Grade 1015 or 1020, cold finished carbon steel; with dimensions complying with AISC Specifications.

H. Anchor Bolts: ASTM A307, nonheaded type unless otherwise indicated.

I. Unfinished Threaded Fasteners: ASTM A307, (2004) Grade A, regular low-carbon steel bolts and nuts. Provide hexagonal heads and nuts for all connections.

J. High-Strength Threaded Fasteners: Heavy hexagon structural bolts, heavy hexagon nuts, and hardened washers of quenched and tempered alloy steel complying with ASTM A325 (2004) or A490 (2006). Provide A325 (2004) if not otherwise indicated.

K. Electrodes for Welding: Comply with AWS Code (2005).

L. Structural Steel Primer Paint: Gray iron oxide alkyd resin.

M. Non-metallic Shrinkage-Resistant Grout: Pre-mixed, non-metallic, non-corrosive, non-staining product containing selected silica sands, Portland cement, shrinkage compensating agents, plasticizing and water reducing agents, complying with CE-CRD-C621 (2004).

Products: Subject to compliance with requirements, provide one of the following:

Euco N.S. - Euclid Chemical Co.
Crystex - L&M Construction Chemicals
Masterflow 713 - Master Builders
Five Star Grout - U.S. Grout Corporation
Upcon - Upco Chemical Division, USM Corporation
Set Non-Shrink - Set Products, Inc.

2.2FABRICATION

A. Shop Fabrication and Assembly: Fabricate and assemble structural assemblies in shop to greatest extent possible. Fabricate items of structural steel in accordance with AISC Specifications and as indicated on final shop drawings. Mark and match-mark materials for field assembly.

Where finishing is required, complete assembly, including welding of units, before start of finishing operations. Provide finish surfaces of members exposed in final structure free of markings, burrs, and other defects.

B. Connections: Weld or bolt shop connections, as indicated.

Bolt field connections, except where welded connections or other connections are indicated.

Provide high-strength threaded fasteners for all principal bolted connections, except where unfinished bolts are indicated.

C. High-Strength Bolted Construction: Install high-strength threaded fasteners in accordance with 2005 AISC "Specifications for Structural Joints using ASTM A325 (2004) or A490 Bolts" (RCSC) (2004).

D. Welded Construction: Comply with AWS Code (2005) for procedures, appearance and quality of welds, and methods used in correcting welding work. Assemble and weld built-up sections by methods which will produce true alignment of axes without warp.

E. Holes for Other Work: Provide holes for securing other work to structural steel framing, and for passage of other work through steel framing members. Provide holes for all wood nailers in contact with structural steel. If not indicated provide holes for 3/8" diameter anchors at not less than 48" o.c.

Provide threaded nuts welded to framing, and other specialty items as indicated to receive other work.

Cut, drill, or punch holes perpendicular to metal surfaces. Do not flame cut holes or enlarge holes by burning. Drill holes in bearing plates.

Do not use powder actuated fasteners for connections to structured steel, U.N.O.

2.3SHOP PAINTING

A. General: Shop paint structural steel, except those members or portions of members to be embedded in

concrete or mortar. Paint embedded steel which is partially exposed on exposed portions and initial 2" of embedded areas only.

Do not paint surfaces which are to be welded or high-strength bolted with friction-type connections.

Do not paint surfaces which are scheduled to receive sprayed-on fireproofing.

Apply two coats of paint to surfaces in exterior stairs, balconies piers, wrapped exterior columns which are inaccessible after assembly or erection. Change color of second coat to distinguish it from first.

B. Surface Preparation: After inspection and before shipping, clean steelwork to be painted. Remove loose rust, loose mill scale, and spatter, slag or flux deposits. Clean steel in accordance with Steel Structures Painting Council (SSPC), (2004).

3PART - EXECUTION

3.1ERECTION

A. Temporary Shoring and Bracing: Provide temporary shoring and bracing members with connections of sufficient strength to bear imposed loads. Remove temporary members and connections when permanent members are in place and final connections are made.

B. Setting Bases and Bearing Plates: Clean concrete and masonry bearing surfaces of bond-reducing materials and roughen to improve bond to surfaces. Clean 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.

C. 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.

D. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain. Finish exposed surfaces, protect installed materials, and allow to cure. Comply with manufacturer's instructions in additions to the above requirements.

E. Field Assembly: Set structural frames accurately to lines and elevations. Align and adjust members forming part of 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.

Level and plumb individual members of structure within specified AISC tolerances.

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.

F. Comply with AISC specifications (2004) for bearing, adequacy of temporary connections, alignment, and removal of paint on surfaces adjacent to field welds. Tighten bolts by a calibrated wrench or by direct tension indicator in accordance with AISC (2004). The turn of the nut method is unacceptable.

Do not enlarge unfair holes in members by burning or by use of drift pins, except in secondary bracing members. Ream holes that must be enlarged to admit bolts.

Dip bolts exposed to weather in rust inhibitive paint just before putting into place. All bolts shall have 1½ threads exposed minimum after nut is tightened.

G. Gas Cutting: Do not use gas cutting torches in field for correcting fabrication errors in primary structural framing. Cutting will be permitted only on secondary members which are not under stress, as acceptable to Architect.

H. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint. Apply paint to exposed areas using same material as used for shop painting. Apply by brush or spray to provide minimum dry film thickness of 1.5 mils.

3.2 QUALITY CONTROL

A. An independent testing and inspection agency will be engaged to inspect high-strength bolted connections and welded connections and to perform tests and prepare test reports.

Testing agency shall conduct and interpret tests and state in each report whether test specimens comply with requirements, and specifically state any deviations therefrom.

Provide access for testing agency to places where structural steel work is being fabricated or produced so that required inspection and testing can be accomplished.

B. Correct deficiencies in structural steel work which inspections and laboratory test reports have indicated to not be in compliance with requirements. Perform additional tests, at Contractor's expense, to reconfirm any non-compliance of original work, and to show compliance of corrected work.

C. Bolted Connections: Inspect or test in accordance with AISC specifications. Randomly test at least 10% of the bolts. If 95% of these bolts do not achieve design tension or if any bolt is less than 85% of required tension, test all remaining bolts.

D. Welding: Inspect and test during fabrication and erection of structural steel as follows:

Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work.

SECTION 05120

STRUCTURAL STEEL - BUILDING

Perform visual inspection of all field welds. Check against drawings, specifications and shop drawings. Check type, size, and length.

Test 100% of full penetration welds and welded joints in the length of a member using ultrasonic or radiographic test methods in accordance with AWS D.I.I. (2005) Randomly test 15% of all fillet welds. If 5% or more are not satisfactory, test all remaining welds.

END OF SECTION 05120

SECTION 05500

METAL FABRICATIONS
BUILDING

1PART - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to work of this Section.

1.2 SUMMARY

A. Definition: Metal fabrication includes items made from iron and steel shapes, plates, brass strips, tubes pipes and castings which are not a part of structural steel or other metal systems specified elsewhere.

B. Extent of metal fabrications is indicated on drawings or schedules.

This section includes the following metal fabrications:

Rough hardware
Loose steel lintels
Miscellaneous framing supports, and fabrications
Metal railings and handrail systems

C. See Division 5 Section "Structural Steel" for structural steel framing system components.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. Structural Performance: Design, engineer, fabricate, and install metal fabrications, anchors and connections to withstand loads without exceeding the allowable design working stress of the materials. Apply each load to produce the maximum stress in each component. Concentrated and uniform loads do not act concurrently.

B. Top Rail of Guardrail Systems: Concentrated load of 200 lb. applied at any point nonconcurrently, vertically downward, or horizontally. Uniform load of 50 lb. per linear ft. applied vertically downward or horizontally.

C. Handrails Not Serving as Top Rails: Concentrated load of 200 lb. applied at any point vertically downward or horizontally.

D. Infill Area of Guardrail Systems: Horizontal concentrated load of 25 lb./sq.ft. applied to the gross area and 200 lb. concentrated load applied on a 1 sq.ft. area at any point.

E. Stairs and Landings: Capable of withstanding a uniform load of 100 lb./sq.ft.

1.4 SUBMITTALS

A. Product data for products used in miscellaneous metal fabrications, including paint products and grout.

B. Shop drawings detailing fabrication and erection of each metal fabrication. Include plans, elevations, sections, and details of metal fabrications and their connections. Show anchorage and accessory items. Provide templates for anchors and bolts.

Where installed metal fabrications are to comply with specified design loadings, include structural computations, material properties, and other information for structural analysis that has been prepared, signed and sealed by a qualified professional engineer.

C. Welder Certificates signed by Contractor certifying that welders comply with requirements specified under "Quality Assurance" article.

1.5 QUALITY ASSURANCE

A. Fabricator and Installation Qualifications: Firm experienced in successfully producing similar metal fabrications with sufficient production capacity to produce units without causing delay in the Work.

B. Qualify welding processes and welding operators in accordance with AWS D1.1 "Structural Welding Code - Steel, (2005)" D1.3 "Structural Welding Code - Sheet Steel, (2005)" and D1.2 "Structural Welding Code - Aluminum." (2005) Certify that each welder has satisfactorily passed AWS qualification tests for welding processes involved and, if pertinent, has undergone recertification.

C. Engineer Qualifications: Professional engineer licensed to practice in jurisdiction where project is located and experienced in providing engineering services of the kind indicated that have resulted in the successful installation of metal fabrications similar in material, design, and extent to that indicated for this Project.

1.6 PROJECT CONDITIONS

A. Field Measurements: Check actual locations and condition of walls and other construction, by accurate field measurements before fabrication; show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of Work.

2PART - PRODUCTS

2.1 FERROUS METALS

A. Metal Surfaces, General: For metal fabrications exposed to view, provide materials selected for their surface flatness, smoothness, and freedom from surface blemishes. Do not use materials whose exposed surfaces exhibit pitting, seam marks, roller marks, rolled trade names, roughness, and, for steel sheet, variations in flatness exceeding those permitted by reference standards for stretcher-leveled sheet.

B. Steel Plates, Shapes, and Bars: ASTM A36 (2005).

C. Rolled Steel Floor Plates: ASTM A786 (2005).

D. Steel Tubing: Product type (manufacturing method) and as follows:

1. Cold-Formed Steel Tubing: ASTM A500 (2003), Grade A, unless otherwise indicated or required for design loading.
2. Hot-Formed Steel Tubing: ASTM A501 (2005).
3. For exterior installations and where indicated, provide tubing with hot-dip galvanized coating per ASTM A53 (2006).

E. Uncoated Structural Steel Sheet: ASTM A611 (2004), ASTM A570 (2004) Grade A, or Hot-Rolled Structural Steel Sheet: ASTM A570 (2004), Grade 30, unless otherwise indicated or required by design loading.

F. Uncoated Steel Sheet: Commercial quality of Cold-Rolled Steel Sheet: ASTM A366 (1997) or Hot-Rolled Steel Sheet: ASTM A569 (2004) .

G. Galvanized Steel Sheet: Structural Quality - ASTM A446 (1994); Grade A, unless another grade required for design loading, and G90 coating designation unless otherwise indicated.

H. Steel Pipe: ASTM A53 (2006); Black finish except Galvanized finish for exterior installations and where indicated. Standard weight (schedule 40) unless otherwise indicated.

I. Gray Iron Castings: ASTM A48, Class 30 (2003).

J. Malleable Iron Castings: ASTM A47(2004), grade 32510 .

K. Brackets, Flanges and Anchors: Cast or formed metal of the same type material and finish as supported rails, unless otherwise indicated.

L. Concrete Inserts: Threaded or wedge type; galvanized ferrous castings, either malleable iron, ASTM A47 (2004), or cast steel, ASTM A27 (2005). Provide bolts, washers, and shims, hot-dip galvanized per ASTM A153 (2005).

M. Welding Rods and Bare Electrodes: Select in accordance with AWS specifications for the metal alloy to be welded.

2.2 GROUT AND ANCHORING CEMENT

A. Nonshrink Nonmetallic Grout: Premixed, non-metallic, nonstaining, noncorrosive, grout complying with CE CRD-C 621. Provide one of the following:

"Euco N.S." - Euclid Chemical Co.
"Masterflow 713" - Master Builders
"Crystex" - L&M Construction Chemicals
"Sonogrout" - Sonneborn Building Products Division
"Five Star Grout" - U.S. Grout Corporation
"Upcon" - Upcon Chemical Division, USM Corporation

2.3 FASTENERS

A. General: Provide zinc-coated fasteners for exterior use or where built into exterior walls. Select fasteners for the type, grade, and class required.

B. Bolts and Nuts: Regular hexagon head type, ASTM A307 (2004), Grade A.

C. Lag Bolts: Square head type, FS FF-B-561 (2003).

D. Machine Screws: Cadmium plated steel, FS FF-S-92 (2004).

E. Wood Screws: Flat head carbon steel, FS FF-S-111 (2004).

F. Plain Washers: Round, carbon steel, FS FF-W-92 (2002).

G. Masonry Expansion Anchors: FS FF-S-325 (2005).

H. Toggle Bolts: Tumble-wing type, FS FF-B-588 (2005).

I. Lock Washers: Helical spring type carbon steel, FS FF-W-84 (2002).

2.4 SHOP PAINT

A. Shop Primer for Ferrous Metal: Manufacturer's or fabricator's standard, fast-curing, lead-free, universal modified alkyd primer selected for good resistance to normal atmospheric corrosion, for compatibility with finish paint systems indicated, and for capability to provide a sound foundation for field-applied topcoats despite prolonged exposure complying with performance requirements of FS TT-P-645 (2005). Coordinate primer with Section 09900 Painting.

2.5 FABRICATION, GENERAL

A. Form metal fabrications from materials of size, thickness, and shapes indicated but not less than that needed to comply with performance requirements. Work to dimensions verified by field measure, using proven details of fabrication and support.

B. Form exposed work true to line and level with accurate angles and surfaces and straight sharp edges.

C. Allow for thermal movement resulting from a maximum change of 100 degree F in ambient temperature in the design, fabrication, and installation of installed metal assemblies to prevent buckling, opening up of joints, and overstressing of welds and fasteners.

D. Shear and punch metals cleanly, accurately and remove burrs. Form bent-metal corners to smallest radius possible without causing grain separation or otherwise impairing work.

E. Remove sharp or rough areas on exposed traffic surfaces.

F. Weld corners and seams continuously to comply with AWS recommendations (2006). Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. Obtain fusion without undercut or overlap. Remove welding flux immediately.
At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

G. 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.

H. Provide for anchorage of components; coordinate with supporting structure. Fabricate and space anchoring devices to provide adequate support for intended use.

I. Shop Assembly: Preassemble items in shop to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

J. Cut, reinforce, drill and tap miscellaneous metal work to receive finish hardware, screws, and similar items.

K. Fabricate joints that will be exposed to weather in a manner to exclude water, or provide weep holes where water may accumulate.

2.6 ROUGH HARDWARE

A. Furnish bent or other custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes for framing and supporting woodwork, and for anchoring or securing woodwork. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

2.7 LINTELS AND MISCELLANEOUS FRAMING AND SUPPORTS

A. General: Provide loose steel lintels, steel framing and supports which are not a part of structural steel framework.

B. Fabricate units of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.

C. Galvanize miscellaneous framing and supports in exterior locations or walls and where indicated.

2.8 STEEL PIPE RAILINGS AND HANDRAILS

A. Interconnect railing and handrail members by butt-welding or welding with internal connectors, at fabricator's option, unless indicated. Cope joints at tee and cross intersections.

B. 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.

C. Provide wall returns at ends of wall-mounted handrails.

D. Close exposed ends of pipe by welding 3/16" thick steel plate in place or by use of prefabricated fittings, except where clearance of end of pipe and adjoining wall surface is 1/4" or less.

E. 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.

For railing posts set in concrete fabricate sleeves from steel pipe not less than 6" long and with an inside diameter not less than ½" greater than the outside diameter of post, with steel plate closure welded to bottom of sleeve.

For removable railing posts, fabricate slip-fit sockets from steel pipe whose inside diameter is sized for a close fit with posts and to limit deflection of post without lateral load, measured at top, to not more than 1/12 of post height. Provide socket covers designed and fabricated to resist accidental dislodgement.

2.9 STEEL AND IRON FINISHES

A. Galvanizing: Apply zinc-coating by the hot-dip process compliance with ASTM A153 (2005) or ASTM A123 (2002). Exterior components shall be galvanized unless otherwise noted.

B. Preparation for Shop Priming: Prepare uncoated ferrous metal surfaces to comply with requirements for SSPC surface preparation specifications and environmental exposure conditions of metal fabrications:

Exteriors (SSPC Zone 1B): SSPC-SP6 "Commercial Blast Cleaning." (2004)

Interiors (SSPC Zone 1A): SSPC-SP3 "Power Tool Cleaning." (2006)

C. Apply shop primer to uncoated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete or masonry, sprayed-on fireproofing, unless otherwise indicated. Comply with requirements of SSPC-PA1 "Paint Application Specification No. 1" (2004) for shop painting.

3PART - EXECUTION

3.1 PREPARATION

A. Coordinate delivery and furnish anchorages, setting drawings, diagrams, templates, instructions, and directions for installation of anchorages, including items having integral anchors that are to be embedded in other construction.

3.2 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, lag bolts, wood screws, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting 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 rackup and measured from established lines and levels.

C. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints. 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.

D. Field Welding: Comply with AWS Code (2000) for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:

Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals. Obtain fusion without undercut or overlap. Remove welding flux immediately.

At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

3.3 INSTALLATION OF STEEL PIPE RAILINGS AND HANDRAILS

A. Adjust railings prior to anchoring to ensure matching alignment at abutting joints. Space posts at spacing indicated, or if not indicated, as required by design loadings. Plumb posts in each direction.

B. Anchor posts in concrete by means of pipe sleeves preset and anchored into concrete. Install posts into sleeves, fill space solid with grout, mixed and placed to comply with the manufacturer's directions.

Leave 1/8" grout build-up, sloped away from posts. For installations exposed on exterior, or to flow of water, seal anchoring material to comply with grout manufacturer's directions.

1. Anchor posts and rail ends to steel by welding.

2. Anchor rail ends into concrete and masonry with steel round flanges welded to rail ends and

anchored into wall construction with lead expansion shields and bolts.

3.4 ADJUSTING AND CLEANING

A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 (2004) requirements for touch-up of field painted surfaces. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.

For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A780. (2001)

END OF SECTION 05500

SECTION 05510

METAL FABRICATIONS

SKATE PARK

PART 1 – GENERAL

1.01 RELATED SECTIONS

A. Section 03110: Concrete Formwork - Skate Park

B. Section 03210: Concrete Reinforcement - Skate Park

C. Section 03310: Cast-In-Place Concrete - Skate Park

D. Section 03370: Shotcrete - Skate Park

1.02 SUBMITTALS

A. Shop Drawings:

1. Submit shop drawings for all custom fabricated items under this section. Indicate profiles, sizes, connection attachments, reinforcing, anchorage, size and type of fasteners and accessories. Indicate welded connections using standard AWS welding symbols.

2. Verification: Verify all measurements at the job. Show dimensions, sizes, thicknesses, gauges, finishes, joining, attachments, and relationship of work to adjoining construction. Where items must fit and coordinate with finished surfaces and/or constructed spaces, take measurements at site and not from drawings.

3. Coordination: Coordinate with work of Cast-In-Place Concrete Section 03310.

B. Samples: Required for all Coping and Edging of concrete work. Submit finish metal samples for final finish selection. Submit prior to delivery to site. Attach name, address of manufacturer and/or supplier to each sample.

1.03 DELIVERY, STORAGE AND HANDLING

A. Coordination:

1. Coordinate with work of Cast-In-Place Concrete Section 03310.

B. Storage of Materials:

1. Materials which are stored at the project site shall be above ground on platforms, skids, or other supports. Protect steel from corrosion. Store other materials in a weather-tight and dry place until ready for use.

C. Protection:

1. Use all means necessary to protect miscellaneous metals before, during and after installation and to protect the installed work and materials of all other trades.

2. Protect any adjacent materials or areas below from damage due to weld splatter or sparks during field welding.

D. Replacements: In the event of damage, immediately make all repairs and replacements necessary to the approval of the Owner's Representative and at no additional cost to the Owner.

1.04 JOB CONDITIONS

A. Examine existing conditions in which the work is to be installed. Notify Owner's Representative if conditions are unacceptable to begin work.

B. Do not proceed with the work until unsatisfactory conditions have been corrected.

1.05 COORDINATION

A. Templates and Built-ins: Furnish all anchors, fastenings, sleeves, setting templates and layouts affecting or installed in the work of other trades.

B. Delivery: Where items must be incorporated or built into adjacent work, deliver to trade responsible for such work in sufficient time that progress of work is not delayed. Be responsible for proper location of such items.

1.06 JOB SITE SAMPLE

A. Contractor to provide fabricated, on site sample of metal item(s), complete with approved finish, for review by Owner and Owner's Representative before fabrication of total quantities. Any fabrication of project item(s) by Contractor before Owner review and approval is strictly at his own risk and expense.

B. Approved sample(s) shall be used as the standard of workmanship and shall remain on site until work has been completed and approved by the Owner's Representative.

1.07 QUALITY ASSURANCE

A. Provide at least one person thoroughly familiar with the specification requirements, completely trained, qualified to do the work, who shall be present at all times on the project site directing the work. Provide additional skilled personnel to insure installation is in strict conformance with the design documents.

PART 2 - PRODUCTS

2.01 STEEL PIPE COPING: ASTM A-500 (2003) Grade B, (FY=46 KSI):

A. 2" ROUND: HSS 2.375 [6.03cm] x 0.154 [3.91mm]

B. 2" X 2" SQUARE: HSS 2.000 [5.08cm] x 2.000 [5.08cm] x 0.1875 [4.76mm]

C. 3" ROUND: HSS 3.500 [8.89cm] x 0.216 [5.49mm]

D. 3" X 3" SQUARE: HSS 3.000 [7.62cm] x 3.000 [7.62cm] x 0.1875 [4.76mm]

E. 4" ROUND: HSS 4.500 [11.43cm] x 0.237 [6.02mm]

2.02 WELDING RODS: E-70 series low hydrogen unless otherwise noted on drawings.

2.03 GROUT: Non-shrinking Master Builder's "Embedco", Conrad Sovig's "Metel-Mxs Grout", Sonneborn's "Ferrolith G Redi-Mixed Grout"' or approved equal.

2.04 OTHER MATERIALS: All other materials, not specifically described but required for a complete and proper installation of miscellaneous metals, shall be new, first quality of their respective kinds and subject to the approval of the Owner's Representative.

PART 3 - EXECUTION

3.01 EXISTING CONDITIONS

A. Inspection:

1. Prior to all work of this Section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this installation may properly commence.

B. Discrepancies:

1. In the event of discrepancy, immediately notify the Owner's Representative.

3.02 COORDINATION

A. General: Carefully coordinate with all other trades to insure proper and adequate interface of the work of other trades with the work of this Section.

B. Delivery: Insure timely delivery of all metal fabrications which must be installed in other work so as not to delay that work.

3.03 INSTALLATION

A. General:

1. Install metal fabrications in strict accordance with the Drawings, the approved Shop Drawings, and all pertinent codes, regulations and standards.

2. Obtain Owner's Representative review prior to site cutting or making adjustments which are not part of scheduled work.

3. Install items square and level, accurately fitted and free from distortion or defects.

4. Align all metal fabrications as shown on the Drawings, and where vertical or horizontal members are shown, align them straight, plumb and level within a tolerance of one in 500.

5. Make provisions for erection stresses by temporary bracing. Keep work in alignment.

6. Replace items damaged in course of installation.

7. Perform field welding in accordance with AWS D1.1 (2005)

8. After installation, grind and touch-up field welds.

3.04 WORKMANSHIP

A. Layout: Set all work plumb, true, rigid, and neatly trimmed out. Miter corners and angles of exposed molding and frames unless otherwise noted.

B. Fitting: Fit exposed connections accurately together to form tight hairline joints.

C. Labor: Employ only workmen specifically skilled in such work.

3.05 FABRICATION

A. Shop assemble in largest practicable dimensions, making members true to length so assembling may be done without fillers.

B. Provide all surfaces free of file marks, dents, hammer marks, wire edges or any unsightly surface defects.

C. STEEL PIPE COPING: Roll pipe to conform with the top radius curve of each bowl and ledge as shown on drawings. Refer to drawings for relational tolerance to concrete surface and other steel.

3.06 ATTACHMENTS AND REINFORCEMENTS

A. Do all cutting, shearing, drilling, punching, threading, tapping, etc., required for site metalwork or for attachment of adjacent work. If applicable, drill or punch holes; do not use cutting torch.

3.07 OTHER CONNECTORS: Make all permanent connections in ferrous metal surfaces using welds where at all possible; do not use bolts or screws.

3.08 WELDING

A. Preparation: Remove all rust, paint, scale and other foreign matter. Wire brush all flame-cut edges. Clamp members as required and alternate welds, all as necessary to prevent warping or misalignment.

B. Exposed Welds: Uniformly grind smooth (no tolerance) all welds normally exposed to view and feel in the finished work.

D. Faulty and Defective Welding: Chip out and replace all welding showing cracks, slag inclusion, lack of fusion, bad undercut or other defects ascertained by visual or other means of inspection. Replace and re-weld at no cost to Owner.

E. Field Welding:

1. Procedure: Comply with AWS code of manual shielded metal-arc welding (2005), appearance and quality of welds made, and methods used in correcting welding work.

2. Protection: Protect all adjacent surfaces from damage due to weld sparks, spatter, or tramp metal.

3.09 SURFACE TREATMENT AND PROTECTIVE COATINGS

A. Cleaning:

1. Thoroughly clean all mill scale, rust, dirt, grease and other foreign matter from ferrous metal prior to any galvanizing, or painting.

2. Conditions which are too severe to be removed by hand cleaning, shall be cleaned using appropriate methods for solvent cleaning, power tool cleaning and brush-off blast cleaning.

B. Exterior Ferrous Metal:

1. Grind smooth all welds, burrs, and rough surfaces. Clean all coping from grease.

2. Shop coat iron metal items; using anti-rust primer (red color).

3. All welds to be painted with primer after appropriate connections and grinding has taken place. Touch-up all scratched primer prior to shotcrete application.

3.10 CLEAN-UP

A. Keep all areas of work clean, neat and orderly at all times. Keep paved areas clean during installation.

B. Clean up and remove all debris from the entire work area prior to Final Acceptance to satisfaction of Owner's Representative.

END OF SECTION 05510

SECTION 05710

ORNAMENTAL METALS
SKATE PARK

PART 1 GENERAL

1.01 SUMMARY

A. Work Included: Provide Fencing, Entry Gate and Signage Posts, complete, as shown and as specified.

B. Related Work:

Section 05510: Ornamental Metals - Skate Park

Section 03310: Cast-In-Place Concrete - Skate Park

Section 09900: Painting - Skate Park

1.02 REFERENCES

A. AWS - "Code for Arc and Gas Welding in Building Construction" of American Welding Society, AWS D1.0 (2005)

B. ASTM - American Society for Testing and Materials

C. SSPC - Steel Structures Painting Manual, Vol. 2.

1.03 SUBMITTALS

A. Product Data: Manufacturers' catalog cuts and current printed specifications of the following:

1. Primer

2. Intermediate Coat

3. Finish Coats

B. Shop Drawings: Minimum 3/8 inch scale showing dimensions, sizes, thicknesses, gauges, finishes, joining, attachments, and relationship of work to adjoining construction.

1. Verification: Verify measurements at the job site. Where items must fit and coordinate with finished surfaces and/or constructed spaces, take measurements at site and not from drawings.

2. Coordination: Where concrete, or other materials must be set to exact locations to receive work, furnish assistance and direction necessary to permit other trades to properly locate their work.

3. Setting Diagrams for Welded Connectors, Concrete Inserts: Where required to receive work, show exact locations and furnish all such Drawings to the trades responsible for installing the connectors or inserts.

4. Catalogue Work Sheets: Show illustrated cuts of item to be furnished, scaled details and dimensions.

C. Samples:

1. Fencing: One (1) - 18 inch [45.72cm] long square tube painted per submittal spec.

2. Signage: One (1) – 12 inch [30.48cm] long round tube painted per submittal spec.

D. Certificate: Certification that painting has been done in strict compliance with paint manufacturer's current specifications.

1.04 QUALITY ASSURANCE

A. Welder's Qualifications: Qualified per AWS. Submit certification.

B. Field Welds: Comply with AWS code of manual shielded metal-arc welding (2005).

C. Provide at least one person thoroughly familiar with the specification requirements, completely trained, qualified to do the work, who shall be present at all times on the project site directing the work. Provide additional skilled personnel to insure installation is in strict conformance with the design documents.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Delivery: Deliver fabricated units and components completely identified per Shop Drawings. No materials with defects or scratches on exposed finishes will be accepted.

B. Storage: Protect work at site from damage and from weather until installed and work has been accepted. Do not remove protective wrappings from shop-painted finishes until installation.

C. Handling: Disassemble units only as necessary for shipping and handling limitations.

D. Replacement: Replace damaged work at no cost to Owner.

1.06 SEQUENCING AND SCHEDULING

A. Acceptance: Do not install work of this section prior to acceptance by Owner's Representative of area to receive such work.

B. Coordination: Coordinate with the work of other sections to insure the following:

1. Templates and Built-ins: Furnish anchors, fastenings, sleeves, setting templates and layouts affecting or installed in the work of other trades so that work or progress of work is not delayed. Be responsible for proper location of such items.

PART 2 PRODUCTS

2.01 MATERIALS

A. Steel Tubing: ASTM A500, (2003) cold-formed, Grade A, welded or seamless.

B. Steel Pipe:

1. For Bending: ASTM A53, (2006) Type E or S, Grade A.

2. Straight: ASTM 120. (2003)

2.02 SPECIALLY FABRICATED PRODUCTS

A. Ferrous Metal Fence:

1. Square Tube Fencing and Signage Post: Mild steel with connections welded.

2. Pipe Railings: I.P.S. unless otherwise noted. Fabricate in largest sections practicable. Weld and grind shop joints. Conceal field joints with sleeves and pins.

B. Grout:

1. Type: Non-shrinking, non-staining grout.

2. Color: Match adjacent concrete paving.

3. Product: "Embeco 153" by Master Builder's, (216) 831-5500; "Metal-Mix Grout", by Conrad Sovig's, (415) 863-3803; "Ferrolith G Redi-Mixed Grout" by Sonneborn Building Products, (415) 889-9899 or (612) 835-3434 or "Upco Non-shrink", by Upco Co., (216) 881-0033, or equal.

2.03 FINISHES

A. Refer to Section 09900 – Painting

2.04 FABRICATION

A. Shop Assembly:

1. Pre-assemble items in shop to greatest extent possible to minimize field splicing and assembly.

2. Tolerances: Provide surfaces free of file marks, dents, hammer marks, wire edges or any unsightly surface defects.

3. Bends, twists, open joints in finished members, and projecting edges or corners at connections not permitted.

B. Welding:

1. Standards: Weld and grind shop joints per AWS Code D1.0. (2005) (ASTM A36 (2005)(for structural steel.)

2. Preparation: Remove rust, paint, scale and other foreign matter. Wire brush flame-cut edges. Clamp members as required and alternate welds, as necessary to prevent warping or misalignment.

3. Exposed Welds: Uniformly make and ground smooth welds normally exposed to view in the finished work.

4. Galvanized Units: Do not weld after fabrication.

5. Faulty and Defective Welding: Chip out and replace welding showing cracks, slag inclusion, lack of fusion, bad undercut or other defects ascertained by visual or other means of inspection. Replace and reweld at no cost to Owner.

C. Shop Factory/Finishing:

1. Cleaning:

a. Thoroughly clean mill scale, rust, dirt, grease and other foreign matter from ferrous metal prior to any painting.

b. Conditions which are too severe to be removed by hand cleaning methods, shall be cleaned per SSPC "Surface Preparation Specifications" (2004), "Solvent Cleaning, SSPC SP-1" (2004), "Power Tool Cleaning, SSPC-SP"(2004), or "Brush-Off Blast Cleaning, SSPC-SP7" as required (2000).

2. Exterior Ferrous Metal:

a. Grind smooth welds, burrs, and rough surfaces. Clean and hot-phosphate treat completed assembly. Hot phosphate treatment not required on items which are not exposed in the finish work or on those items where size prohibits such treatment.

b. Shop coat ferrous metal items unless specified; use metal primer as specified.

c. Indicate on shop drawings where treatment is proposed to be omitted, if any.

D. Painting:

1. Refer to Section 09900 – Painting.

PART 3 EXECUTION

3.01 EXAMINATION

A. Condition of Surfaces: Inspect surfaces and layout to receive Fencing and report defects which would interfere with installation.

B. Acceptance: Starting work implies acceptance of surfaces as satisfactory.

3.02 PREPARATION

A. Layout: Verify entire layout. Set work plumb, true and rigid.

B. Fitting: Fit exposed connections accurately together to form tight hairline joints.

3.03 INSTALLATION

A. Attachments and Reinforcements:

1. Do cutting, shearing, drilling, punching, threading, and tapping required for site metalwork or for attachment of adjacent work. Drill or punch holes; do not use cutting torch. Shearing and punching shall leave true lines and surfaces.

2. Set fence posts and similar items shown or required to be set in core drilled hole with quick setting non-shrink grout or anchor cement. Provide approximately 1/4 inch [6.35mm] clearance around fence posts.

3. Provide reinforcements for hardware and other miscellaneous attachments.

B. Field Welding:

1. Procedure: Comply with AWS code of manual shielded metal-arc welding (2005), appearance and quality of welds made, and methods used in correcting welding work.

2. Protection: Protect adjacent surfaces from damage due to weld sparks, spatter, or tramp metal.

3.04 TOUCH-UP AND PROTECTION

A. Touch-up: Immediately after erection, clean field welds, bolted connections and abraded areas of shop paint. Paint exposed areas with same material to same dry-film thickness as used for shop painting.

B. Protection: Protect the work from damage or discoloration until acceptance of work.

3.05 CLEANING

A. Spills: Clean up over spill from installation. Do not use caustic chemicals to remove stains where adjacent surfaces may be damaged.

END OF SECTION 05710

SECTION 06101

ROUGH CARPENTRY

1PART - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

Types of work in this section include rough carpentry for:

Wood framing, grounds, nailers, blocking, furring and sheathing.

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's specifications and installation instructions for materials listed below:

Sheathing
Corrosion resistance for fasteners used in exterior wall assemblies

1.4 PRODUCT HANDLING

Delivery and Storage: Keep materials under cover and dry. Stack lumber, plywood, and other panels; provide for air circulation within and around stacks and under temporary coverings including polyethylene and similar materials.

2PART - PRODUCTS

2.1 LUMBER, GENERAL

A. Lumber Standards: Manufacture lumber to comply with PS 20 "American Softwood Lumber Standard" (2005) and with applicable grading rules of inspection agencies certified by American Lumber Standards Committee's (ALSC) Board of Review.

B. Inspection Agencies: Inspection agencies and the abbreviations used to reference with lumber grades and species include the following:

RIS - Redwood Inspection Service
NLGA - National Lumber Grades Authority (Canadian)

SPIB - Southern Pine Inspection Bureau
WCLIB - West Coast Lumber Inspection Bureau
WWPA - Western Wood Products Association

C. Grade Stamps: Factory mark each piece of lumber with grade stamp of inspection agency, evidencing compliance with grading rule requirements and identifying grading agency, grade, species, moisture content at time of surfacing, and mill. For exposed lumber, apply grade stamps to ends or back of each piece, or omit grade stamps entirely and issue certificate of grade compliance from inspection agency in lieu of grade stamp.

Nominal sizes are indicated, except as shown by detail dimensions. Provide actual sizes as required by PS 20 (2005), for moisture content specified for each use.

Provide dressed lumber, S4S, unless otherwise indicated.

Provide seasoned lumber with 19% maximum moisture content at time of dressing and shipment for sizes 2" or less in nominal thickness unless otherwise indicated.

2.2 DIMENSION LUMBER

A. For light framing, provide "stud" or "standard" grade lumber for stud framing (2" to 4" thick, 2" to 6" wide, 10' and shorter) and "standard" grade for other light framing (2" to 4" thick, 2" to 4" wide), any spruce-pine-fir graded under NLGA (2005) or any species graded under WWPA (2005) or WCLIB (2005) rules.

B. For structural light framing (2" to 4" thick, 2" to 4" wide), provide the following grade and species:

No. 2 grade
Same species as indicated for structural framing grade below

C. For structural framing (2" to 4" thick, 5" and wider), provide the following grade and species:

No. 1 grade
Douglas fir or Douglas fir-larch graded, respectively, under WCLIB (2005) or WWPA (2005) rules.
Southern pine graded under SPIB (2005) rules.

2.3 MISCELLANEOUS LUMBER

Provide wood for support or attachment of other work including rooftop equipment curbs and support bases, cant strips, bucks, nailers, blocking, furring, grounds, stripping and similar members.

Provide lumber of sizes indicated, worked into shapes shown, and as follows:
Grade: Standard grade light framing size lumber of any species or board size lumber as required. No. 3 Common or Standard grade boards per WCLIB (2005) or WWPA (2005) rules or No. 3 boards per SPIB rules.

2.4 CONSTRUCTION PANELS

A. Construction Panel Standards: Comply with PS 1 "U.S. Product Standard for Construction and Industrial Plywood" (2005) for plywood panels and, for products not manufactured under PS 1 provisions, with American Plywood Association (APA) "Performance Standard and Policies for Structural-Use Panels," Form No. E445. Factory mark each construction panel with APA trademark evidencing compliance with grade requirements.

B. Roof Sheathing: APA rated OSB sheathing.

Exposure Durability Classification: Exposure 1
Span Rating: 40/20
Edges: Square
Thickness: 7/16" unless otherwise indicated

2.5 ACCESSORY MATERIALS

A. 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 metal hangers and framing anchors of the size and type recommended by the manufacturer for each use including recommended nails. 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 A153) (2005).

B. Framing Anchors: Hot-dip Zinc coated steel equal to products of Simpson Strongtie.

C. Building Paper: ASTM D226, (2005), Type I; asphalt saturated felt, non-perforated, 15 lb. type.

2.6 WOOD TREATMENT BY PRESSURE PROCESS

A. Preservative Treatment: Where lumber or plywood is indicated as "PT" or "Treated," or is specified herein to be treated, comply with applicable requirements of AWPA Standards C2 (Lumber) (2005) and C9 (Plywood) and of AWPB Standards (2005) listed below. Mark each treated item with the AWPB Quality Mark Requirements.

B. Pressure treat items with water-borne preservatives to comply with AWPA. After treatment, kiln-dry

lumber and plywood to a maximum moisture content, respectively, of 19% and 15%. Treat indicated items and the following (except items which require fire retardant treatment):

1. AWPA (2005)- Use category UC2. Interior Construction protected from weather, potentially damp conditions.

    a. Treatment: Disodium octaborate tetrahydrate (DOT) sodium borate.

    b. Retention: 0.25 psf. Products to be treated include the following:

        1. Sill plates for slab on grade.

        2. Plates, blocking, and furring in contact with concrete or CMU walls.

        3. Protected wood roof nailers.

2. AWPA (2005) - Use category UC3A, UC3B. Exterior construction not in contact with the ground and exposed to the weather, or wood components closer than 18" to exposed ground in crawl spaces.

    a. Treatment: Copper quaternary.

    b. Retention: 0.25 pcf.

    c. Products to be treated include the following:

        1. Exterior rails, pickets, fence boards.

        2. Exterior deck components, plates, joist, decks, blocking.

        3. Exterior fence component trim, boards except post.

        4. Exterior fascia board.

3. AWPA (2005) - Use category UC4. Exterior construction in contact with ground or fresh water.

    a. Treatment: Copper quaternary.

    b. Retention: 0.40 pcf.

    c. Products to be treated include the following:

        1. Exterior posts.

        2. Exterior guard rail posts.

3. Exterior stair stringers.

4. Exterior fence posts.

3PART - EXECUTION

3.1 INSTALLATION, GENERAL

A. 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.

B. Set carpentry work to required levels and lines, with members plumb and true to line and cut and fitted.

C. Securely attach carpentry work to substrate by anchoring and fastening as shown and as required by recognized standards.

D. Use common wire nails, except as otherwise indicated. 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 if required.

E. Coordinate work of this section with other trades. Provide cutting, blocking, and carpenter assistance required for other trades.

3.2 WOOD GROUNDS, NAILERS, BLOCKING AND SLEEPERS

A. Provide for screening or attachment of other work. Form to shapes as shown or necessary and cut for true line and level of work to be attached. Coordinate location with other work involved. Provide blocking for wall-attached items including all wall cabinets, handrails, grab bars, downspouts, and fire extinguishers.

B. Attach to substrates to support applied loading. Countersink bolts and nuts flush with surfaces, unless otherwise indicated.

3.3 WOOD FRAMING, GENERAL

A. Provide framing members of sizes and on spacings shown, and frame openings as shown or, if not shown, comply with recommendations of "Manual for House Framing" (2002) of National Forest Products Association (NFPA). Do not splice structural members between supports.

B. Anchor and nail as shown and to comply with "Recommended Nailing Schedule" of "Manual of House Framing" (2002) and "National Design Specifications for Wood Construction" (2002)

published by NFPA.

C. Firestop concealed spaces of wood-framed walls and partitions at each floor level and at the ceiling line of the top story. Where firestops are not automatically provided by the framing system used, use closely-fitted wood blocks of nominal 2" thick lumber of the same width as framing members.

D. Studs: Select studs for straightness. Install at not less than 16" o.c., 12" o.c. for wall supporting roof truss to allow trusses to bear directly over stud.

E. Top Plates: Provide double top plate for load-bearing partitions, single for non-load-bearing partitions. Ends shall occur over studs.

3.4 INSTALLATION OF CONSTRUCTION PANELS

A. General: Comply with applicable recommendations contained in Form No. E30F, "A"A Design/Construction Guide - Residential & Commercial," for types of construction panels and applications indicated. Offset and stagger joints. Set nails slightly below surface. Sand panels smooth. Seal edges of panels with water repellant preservative compatible with specified paint.

B. Fastening Methods:

1. To Sheathing: 6d nails for ½" thickness, 8d for 19/32" or greater thickness. Space per International Building Code (2003) requirements.

END OF SECTION 06101

SECTION 06192

PREFABRICATED WOOD TRUSSES

1PART - GENERAL

1.1RELATED DOCUMENTS

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

1.2SUMMARY

A. Extent and configuration of prefabricated wood roof trusses is indicated on drawings.

B. Sheathing is specified in Division 6 section "Rough Carpentry."

1.3DEFINITIONS

Prefabricated wood trusses include planar structural units consisting of metal plate connected members which are fabricated from dimension lumber and which have been cut and assembled prior to delivery to the project.

1.4SUBMITTALS

A. Product Data: Submit fabricator's technical data covering lumber, metal plates, hardware, fabrication process, treatment (if any), fire assembly, handling, and erection.

B. Shop Drawings: Submit shop drawings showing species, sizes and stress grades of lumber to be used; pitch, span, camber, dimension, configuration and spacing for each type of truss; type, size, material, finish, design values, location of metal connector plates; and bearing and anchorage details.

Submit design analysis and test reports indicating loading, section modules, assumed allowable stress, stress diagrams and calculations, and similar information needed for analysis and to ensure that trusses comply with requirements.

Provide shop drawings which have been signed and stamped by a Structural Engineer licensed to practice in the jurisdiction where trusses will be installed.

1.5QUALITY ASSURANCE

A. TPI Standards: Comply with applicable requirements and recommendations of the following Truss Plate Institute (TPI) publications:

1. "Design Specification for Metal Plate Connected Wood Trusses"

2. "Design Specification for Metal Plate Connected Parallel Chord Wood Trusses" (2005)
3. "Commentary and Recommendations for Handling and Erecting Wood Trusses" (2002)
4. "Commentary and Recommendations for Bracing Wood Trusses" (2003)
5. "Quality Standard for Metal Plate Connected Wood Trusses" (2002)

B. Wood Structural Design Standard: Comply with applicable requirements of "National Design Specification for Wood Construction" published by NFPA (2002).

C. Design by Manufacturer: Trusses shall be designed by connector plate manufacturer to support all superimposed dead and live loads, with design approved and certified by a structural engineer licensed to practice in the jurisdiction where trusses will be installed.

D. Connector Plate Manufacturer's Qualifications: Provide truss connector plates manufactured by a firm which is a member of TPI and which complies with TPI quality control procedures for manufacture of connector plates published in TPI "Quality Standard for Metal Plate Connected Wood Trusses" (2002).

E. Fabricator's Qualifications: Provide trusses by a firm which has a record of successfully fabricating similar trusses and which practices a quality control program which complies with, or is comparable to, one published in TPI "Quality Standard for Metal Plate Connected Wood Trusses" (2005) and which involves inspection by an independent inspection and testing agency acceptable to Architect and authorities having jurisdiction.

1.6DELIVERY. STORAGE AND HANDLING

A. Handle and store trusses with care, and in accordance with manufacturer's instructions and TPI recommendations to avoid damage from bending, overturning, or other cause for which truss is not designed to resist or endure.

B. Time delivery and erection of trusses to avoid extended on-site storage and to avoid delaying work of other trades whose work must follow erection of trusses.

1.7COORDINATION

A. Coordinate location and openings in trusses with location, spacing, and size requirements for recessed lighting and HVAC ductwork.

2PART - PRODUCTS

2.1MANUFACTURERS

A. Subject to compliance with requirements, provide prefabricated wood floor trusses of the following:

Alpine Engineered Products, Inc.

B. Substitution under provisions of Section 01600.

2.2 LUMBER

A. Factory mark each piece of lumber with type, grade, mill and grading agency.

B. Lumber Standard: 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.

C. Inspection Agencies: Inspection agencies and the abbreviations used to reference them to lumber grades and species include the following:

NLGA	-	National Lumber Grades Authority (Canadian)
SPIB	-	Southern Pine Inspection Bureau
WCLIB	-	West Coast Lumber Inspection Bureau
WWPA	-	Western Wood Products Association

D. Provide lumber manufactured to actual sizes required by PS 20 to comply with requirements indicated below:

Dressed, S4S, unless otherwise indicated.

Moisture Content: Seasoned, with 19% maximum moisture content at time of dressing and shipment for sizes 2" or less in nominal thickness, unless otherwise indicated.

Grade: Manufacturer's choice meeting design requirements.

Species: Provide any species and grade which has been stress-rated and certified, at indicated moisture content, to comply with requirements for minimum design values of single members used in the design of the trusses.

2.3 METAL CONNECTOR PLATES. FASTENERS AND ANCHORAGES

A. Connector Plates: Fabricate connector plates from metal complying with any of the following requirements as acceptable for exposure and treatment.

1. Hot-Dip Galvanized Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A446, (1994) Grade A; zinc coated by hot-dip process to comply with ASTM A525, (1994) Designation G60; minimum coated metal thickness of not less than 0.036".

2. Electrolytic Zinc-Coated Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A591 (2005), Coating Class C, and, with ASTM A446, (1994) Grade A; zinc-coated by electro-deposition; with minimum coated metal thickness of not less than 0.047".

3. Aluminum-Zinc Alloy-Coated Steel Sheet: Structural (physical) quality steel sheet complying with ASTM A792 (2006), Coating Designation AZ 50, and, with ASTM A446, (1994) Grade A; aluminum-zinc alloy-coated by hot-dip process; with minimum coated metal thickness of not less than 0.036".

B. Fasteners and Anchorages: Provide size, type, material and finish required for nails, screws, bolts, nuts, washers, and other anchoring devices.

2.4CHARACTERISTICS

A. Wood Roof Trusses:

1. Parallel 2x4 minimum cord members unless otherwise shown. Cords oriented vertically. Double cords for long span units.
2. Bearing: Bottom
3. Webs: Open 2x4
4. Deflection: L/240

2.5FABRICATION

A. Cut truss members to accurate lengths, angles and sizes to produce close fitting joints with wood-to-wood bearing in assembled units. Provide a minimum of 1-1/2" bearing surface for plywood decks. Design trusses to accommodate ducts, access and other clearances indicated.

B. Fabricate metal connector plates to size, configuration, thickness and anchorage details required.

C. Assemble truss members using jigs or other means to ensure uniformity and accuracy of assembly with close fitting joints. Position members to produce camber.

3PART - EXECUTION

3.1INSTALLATION

A. General: Erect and brace trusses to comply with recommendations of manufacturer and the Truss Plate Institute.
B. Erect trusses with plane of truss webs vertical (plumb) and parallel to each other, located accurately. Hoist units in place by means of lifting equipment suited to sizes and types of

trusses, applied at designated lift points as recommended by fabricator, exercising care not to damage truss members or joints by out-of-plane bending or other causes.

C. Provide temporary bracing to maintain trusses plumb, parallel and in location, until permanent bracing is installed.

D. Anchor trusses securely at all bearing points using metal connectors. **Toe nailing is not acceptable.** Install permanent bracing and related components to enable trusses to maintain spacing, withstand live and dead loads including lateral loads, and to comply with other requirements.

E. Do not cut or remove truss members, plates or bracing.

END OF SECTION 06192

SECTION 06400

ARCHITECTURAL WOODWORK AND FINISH CARPENTRY

1PART - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

A. Extent of each type of woodwork is indicated on drawings and in schedules. Woodwork as specified herein shall mean both architectural woodwork and finished carpentry.

B. Architectural woodwork is distinguished from finish carpentry by being primarily shop fabricated to conform to high quality of standards of material and workmanship.

Types of architectural woodwork include the following:

Architectural cabinets (millwork)

C. Finish Carpentry: Involves products which meet architectural woodworking quality standards but are primarily of stock materials and partially or totally fabricated in the field.

Types of Finish Carpentry include the following standing and running trim (if any):

Closet and utility shelving
Finish carpentry
Standing and running trim

1.3 QUALITY ASSURANCE

A. AWI Quality Standard: Comply with applicable requirements of "Architectural Woodwork Quality Standards" published by the Architectural Woodwork Institute (AWI), (2004) except as otherwise indicated.

B. Installer Qualifications: Installation of architectural woodwork items shall be by same firm which fabricated them.

1.4 DELIVERY, STORAGE, AND HANDLING

Protect woodwork during transit, delivery, storage and handling to prevent damage, soiling and deterioration.

1.5 PROJECT CONDITIONS

A. 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.

B. 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 conditions.

2PART - PRODUCTS

2.1 FABRICATION, GENERAL

A. 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.

B. 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.

C. 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.

D. 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.

E. Measurements: Before proceeding with fabrication of woodwork required to be fitted to other construction, obtain field measurements and verify dimensions and shop drawing details 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.

2.2 STANDING AND RUNNING TRIM, AND RAILS

A. Quality Standard: Comply with AWI Section 300 (2004) Custom Grade.

Rout or groove backs of flat trim members, kerf backs of other wide flat members, stop kerf ½" from ends where exposed in finished work.

B. Interior Trim for Transparent Finish: White Oak, rift sawn.

2.3 HIGH PRESSURE DECORATIVE LAMINATE (HPDL)

A. Laminate Cladding: High pressure decorative laminate complying with NEMA LD 3. (2006) Colors, patterns and finishes as indicated, or as selected by Architect from laminate manufacturer's standard products. Minimum 16 selections available.

Acceptable Manufacturers (HPDL):
Formica
Laminart
Nevamar
Ralph Wilson Plastics Company

Laminate Grade for Exposed Surfaces: GP-50 except post formed use PF-42.

Semi-Exposed Surfaces: GP-28; CL-20 or shops standard low pressure laminate.

Backing Laminate: Backer 20 nominal .020".

2.4 ARCHITECTURAL CABINETS, LAMINATE CLAD

A. Quality Standard: Comply with AWI Section 400B, (2004) Custom Grade.

Type of Cabinet Construction: Flush overlay
Exposed Surfaces: HPDL
Semi-Exposed Surfaces: Overlay or varnished
Edges: HPDL

2.5 CABINET HARDWARE AND ACCESSORY MATERIALS

A. Hardware Standard: Comply with ANSI/BHMA A156.9 "American National Standard for Cabinet Hardware" (2004) for items indicated by reference to BHMA numbers or referenced to this standard.

Quality Level: Type 2 (Institutional), unless otherwise indicated.

Finish: 626 (Satin chromium plated, brass or bronze base) provide manufacturer's standard finish for concealed hardware.

B. Cabinet Door Hardware:

Spring Hinges - 150 degrees
Magnetic catches
Pulls - wire type, 4" centers

C. Drawer Hardware:

Side mounted, full extension, ball-bearing, nylon roller drawer slides with load capacity of 75 lb. per pair.

Pull.

D. Shelf Supports Adjustable: Side mounted slotted-type standards and brackets designed to support a uniform 40 lb. per linear foot load.

E. Grommets: Provide grommets for all wiring openings in tops, consisting of 2.75" diameter-grommet, grommet cap and slot cover. Furnish in one of five colors to best match top.

F. Locks: Best cabinet with 2 keys each. Key alike each suite.

2.6 CLOSET AND UTILITY SHELVING

A. Quality Standard: Comply with AWI Section 600, Custom Grade.

Shelving Material: Lumber, any closed-grain hardwood listed in standard or Birch faced veneer plywood with edge bands.

B. Closet and Utility Shelving Hardware:

1. Horizontal Slotted Type: Surface or mortise mounted, □" wide x 3/16" high x length indicated, BHMA No. B84071, open shelf rest BHMA No. B84091, zinc-plated steel.

2. Clothes Poles and Supports: Provide galvanized 1" O.D. steel pipe or cut to length, with standard wrought steel flanges (one with open top).

Center Brackets: Combination shelf and closet pole support wrought steel with manufacturer's standard enamel finish; complying with ANSI A156.16, (2004) Type B84051. Provide at 5'-O" O.C.

2.7 FASTENERS AND ANCHORS

A. Screws: For metal framing supports, provide screws as recommended by metal framing manufacturer. Nails shall have casing or finish heads.

B. Nails: Provide stainless steel or aluminum nails for exposed exterior woodwork which is to receive transparent finish (if any). Provide any type of non-corrosive nails for other exterior woodwork.

C. 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 to be set into concrete or masonry work for subsequent woodwork anchorage.

3PART - EXECUTION

3.1 PREPARATION

A. Condition woodwork to average prevailing humidity conditions in installation areas prior to installing.
B. Prior to installation of architectural woodwork, examine shop fabricated work for completion, and complete work as required, including back priming and removal of packing.

3.2 INSTALLATION

A. 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.

B. Scribe and cut woodwork to fit adjoining work, and refinish cut surfaces or repair damaged finish at cuts.

C. 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 exposed nailing, countersunk and filled flush with woodwork, and matching final finish where transparent finish is indicated.

D. Standing and Running Trim: Install with minimum number of joints using full-length pieces (from maximum length of lumber available). Stagger joints in adjacent and related members. Cope at returns, miter at corners and comply with referenced Quality Standards for joinery.

E. Cabinets: 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 unincumbered operation. Complete the installation of hardware and accessory items as indicated. Maintain veneer sequence matching (if any) of cabinets with transparent finish.

3.3 ADJUSTMENT, CLEANING, FINISHING, AND PROTECTION

A. 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.

B. Clean, lubricate and adjust hardware.

C. Clean woodwork on exposed and semi-exposed surfaces. Touch-up shop-applied finishes to restore damaged or soiled areas.

D. Refer to the Division 9 sections for final finishing of installed architectural woodwork.

E. 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.

SECTION 06400

ARCHITECTURAL WOODWORK AND FINISH CARPENTRY

END OF SECTION 06400

SECTION 07201

INSULATION

1PART - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

A. Extent of insulation work is shown on drawings and indicated by provisions of this section.

B. Applications of insulation specified in this section include the following:

Foundation insulation
Batt-type building insulation
Masonry foam insulation

C. Related work specified elsewhere includes deck roof insulation, sound attenuation blankets, and masonry cavity wall insulation.

1.3 QUALITY ASSURANCE

A. Maximum Allowable Asbestos Content: Provide insulations 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. (2005)

2PART - PRODUCTS

2.1 EXTRUDED POLYSTYRENE BOARD INSULATION

A. 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 C578 (2006) for type indicated; with five-year aged R-Values of 5.4 and 5 at 40EF and 75EF (4.4EC and 23.9EC) respectively, and as follows:

Type IV, 1.6 lb/cf minimum density and a minimum of 1½" thick, unless otherwise indicated. Maximum flame spread of 5 and smoke developed 165, per ASTM E84. (2005)

B. Acceptable Manufacturers: Subject to compliance with requirements provide products of one of the following:

Amoco Foam Products Company

Dow Chemical U.S.A.
Minnesota Diversified Products, Inc.
U C Industries

2.2 GLASS FIBER BLANKET/BATT INSULATION

A. Thermal insulation produced by combining glass fibers with thermosetting resins to comply with ASTM C665 (2006) for Type III (faced). Where material is exposed to inside of building, including plenum spaces, or not separated by minimum of ½" gypsum board, provide units with a maximum flame spread of 25, and smoke developed 50. ASTM E84 (2005) and passing ASTM E136 Test (2004). Unless otherwise indicated, provide faced units with a foil-scrim kraft vapor-retarder on one face with integral nailing flanges. Size insulation for wood or metal stud spacing shown.

Provide nominal size and insulation value as follows:

1. 3½", R value of 13, FS-25, where not separated from inside by a minimum ½" gypsum board.
2. 6", R value of 19, FS-25, where not separated from inside by a minimum ½" gypsum board.
3. 9½", R value of 30.

B. Manufacturers: Subject to compliance with requirements, provide products of one of the following:

CertainTeed Corporation
Knauf Fiber Glass GmbH
Manville Corporation
Owens-Corning Fiberglas Corporation

C. Where units are part of a fire rated wall/ceiling/floor/roof assembly, provide units which are identical to those as indicated in the assembly.

2.3 MASONRY FOAM INSULATION

A. Provide proprietary non-expanding, plastic, foamed-in core, non-combustible insulation with an in-place density of 2.5 to 3.3 lb/cf. R-value for 8", 105 lb. density CMU shall be not less than 8.2.

B. Acceptable Products:

1. Thermal Corporation of America "Thermco"

2. Tailored Chemical Products, Inc. "Core-Fill-500"

2.4 AUXILIARY INSULATING MATERIALS

A. Adhesive for Bonding Insulation: Type recommended by insulation manufacturer and complying with requirements for fire performance characteristics.

B. Mechanical Anchors: Provide mechanical anchors as recommended by insulation manufacturer for type of application and condition of substrate to secure insulation in place where batt insulation would be otherwise unsupported, including stick clips, wire retainers, and friction anchors.

C. Eave Ventilation Troughs: Preformed rigid fiberboard or plastic sheet designed and sized to fit between roof framing members and to maintain cross ventilation of a minimum of 3" at vented eaves.

3PART - EXECUTION

3.1 INSTALLATION, GENERAL

A. Comply with manufacturer's instructions for particular conditions of installation. Properly prepare areas to receive insulation.

B. Extend insulation full thickness over entire area to be insulated. Cut and fit tightly around obstructions, and fill voids with insulation. Remove projections which interfere with placement. Place on exterior of steel beams and columns such that there is a continuous thermal envelope.

3.2 INSTALLATION OF PERIMETER AND UNDER-SLAB INSULATION

On vertical surfaces, set units in adhesive applied in accordance with Manufacturer's instructions.

3.3 INSTALLATION OF MASONRY FOAM INSULATION

A. Install foam insulation in concrete unit masonry cells of all 8" to 12" exterior units. Installation shall be by experienced personnel certified and approved by the Manufacturer. Install foam as wall is constructed in two stages, one at the 10' height and one before topping with bond beam. Alternately, the foam can be pumped into each cavity through a 5/8" hole drilled into the mortar joints at approximately 5' from floor level and repeated in lifts of 10' until wall is filled. Installer shall be experienced application of this type insulation and shall be approved by the Manufacturer. Pump foam into cell to completely fill each cavity. Protect completed operation

from moisture of not less than 24 hours. Do not allow wall to be painted for two weeks.

3.4 INSTALLATION OF GLASS FIBER INSULATION

A. 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.

B. Set vapor retarder faced units with vapor retarder to warm side of construction, except as otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.

C. Stuff glass fiber insulation into miscellaneous voids and cavity spaces.

3.5 PROTECTION

General: Protect installed insulation and vapor retarders from harmful weather exposures and from physical abuses. Replace damaged or displaced insulation to maintain a complete envelope.

END OF SECTION 07201

SECTION 07410

PREFORMED ROOFING & SIDING

1PART - GENERAL

1.1RELATED DOCUMENTS

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

1.2DESCRIPTION OF WORK

A. Extent of each type of preformed roofing is indicated on the drawings or by provisions of this section.

B. Types of products required include the following: Architectural standing seam type roof panels, galvalume corrugated wall panels, gutters, fascia, related trim, anchoring devices, and accessories for a complete weathertight system.

C. Related products specified elsewhere:

1. Wood nailers
2. OSB roof deck

1.3QUALITY ASSURANCE

A. Performance Test Standards: Provide preformed panel systems which have been pretested and certified by manufacturer to provide specified resistance to air and water infiltration and structural deflection and failure when installed as indicated and when tested in accordance with AAMA Standard Test TM-l, "Specification for Method of Test for Metal Curtain Walls for Water Penetration Using Dynamic Pressure." (2004)

B. Field Measurements: Where possible, prior to fabrication of prefabricated panels, 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.

C. Installer: The installer shall have not less than three years experience in installation of similar systems and shall be accepted in writing by the manufacturer.

D. Industry Standards: Conform to recommendations and details of SMACNA "Architectural Sheet Metal Manual" (2002) and other recognized industry practices. Fabricate for waterproof and weather-resistant performance.

1.4SUBMITTALS

A. Product Data: Submit manufacturer's product specifications, warranty, standard details,

certified product test results, installation instructions and general recommendations, as applicable to materials and finishes for each component and for total system of preformed panels.

B. Samples: Submit two samples, each 12" square, of each exposed finish material.

C. Shop Drawings: Submit small-scale layouts of panels on walls and roofs, and large-scale details of edge conditions, joints, corners, custom profiles, supports, anchorages, flashings, closures, and special details. Distinguish between factory and field assembly work.

1.5WARRANTY

A. Guarantee finish against failure by cracking, peeling, blistering, chipping of finish, and without chalking in excess of 8 (ASTM D659) (2003), and without fading in excess of 5 NBS units for a period of 20 years.

B. Guarantee watertightness of complete system for a period of two years from date of substantial completion. Guarantee shall be executed by the Contractor and Installer.

1.6DELIVERY, STORAGE AND PROTECTION

A. Panels shall be factory protected by a strippable film, which shall be removed for installation.

B. Store panel in a clean, dry location. Do not expose panels with protective film to the sun. Stack to prevent damage and to allow for adequate ventilation.

2PART - PRODUCTS

2.1ACCEPTABLE MANUFACTURERS

A. Available Manufacturers: Architectural Panels Specifications are based upon the following:

1. Berridge Cee-Lock with gasket
2. Perma-Clad Perm-Loc "S"
3. Imetco Snap-Lok
4. Atas - Dutch Seam

B. Substitutions allowed prior to bids: See Section 00100 Instructions to Bidders.

2.2SYSTEM DESCRIPTION - ROOFING

A. Architectural:
1. Material: 24 gage Galvalume Steel ASTM A792 (2006), ASTM A446 (1994) Grade C.

2. Finish: Kynar 500 with strippable protective coating.
3. Color: "Forrest Green" to match adjacent structure.
4. Seam Spacings: 12"- 18"o.c.
5. Anchors: Concealed to allow for movement and wind uplift.
6. Length: One piece.
7. Trim and Flashing: Matching (all exposed to view). Provide heavier gages where required for condition.
8. Fascia: Matching 22 gage steel.
9. Texture: Smooth.
10. Seam Height: 1" to 1½".

2.3SYSTEM DESCRIPTION - CORRUGATED WALL PANELS

1. Material: 20 gage Galvalume Steel.
2. Texture: Smooth.
3. Height: 7/8" nominal.
4. Finish: Galvalume ASTM A792 (2006)
5. Anchors: Matching exposed.
6. Accessories: Match panel.
7. Length: One piece.

2.4MISCELLANEOUS MATERIALS

A. General: Provide insulating materials to comply with requirements indicated for materials and compliance with referenced standards; in sizes to fit applications indicated, selected from manufacturer's standard thickness widths and lengths.

B. Provide ice and water shield at valleys, eaves, and ridges. Product shall be elastic flexible sheet flashing of 40 to 60 mils thickness.

C. Underlayment: 30# asphalt-saturated roofing felt.

D. Roof Plumbing Vents: Locate roof vents in panel pans. Flash with flexible pipe flashing system equal to ITW Buildex "Dektite."

E. Fasteners: Manufacturer's standard noncorrosive types, with exterior heads gasketed. Fasteners shall be concealed where possible.

F. Accessories: Except as indicated as work of another specification section, provide components required for a complete roofing/siding system, including trim, copings, fascias, gravel stops, mullions, sills, corner units, ridge closures, clips, seam covers, battens, flashings, gutters, louvers, sealants, gaskets, fillers, closure strips and similar items. Match materials/finishes of preformed panels.

G. Bituminous Coating: Cold-applied asphalt mastic, SSPC paint 12, compounded for 15 mil dry film thickness per coat.

2.5PANEL FABRICATION

A. 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.

B. Required Performances: Fabricate panels and other components of roof system for the following installed performances:

1. Roof Wind Loading: 30 lb. per sq.ft. inward; 15 lb. per sq.ft. outward.
2. Roof Live Loading: 20 lb. per sq.ft.
3. Water Penetration: No significant, uncontrolled leakage at 4 lbs per sq ft pressure with spray test.
4. Air Infiltration: 0.02 cfm per sq.ft. for gross roof/wall areas, with 4 lb. per sq.ft. differential pressure.

C. Apply bituminous coating or other permanent separation materials on concealed panel surfaces where panels would otherwise be in direct contact with substrate materials which are noncompatible or could result in corrosion or deterioration of either material or finishes.

D. Fabricate panels to allow for thermal expansion and contraction without effecting water penetration or air infiltration.

E. Condensation: Fabricate panels for control of condensation, including vapor inclusion of seals and provisions for breathing, venting, weeping and draining.

3PART - EXECUTION

3.1INSTALLATION

A. 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. Separate dissimilar materials by application of coating or underlayment. Installed wall panels with exposed fasteners accurately aligned with adjacent panels.

B. Inspection: Inspect substrate to receive preformed panels. Verify satisfactory condition

including soundness, level, and adequate support.

C. 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.

D. Underlayment: Install underlayment over insulation lapping joints a minimum of 6". Install ice and water shed at ridge, valleys and paves. Install ice and water shield to weep out the building.

E. Seaming: Complete seaming of panel joints by operation of portable power-driven equipment of type recommended by panel manufacturer.

F. Joint Sealers: Install gaskets, joint fillers and sealants for weatherproof performance of panel systems. Provide types of gaskets and sealants/fillers indicated or, if not otherwise indicated, types recommended by panel manufacturer.

G. No through panel penetrations or perforation shall be made in metal roofing panels. Anchors shall be concealed except matching pop rivets allowed in fascia and flashings. Flash plumbing vents.

3.2CLEANING AND PROTECTION

A. 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. Protect completed installation from damage.

B. Damaged Units: Replace panels and other components of the work which have been damaged or have deteriorated beyond successful repair by means of finish touch-up or similar minor repair procedures.

END OF SECTION 07410

SECTION 07461

FIBER-CEMENT SIDING

1PART - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

A. Types of siding specified in this section include fiber-cement board siding, panels and trim.

B. Related Work Specified Elsewhere:

1. Sheathing and Wood Framing: Section 06100
2. Joint Sealers, Section 07900
3. Insulation, Section 07200

1.3 SUBMITTALS

A. Product Data: Submit manufacturer's technical data and installation instructions for each material and component substantiating conformance with requirements.

1.4 QUALITY ASSURANCE

A. Fiber-cement Siding Standard: Comply with ASTM C1186, (2002) Grade II, Type A.

1.5 PRODUCT HANDLING

A. Store siding materials at site to prevent warping, chipping edges, and weather damage, elevating above ground on level blocking and covering to prevent water damage and to permit adequate ventilation within bundles.

B. Acclimatize siding by storing at site not less than five days prior to installation.

1.6 SPECIFIED PRODUCT WARRANTY

A. Provide siding manufacturer's warranty on materials agreeing to pay replacement cost of defective siding material which fails through corrosion caused by manufacturing defects. Period of warranty after date of substantial completion is 30 years. Warrant primer for five years against efflorescence, peeling, or chipping.

2PART - PRODUCTS

2.1 MATERIALS

SECTION 07461

FIBER-CEMENT SIDING

A. Siding: 5/16" thick with all exposed surfaces primed with 1.0 mil acrylic primer. Product shall be lap siding "smooth" 8-1/4" with matching trim as manufactured by James Hardie and with the following characteristics:

1. Tensile strength:
a) Across sheet 1,100 psi
b) Along sheet 725 psi
2. Tension:
a) Across sheet 1,200,000 psi
b) Along sheet 1,110,000 psi
3. Non-combustible, ASTM E136:
a) Flame spread: 0
b) Fuel contributed: 0
c) Smoke density: 5
4. Composition: Sand, cellulose fiber, portland cement, stabilizer additives, and water.

B. Panels: Fiber cement shingles of same manufacturer and construction as siding and with the following characteristics:

1. Size: 4' x 9'
2. Texture: Smooth
3. Finish: Factory primed with acrylic primer
4. Thickness: 5/16"

C. Fasteners: Stainless steel or hot-dipped zinc-coated siding nails, 8d where applied over sheathing or of sufficient length to penetrate sheathing.

2.2 MISCELLANEOUS MATERIALS

A. Trim Boards: Fiber-cement members of sizes indicated on drawings, in material and texture compatible with siding materials.

B. Sealants: Comply with requirements of Division 7 section on caulking and sealants for materials required for siding work.

3PART - EXECUTION

3.1 PREPARATION

A. Verify that substrate conditions are acceptable.

3.2 INSTALLATION

SECTION 07461

FIBER-CEMENT SIDING

A. General: Comply with instruction and recommendations of siding manufacturer, except to extent more stringent requirements are indicated.

B. Underlayment: Apply one layer felt horizontally over entire surface, lapping succeeding courses 2" minimum and fastening with sufficient nails to hold in place until siding application.

C. Siding: Install so that all edges are backed by solid lumber framing or blocking, nailing at 24" or 16" intervals in accordance with stud spacing and at ends.

1. Stagger joints a minimum of 24"; align joints of every fourth board. Splices shall be a minimum of 24" away from corners and opening.

2. Caulk butt joints, inside and outside corners.

3. Install a minimum of 1/4" thick starter strip at the bottom course of the wall.

4. Apply corner trim as detailed.

5. Conceal fasteners to greatest extent possible, by countersinking and filling, by placing in grooves of siding pattern, or by concealing with applied trim as detailed.

D. Panels:

1. Layout panels as indicated.
2. Vertical butt joints shall be caulked.
3. Horizontal joints shall be "Z" flashed.
4. Provide blocking or OSB backup for siding joint.
5. Fasteners shall be a minimum of 3/8" from panel edges and 2" from corners. Fasteners shall be 6d common hot dipped galvanized or stainless steel nails spaced at 8" o.c.

E. Patching: Minor dents, chips, and cracks shall be filled with cementitious patching compound.

F. Installation Tolerance: Maximum variation from plumb or level 1/4" in 10 feet.

END OF SECTION 07461

SECTION 07900

JOINT SEALERS

1PART - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Extent of joint sealers is indicated on drawings and schedules and includes joint sealers for the following locations:

1. Perimeter joints of windows, frames, and louvers.
2. Expansion and control joints including concrete floors exposed to view.
3. Joint at exterior wall of building between concrete paving, walks and building.
4. Interior joints where indicated.
5. Fire stopping rated partitions and openings in floors.
6. Pedestrian traffic joints.
7. Exterior concrete paving and walk joints.
8. Sealing joints in flashing and sheet metal.
9. Sealing joints in exterior insulation and finish systems (EIFS).
10. Sealing joints between counters and walls.
11. Other joints to insure the weather and watertight integrity.

B. The following sealers are specified elsewhere.

1. Sealants for glazing purposes are specified in Division 8 Section "Glass and Glazing."
2. Sealing perimeter joints of gypsum drywall partitions is specified in Division 9 Section "Gypsum Drywall."
3. Sealing tile joints is specified in Division 9 Section "Tile."

C. Definitions:

1. Sealant: A weatherproof elastomer used in filling and sealing joints, having properties of adhesion, cohesion, extensibility under tension, compressibility and recovery shall be designed to make joints air and watertight. Material is designed generally for application to joints at exterior of structures and to other joints subject to movement. Classified as elastomeric.

2. Caulking Compound: A material used in filling joints and seams, having properties of

adhesion, cohesion, not intended for extensibility or recovery. Material is designed generally for application to joints at interior of structures and to other joints not subject to movement in excess of plus or minus 7.5%. Classified as non-elastomeric.

3. Caulking: The term is used here to denote the process of filling the joints, without regard to type of material.

1.3 SUBMITTALS

A. Product data and test reports for each joint sealer product, including instructions for preparation and application indicating compliance with requirements.

B. Samples for Selection Purposes: Manufacturer's standard bead samples consisting of strips of actual products showing full range of colors available, for each product exposed to view.

C. Certificates from manufacturers of joint sealers attesting that their products comply with specification requirements and are suitable for the use indicated.

D. Compatibility and adhesion test reports from elastomeric sealant manufacturer indicating that materials forming joint substrates and joint sealant backings have been tested for compatibility and adhesion with joint sealants. Include sealant manufacturer's interpretation of test results relative to sealant performance and recommendations for primers and substrate preparation needed to obtain adhesion. Include compatibility acceptances of manufacturers of exterior insulation and finish systems (EIFS).

1.4 PROJECT CONDITIONS

A. Installation Conditions: Do not proceed with installation of joint sealers under the following conditions:

1. When ambient and substrate temperature conditions are outside the limits permitted by joint sealer manufacturer or below 40EF (4.4EC).
2. When joint substrates are wet due to rain, frost, condensation, or other causes.
3. Where joint widths are less than recommended by joint sealer manufacturer for application.
4. Until contaminants capable of interfering with their adhesion are removed from joint substrates.

2PART - PRODUCTS

2.1 MATERIALS, GENERAL

SECTION 07900

JOINT SEALERS

A. 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 sealant manufacturer based on testing and field experience.

B. Colors: Provide color of exposed joint sealers indicated or as selected by Architect from manufacturer's standard colors.

2.2 ELASTOMERIC JOINT SEALANTS: Interior joints subject to movement including expansion and control joints, all exterior joints, and traffic joints.

A. Products: Subject to compliance with requirements, provide one of the following.

B. Expansion and Control Joints: ASTM C920 (2005) Type Mi Grade NS, Class 25, multi-part Nonsag Urethane Sealant for Use NT.

"Dynatrol II"; Pecora Corporation
"Sonolastic NP 2"; Sonneborn Building Products Division
"Dymeric"; Tremco, Inc.

C. Pedestrian Traffic: Including concrete slabs exposed to view and walks, ASTM C920 (2005) Type M Grade P Class 25. Multi-Part, Pourable, Urethane

Sealant for "NR-200 Urexpan"; Pecora Corporation
"Sonolastic SL2"; Sonneborn Building Products Division
"THC-900"; Tremco, Inc.

D. General purpose sealing operations, Type S, Grade NS, Class 25. One-Part Nonsag Urethane Sealant for Use NT:

"Dynatrol I"; Pecora Corporation
"Sonolastic NP 1"; Sonneborn Building Products Division
"Dymeric"; Tremco, Inc.

2.3 NON-ELASTOMERIC JOINT SEALANT: Interior applications at door frames and other joints subject to limited movement.

A. Acrylic-Emulsion Sealant: Manufacturer's standard, one part, nonsag, mildew-resistant, acrylic-emulsion sealant complying with ASTM C834, (2005) formulated to be paintable and recommended for exposed applications on interior joint movement of not more than plus or minus 7.5%.

Acceptable Products/Manufacturers:

"AC-20"; Pecora Corporation
"Sonolac"; Sonneborn Building Products Division; Rexnord Chemical Products
"Tremco Acrylic Latex 834"; Tremco, Inc.

2.4 FIRE-RESISTANT JOINT SEALERS

A. General: Provide manufacturer's standard fire-stopping sealant, with accessory materials, having fire-resistance ratings indicated as established by testing identical assemblies per ASTM E814 by Underwriters Laboratory, Inc. or other testing and inspecting agency acceptable to authorities having jurisdiction.

B. One-Part Fire-Stopping Sealant: One part elastomeric sealant formulated for use in a through-penetration fire-stop system for sealing openings around cables, conduit, pipes and similar penetrations through walls and floors.

Acceptable Products/Manufacturers:

"Dow Corning Fire Stop Sealant"; Dow Corning Corporation
"3M Fire Barrier Caulk CP-25"; Electrical Products Division/3M
"RTV 7403"; General Electric Co.
"Fyre Putty"; Standard Oil Engineered Materials Co.

2.5 SANITARY SEALANT: Provide at interior locations to seal plumbing fixtures, countertops in kitchens, and ceramic tile in wet areas.

One-part silicone sealant: ASTM C920, (2005)Type S, NS, Class 25, FDA Regulation 21; CFR 177.2600 and National Sanitation Foundation Rating C2. (1998)

Acceptable Products/Manufacturers:

"786," Dow Corning Corporation
"Sanitary 1700," GE Silicones

2.6 MISCELLANEOUS MATERIALS

A. Primer: Provide type recommended by joint sealer manufacturer where required for adhesion of sealant to joint substrates, as determined from preconstruction joint sealer-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Provide nonstaining chemical cleaners of type which are acceptable to manufacturers of sealants and sealant backing materials, which are not harmful to

substrates and adjacent nonporous materials, and which do not leave oily residues or otherwise have a detrimental effect on sealant adhesion or in-service performance.

C. Masking Tape: Provide nonstaining, nonabsorbent type compatible with joint sealants and to surfaces adjacent to joints.

D. Accessory Materials for Fire-Stopping Sealants: Provide forming, joint fillers, packing and other accessory materials for installation of fire-stopping sealants as applicable to installation conditions.

E. Bituminous Fiber Joint Filler: Preformed strips asphalt saturated fiberboard complying with ASTM D1751 (2004).

F. Bond Breaker Tape (BB-Tp): Provide polyethylene tape or other plastic tape as recommended by sealant manufacturer, to be applied to sealant-contact surfaces where bond to substrate or joint filler must be avoided for proper performance of sealant. Provide self-adhesive tape where applicable.

G. Sealant Backer Rod (S-BR): Provide compressible rod stock of polyethylene foam, polyurethane foam, polyethylene jacketed polyurethane foam, butyl rubber foam, neoprene foam or other flexible, permanent, durable nonabsorptive material as recommended by sealant manufacturer for backup of and compatibility with sealant.

3PART - EXECUTION

3.1 EXAMINATION

Examine joints to receive joint sealers, with Installer present, for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealer performance. Do not proceed with installation of joint sealers until unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealers to comply with recommendations of joint sealer manufacturers and the following:

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; old joint sealers; 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, 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.

Clean metal, glass, porcelain enamel, glazed surfaces of ceramic tile; and other nonporous surfaces by chemical cleaners or other means which are not harmful to substrates or leave residues capable of interfering with adhesion of joint sealers.

B. Joint Priming: Prime joint substrates where indicated or recommended by joint sealer manufacturer based on 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.

C. Masking Tape: Use masking tape to prevent contact of sealant with adjoining surfaces which otherwise would be permanently stained or damaged by such contact or by cleaning methods used to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALERS

A. General: Comply with joint sealer manufacturer's printed installation instructions applicable to products and applications, except where more stringent requirements apply.

B. Elastomeric Sealant Installation Standard: Comply with recommendations of ASTM C962 (2005) for use of joint sealants as applicable to materials, applications and conditions.

C. Latex Sealant Installation Standard: Comply with requirements of ASTM C790 (2006) for use of latex sealants.

D. Installation of Sealant Backings: Install sealant backings to comply with the following requirements:

Install joint fillers to provide support of sealants during application and at position 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 adhesion of sealant to surfaces at back of joints would result in sealant failure.

Install compressible seals serving as sealant backings to comply with requirements indicated above for joint fillers.

E. 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.

F. Tooling of Nonsag Sealants: Immediately after sealant application and prior to time skinning or curing begins, tool sealants to form smooth, uniform concave joint configuration per Figure 6A in ASTM C962, (2005) 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.

G. 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. Comply with installation requirements established by testing and inspecting agency.

3.4 CLEANING

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.

3.5 PROTECTION

Protect joint sealers from contact with contaminating substances or from damage 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.

END OF SECTION 07900

SECTION 08110

STEEL DOORS AND FRAMES

1PART - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

Extent of steel (hollow metal) doors, frames, and window frames is indicated on drawings.

1.3 QUALITY ASSURANCE

A. Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) 2006, and as herein specified.

B. Fire-Rated Door Assemblies: Provide fire-rated door and frame assemblies that comply with NFPA 80 "Standard for Fire Doors and Windows" (1999) and have been tested, listed, and labeled in accordance with ASTM E2074 (2000), NFPA 252 (2003) or UL10C (1997) and UL 1784 (2000) for smoke and draft control, "Standard Methods of Fire Tests of Door Assemblies," by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical product data substantiating that products comply with requirements.

B. 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, construction, location and installation of finish hardware and reinforcements, and details of joints, connections, and anchorage.

Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings. Indicate coordination of glazing frames and stops with glass and glazing requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Schedule deliveries with construction requirements. Ship in stages as construction

progresses.

B. 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.

C. 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.

2PART - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

Manufacturer: Subject to compliance with requirements, provide steel doors and frames by one of the following:

Allied Steel Products, Inc.
Amweld/Division of American Welding & Manufacturing Co.
Ceco Corporation
Curries Manufacturing, Inc.
D&D Specialties, Inc.
Dittco Products, Inc.
Fenestra Corporation
Mesker Industries, Inc.
Steelcraft/Division of American Standard Co.
Republic Builders Products Corp./Subsidiary of Republic Steel

2.2 MATERIALS

A. Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A569 (2004) and ASTM A568 (2006).

B. Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A366 (2001) and ASTM A568 (2006).

C. Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A526 (2004), with ASTM A525 (1999), G60 zinc coating, mill phosphatized.

D. Supports and Anchors: Fabricate of not less than 18 gage galvanized sheet steel.

E. Inserts, Bolts, and Fasteners: Manufacturer's standard units, except hot-dip galvanize items to be built into exterior walls, complying with ASTM A153 (2005), Class C or D as applicable.

F. Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for

specified finish paints.

2.3 FABRICATION, GENERAL

A. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

B. Finish Hardware Preparation: Prepare doors and frames to receive mortised and concealed finish hardware in accordance with final Finish Hardware Schedule and templates provided by hardware supplier. Comply with applicable requirements of ANSI A115 (2002) series specifications for door and frame preparation for hardware.

C. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied finish hardware may be done at project site.

D. Locate finish hardware as indicated on final shop drawings or, if not indicated, in accordance with "Recommended Locations for Builder's Hardware," published by Door and Hardware Institute.

E. Shop Painting: Clean, treat, and paint exposed surfaces of steel door and frame units, including galvanized surfaces.

F. Provide labels appropriately identifying fire-rated doors and frames.

2.4 STANDARD STEEL DOORS

A. 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 on site. Comply with SDI-100 (2006) requirements as follows:

1. Interior Doors: SDI-100, (2006) Grade II, heavy-duty, Model 1, minimum 18 gage faces.

2. Exterior Doors: SDI-100, (2006) Grade III, extra heavy-duty, Model 2, minimum 16 gage faces.

B. Door Louvers: Provide sightproof stationary louvers for interior doors where indicated, constructed of inverted V-shaped or Y-shaped blades formed of 24 gage cold-rolled steel set into 20 gage steel frame.

C. Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel.

D. Fabricate all doors, panels and frames from galvanized sheet steel with closed top and bottom edges as integral part of door construction or by addition of minimum 16 gage inverted steel channels.

2.5 STANDARD STEEL FRAMES

A. 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 all applications except knocked-down for field assembly at interior applications for single non-fire rated opening in drywall partitions. All drywall frames shall have double return back bend to prevent cutting into wall. Fabricate all frames from galvanized sheet steel.

B. 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.

C. 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.

3PART - EXECUTION

3.1 INSTALLATION

A. General: Install standard steel doors, frames, and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.

B. Placing Frames: Comply with provisions of SDI-105 (2006) "Recommended Erection Instructions For Steel Frames," unless otherwise indicated.

Except for knock-down (KD) frames, place frames prior to construction of 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.

Provide a minimum of 3 adjustable wall anchors per jamb located at hinge and strike levels. Provide floor anchors of a minimum of 18 gage steel at all frames.
At in-place concrete or masonry construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices.

C. Door Installation: Fit hollow metal doors accurately in frames, within clearances specified in SDI-100 (2006).

D. Place fire-rated doors and frames in accordance with NFPA Standard No. 80 (1999).

3.2 ADJUST AND CLEAN

A. Prime Coat Touchup: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.

B. 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 08331

COILING DOORS & COUNTER SHUTTERS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

A. Extent of counter shutters is shown on the drawings and includes exterior type manual operated aluminum coiling doors and counter shutters.

1.3 QUALITY ASSURANCE

A. Performance Requirements: Furnish each overhead coiling shutters as a complete unit produced by one manufacturer, including hardware, support, accessories, mounting and installation components.

B. Insert and Anchorages: Furnish inserts and anchoring devices which must be set in concrete or built into masonry for installation of units. Provide setting drawings, templates, instructions and directions for installation of anchorage devices. Coordinate delivery with other work to avoid delay.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product data, roughing-in diagrams, and installation instructions indicating compliance with requirements. Provide operating instructions and maintenance information.

B. Shop Drawings: Submit shop drawings indicating installation, dimensions, clearances and other special conditions.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. Subject to compliance with requirements, provide products of one of the following:

Cornell
McGuire Co. Overhead Door
Raynor
R & S Manufacturers

Wayne Dalton

2.2 DOOR CURTAIN MATERIALS AND CONSTRUCTION

A. Door Curtain:
   1. Material: Extruded Aluminum 6063-T5
   2. Thickness: .040" Flush
   3. Bottom Bar: Extruded Aluminum with hand holds, slide bar locks, and weatherstripping.
   4. Nominal Height: 1½"

B. Guides:
   1. Material: Extruded Aluminum
   2. Mounted:
      a. Counter Shutter between jamb mounting
      b. Coiling Door - surface (face of wall)

C. Hood:
   Alumimum .040" formed.

D. Operation:
   1. Manual push up.
   2. Torsion springs assembly with adjustable tension.

E. Finish:
   Clear Anodized.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Obtain field measurement of actual opening size and conditions prior to fabricating between jamb mounted units.

B. Install door and operating equipment complete with hardware, jamb and head mold strips, anchors, inserts, hangers, and equipment supports in accordance with final shop drawings, manufacturer's instructions, and as specified herein.

C. Test and Adjust: Upon completion of installation including work by other trades, lubricate, test and adjust doors to operate easily, free from warp, twist or distortion.

END OF SECTION 08331

SECTION 08360

SECTIONAL OVERHEAD DOORS

1PART - GENERAL

1.1 SECTION INCLUDES

A. Manual overhead sectional door.

B. Aluminum rail and stile doors with solid and glazed panels.

C. Operating hardware and supports.

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

1.2 REFERENCES

A. ANSI A216.1 (2004)- Sectional Overhead Type Door (NAGDM 102).

B. ASTM A446 (1994)- Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Structural (Physical) Quality.

C. ASTM A526 (2004) - Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Commercial Quality.

D. ASTM E330 (2002)- Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.

1.3 PERFORMANCE

A. Design and size components to withstand dead and live loads caused by pressure and suction of wind acting normal to plane of wall to a design pressure of 15 lb./sq.ft. as measured in accordance with ANSI/ASTM E330 (2002).
Maximum deflection 1/120.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.
B. Shop Drawings: Indicate opening dimensions and required tolerances, connection details,

anchorage spacing, hardware locations, installation details and weatherstripping.

C. Product Data: Provide component construction, anchorage method, hardware, and diagrams.

D. Manufacturer's installation instructions.

1.5 OPERATION AND MAINTENANCE DATA

A. Submit under provisions of Section 01700.

B. Maintenance Data: Include data for [motor and] transmission, shaft and gearing, lubrication frequency, spare part sources.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with ANSI A216.1, (2004) Application Type Commercial.

1.7 WARRANTY

A. Provide five year warranty under provisions of Section 01700.

2PART - PRODUCTS

2.1 MANUFACTURERS

A. Raynor

B. Overhead Door Co.

C. Kinnear Door Co.

D. Haas

E. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

A. Sheet Steel: ASTM A526 (2004) or A946 (2004) galvanized to G90.

2.3 DOOR CONSTRUCTION

A. Rail and Stiles: 2" deep 6063-T6 extruded aluminum. 0.062 inch thick for stiles top and bottom rails. 0.050 inch for intermediate rails.

B. Panels: Solid panels shall be 1/8" thick aluminum. Glazed panels shall be ¼" polcarbonate glazing.

2.4 DOOR COMPONENTS

A. Track: Min 16 gage thick; 3" wide rolled steel track, continuous one piece per side; galvanized steel mounting brackets, ¼" thick. High lift track that follows roof slope.

B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.

C. Lift Mechanism: Torsion spring on cross head shaft, with braided steel lift cables. Sized for size and weight of door for a maximum exertion of 25 lbs force to open or close. Spring shall be rated for 25,000 cycles.

D. Weatherstripping:

1. Sill: Resilient rubber strip, one piece; fitted to bottom of door panel, full length contact.

2. Jamb: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.

3. Head weatherstripping: Vinyl head seal

E. Lock: Inside side mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior handle; lock equipped to accept padlock.

F. Manual Operation: Pull up lift handles with pull down rope, operating with not more than

25 lbs.

G. Mounting: High life and follow roof pitch.

H. Glazing: Tempered insulated glass 24"x 12" nominal size.

2.5 FINISHES

A. Exterior and Interior Surfaces: Clear anodized.

3PART - EXECUTION

3.1 EXAMINATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.

B. Beginning of installation means acceptance of existing surfaces.

3.2 PREPARATION

A. Prepare opening to permit correct installation of door unit to perimeter air and vapor barrier seal.

3.3 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.

B. Anchor assembly to wall construction and building framing without distortion or stress.

C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.

D. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.

3.4 ADJUSTING

A. Adjust work under provisions of Section 01700 for smooth operation.

3.5 CLEANING

A. Clean work under provisions of 01700. Clean doors, frames and glass. Remove labels and visible markings.

3.6 PROTECTION OF FINISHED WORK

A. Protect finished Work under provisions of Section 01500.

END OF SECTION 08360

SECTION 08410

ALUMINUM ENTRANCES AND STOREFRONTS

1PART - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Extent of aluminum entrances and storefronts is indicated on drawings or schedules.

B. Aluminum entrance and storefront types required for the project include:

Insulated storefront type framing system for exterior windows and doors
Uninsulated storefront type framing system for interior windows and doors

C. Glazing: Refer to "Glass and Glazing" section of Division 8 for glazing requirements.

1.3 SYSTEM DESCRIPTION

A. Performance Requirements: Provide aluminum entrance and storefront assemblies that comply with specified performance characteristics, as tested by a recognized testing laboratory or agency in accordance.

B. Thermal Movement: Provide systems capable of withstanding thermal movements resulting from an ambient temperature range of 120EF (67EC), that could cause a metal surface temperature range of 180EF (100EC) within the framing system.

C. Wind Loading: Provide assemblies capable of withstanding a uniform test pressure of 20 psf inward and 20 psf outward when tested in accordance with ASTM E330 (2002).

D. Fixed Framing Transmission Characteristics: Provide aluminum entrances and storefront framing system that complies with:

1. Air Infiltration: Air infiltration rate of not more than 0.06 CFM per sq.ft. of fixed area when tested in accordance with ASTM E283 (2004) at an inward test pressure differential of 6.24 psf.

2. Water Penetration: No water penetration as defined in the test method when tested in accordance with ASTM E331 (2000) at an inward test pressure differential of 6.24 lbs. per sq.ft.

3. Condensation Resistance: Where framing systems are of "thermal-break" construction, provide units tested for thermal performance in accordance with AAMA 1502 (2002) showing condensation resistance factor (CRF) of not less than 45.

E. Aluminum Entrance Transmission Characteristics: Provide exterior doors with an air infiltration rate of not more that 0.50 CFM for single doors and 1.0 for pairs of doors when

tested in accordance with ASTM E283 (2004) at an inward test pressure differential of 1.567 psf.

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's product specifications, technical product data, standard details, and installation recommendations. Indicate fabrication, finishes, hardware, accessories, and compliance with requirements.

B. Shop Drawings: Submit shop drawings for fabrication and installation of entrances and storefronts, including elevations, detail sections, dimensions, hardware, mounting heights, anchorages and reinforcements, expansion provisions, glazing details.

C. Samples: Submit pairs of samples of each type and color of painted aluminum finish. Where color or texture variations are anticipated, include two or more units in each set of samples indicating extreme limits of variations.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Installer shall be a firm that has not less than years successful experience in the installation of similar systems and acceptable to the manufacturer.

1.6 PROJECT CONDITIONS

A. Field Measurements: Check openings by field measurement 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.

2PART - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products of one of the following:

Amarlite/Arco Metals Co.
Kawneer Company, Inc.
YKK AP
United States Aluminum Corporation

2.2 MATERIALS

A. Aluminum Members: Provide alloy and temper recommended by the manufacturer for strength, corrosion resistance, and application of required finish; comply with ASTM B221 (2004) for extrusions and ASTM B209 (2004) for sheet or plate.

B. 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.

1. Reinforcement: Reinforce the material where fasteners screw anchor into aluminum less than 0.125" thick.

2. Exposed Fasteners: Except where unavoidable or application of hardware, do not use exposed fasteners. For the application of hardware, use fasteners that match the finish of member or hardware being fastened.

C. Concealed Flashing: Provide 26 gage minimum dead-soft stainless steel, or 0.026" minimum extruded aluminum of alloy and type selected by manufacturer for compatibility with other components.

D. 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 A386 (2001). Provide clips or angles for attachment to substrate.

E. Compression Weatherstripping: Provide manufacturer's standard replaceable compressible weatherstripping gaskets of molded neoprene complying with ASTM D2000 (2006) or molded PVC complying with ASTM D2287. (2001)

2.3 COMPONENTS

A. Storefront Framing System: Provide inside-outside matched resilient flush-glazed stick type storefront framing system with provisions for glass replacement. Shop-fabricate and preassemble frame components where possible. System shall be similar to Tri-Fab II 450 for non-insulated interior glazing and Tri-Fab 451 for exterior insulated glazing. Nominal 2" x 4½" with extruded aluminum. Provide extruded aluminum sill. Provide extruded aluminum head and jamb receptors where detailed. Provide pivot mullions for angled units where detailed.

B. Stile-and-Rail Type Aluminum Doors: Provide tubular frame members, fabricated with mechanical joints using heavy inserted reinforcing plates and concealed tie rods or J-bolts. Fabricate doors to facilitate replacement of glass or panels, without disassembly of stiles and rails. Provide snap-on extruded aluminum glazing stops, with exterior stops anchored for non-removal.

Design: Provide 1¾" thick narrow stile (2" nominal width) with nominal 12" high bottom rail.

C. Accessory Horizontal Sliding Aluminum Window: AAMA performance rating HS-LC25 minimum to match storefront.

2.4 HARDWARE

A. General: Refer to hardware section in Division 8 for requirements for hardware items other than those indicated to be provided by the aluminum entrance manufacturer. Coordinate reinforcement and rough-in requirements.

B. Provide manufacturer's heavy-duty hardware units as scheduled, or required for operation of each door, including the following items of sizes, number and type recommended by manufacturer for service. Finish to match door except as noted.

1. Offset Pivot Sets: Offset pivot assemblies complying with ANSI A156.4, (2002) Grade 1. Provide exposed parts of cast aluminum alloy; provide top, bottom, and intermediate pivots.

2. Overhead Surface Closers: Independently hung, single-acting overhead closers complying with ANSI A156.4,(2002) Grade 2. Comply with manufacturer's recommendation for size of closer, depending on door size, exposure to weather and frequency of use. Include adjustable spring power for opening force not to exceed 8 pounds on exterior door and 5 pounds on interior, Norton 1605.

3. Door Stop: Floor or wall-mounted door stop, as appropriate, with integral rubber bumper; comply with ANSI A156.16, (2002)Grade 1.

4. Pull Handles: Equal to Kawneer Style C09 #14.

5. Push Bar: Equal to Kawneer Style CPII #14.

6. Weatherstripping: For exterior doors, provide compression weatherstripping against fixed stops; at other edges, provide sliding weatherstripping retained on adjustable strip mortised into door edge. Provide EPDM or vinyl blade gasket weatherstripping in bottom door rail, adjustable for contact with threshold.

7. Thresholds: Extruded aluminum threshold, mill finished, complete with anchors and clips, coordinated with hardware. Size ½" maximum height, 4" minimum width. Exterior doors only.

8. Lockset: Adams Rite MS+1890 deadlock/latch with #4565 thumb lever. Equip for cylinder specified in Hardware Section 08710.

9. Signage: Provide fire marshal approved signage adjacent to main entrance door in 1" high contrasting letters that reads: "THIS DOOR TO REMAIN UNLOCKED WHEN THE BUILDING IS OCCUPIED".

2.5 FABRICATION

A. Perform fabrication operations, including cutting, fitting, forming, drilling and grinding of metal work to prevent damage to exposed finish surfaces.

B. Welding: Comply with ASW recommendations (2005); grind exposed welds smooth and restore mechanical finish.

C. Reinforcing: Install reinforcing for hardware and for performance requirements, sag resistance and rigidity.

D. Dissimilar Metals: Separate dissimilar metal with zinc chromate primer, bituminous paint, or other separator that will prevent corrosion.

E. Continuity: Maintain accurate relation of planes and angles, with hairline fit of contacting members.

2.6 FINISHES

A. Anodized Aluminum - Class 1 (.7 mils minimum) AA-M12C22A41.

2.7 INSTALLATION

A. Comply with manufacturer's instructions and recommendations.

B. 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.

C. Separate aluminum and other corrodible metal surfaces from sources of corrosion of electrolytic action at points of contact with other materials. Comply with requirements specified under paragraph "Dissimilar Materials" in the Appendix to AAMA 101-85. (2002)

D. Set sill members and other members in full bed of sealant or with joint fillers or gaskets to provide weathertight construction.

2.8 ADJUSTING AND CLEANING

A. Adjust doors for smooth operation: Doors shall close and latch by force of closers. Adjust weatherstripping for proper fit.

B. Clean the completed system, inside and out, promptly after installation, exercising care to avoid damage to coatings.

C. Institute protective measures throughout the remainder of the construction period to ensure that aluminum entrances and storefronts will be without damage or deterioration at time of acceptance.

D. Repair or replace damaged material and finishes.

END OF SECTION 08410

SECTION 08710

FINISH HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

Definition: "Finish Hardware" includes items known commercially as finish hardware which are required for swinging, sliding, and folding doors, except special types of unique and nonmatching hardware specified in the same section as the door and door frame.

1.2 HARDWARE SPECIFIED ELSEWHERE

Cabinet hardware
Rough hardware
Storefront hardware except as scheduled herein
Toilet compartments

1.3 QUALITY ASSURANCE

A. Manufacturer: Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from a single manufacturer, although several may be indicated as offering products complying with requirements.

B. Supplier: A recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than two years, and who is, or who employs an experienced architectural hardware 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.

C. Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80 (1999) 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.

Where emergency exit devices are required on fire-rated doors (with supplementary marking on doors' UL or FM labels indicating "Fire Door to be Equipped with Fire Exit Hardware"), provide UL or FM label on exit devices indicating "Fire Exit Hardware."

1.4 SUBMITTALS

A. Product Data: Submit manufacturers technical product data for each item of hardware in accordance with Division 1 section "Submittals." Include information necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finish.

B. Hardware Schedule: Submit final hardware schedule in manner indicated below. Coordinate hardware with doors, frames, and related work to ensure proper size, thickness, hand, function finish attachment quantity, fire rating, and operation. Revise schedule to comply with all applicable codes. Schedule shall be prepared by a member of the Door and Hardware Institute.

1. Final Hardware Schedule Content: Based on finish hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:

   a. Type, style, function, size and finish of each hardware item
   b. Name and manufacturer of each item
   c. Fastenings and other pertinent information
   d. Location of hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule
   e. Explanation of all abbreviations, symbols, codes, etc. contained in schedule
   f. Mounting locations for hardware
   g. Door and frame sizes and materials
   h. Fire-rating
   i. Keying information

C. Submittal Sequence: Submit schedule at earliest possible date, particularly where acceptance of hardware schedule must precede fabrication of other work (e.g., hollow metal frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by finish hardware, and other information essential to the coordinated review of hardware schedule.

D. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

E. Samples: Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample of proposed lockset and other samples as requested by the Architect, with specified finish for approval. Samples will be returned to the supplier.

F. 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.

1.5 PRODUCT HANDLING

A. Tag each item or package separately, with identification related to final hardware schedule, and include basic installation instructions with each item or package.

B. Inventory hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

C. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.

D. 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.

2PART - PRODUCTS

2.1 SCHEDULED HARDWARE

A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the Finish Hardware Data Sheet and Hardware Schedule at the end of this section. Products are identified by using hardware designation numbers of the following.

B. Manufacturer's Product Designations: One or more manufacturers are listed for each hardware type required. **An asterisk (*) after a manufacturer's name indicates whose product designation is used in the Hardware Schedule for purposes of establishing minimum requirements.** Provide either the product designated, or, where more than one manufacturer is listed, the comparable product of one of the other manufacturers which comply with requirements including those specified elsewhere in this section.

2.2 MATERIALS AND FABRICATION

A. Manufacturer's Name Plate: Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with required UL labels and as otherwise acceptable to Architect.

Manufacturer's identification will be permitted on rim of lock cylinders only.

B. Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for applicable hardware units by applicable ANSI A156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

C. 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.

D. Furnish screws for installation with each hardware item. Provide Phillips flathead 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.

E. Provide concealed fasteners for hardware units which are exposed when door is closed, except to extent no standard units of type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use sex screw fasteners.

F. Tools and Maintenance Instructions for Maintenance: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.

2.3 HINGES. BUTTS AND PIVOTS

Hinge Pins: Except as otherwise indicated, provide hinge pins as follows:

Steel Hinges: Steel pins
Nonferrous Hinges: Stainless steel pins
Exterior Doors: Nonremovable pins
Outswing Locked Doors: Nonremovable pins
Interior Doors: Nonrising pins
Tins: Flat button and matching plug, finished to match leaves,
except where hospital tip (HT) indicated

2.4 LOCK CYLINDERS AND KEYING

A. Review existing keying systems with the Owner and provide the type required (master, grandmaster or great-grandmaster), integrated with Owner's existing factory registered Grand Master Key System. All locksets shall receive Best interchangeable cores.

B. Comply with Owner's instructions for master keying and, except as otherwise indicated, provide individual change key for each lock which is not designated to be keyed alike with a group of related locks.

C. Key Material: Provide keys of nickel silver only.

D. Key Quantity: Furnish three change keys for each lock; six master keys for each master system; and six construction mater keys and two control keys..

E. Provide a key control system including envelopes, labels, tags with self-locking key clips, receipt forms, three-way visible card index, temporary markers, permanent markers, and standard metal cabinet, all as recommended by system manufacturer, with capacity for 150% of the number of locks required for the project.

Provide complete cross index system set up by key control manufacturer and place keys on markers and hooks in the cabinet as determined by the final key schedule.

Provide hinged-panel type cabinet, for wall mounting.

F. Prior to final inspection, contact Best Locking Systems of Georgia, Inc. And arrange for them to install permanent cores and to set up the key cabinet. This cost shall be included in the General Contractor's Base Bid.

2.5 LOCKS, LATCHES AND BOLTS

A. Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set.

B. Exit Device Dodging: Except on fire-rated doors, wherever closers are provided on doors equipped with exit devices, equip the units with keyed dogging device to hold the push bar down and the latch bolt in the open position.

2.6 CLOSERS AND DOOR CONTROL DEVICES

A. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's

recommendations for size of door control unit, depending upon size of door, exposure to weather and anticipated frequency of use.

B. Access-Free Manual Closers: Provide adjustable units complying with ANSI A117.1 (2005) provisions for door opening force and delayed action closing.

C. Electromechanical Closers and Holders: Provide units designed to hold door in open position under normal usage and to release and automatically close door under fire conditions. Incorporate an integral electromagnetic holder mechanism designed for use with UL listed fire detectors, provided with normally closed switching contacts. Coordinate requirements, voltage, and operation with fire detection.

Provide integral smoke detector device in combination door closers and holders complying with UL 228.

2.7 WEATHERSTRIPPING

General: Provide continuous weatherstripping at each edge of every exterior door leaf. Provide type, sizes, and profiles shown or scheduled. Provide non-corrosive fasteners as recommended by manufacturer for application indicated.

2.8 HARDWARE FINISHES

A. Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door or opening. In general, match items to the manufacturer's standard finish for the latch and lockset (or push-pull units if no latch/locksets) for color and texture.

B. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze, or aluminum, except as otherwise indicated. The suffix "-NL-" is used with standard finish designations to indicate "no lacquer."

C. The designations used in schedules and elsewhere to indicate hardware finishes are the industry-recognized standard commercial finishes, except as otherwise noted.

3PART - EXECUTION

3.1 INSTALLATION

A. 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.

B. 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.

C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units which are not factory prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Set thresholds for exterior doors in full bed of butyl rubber or polyisobutylene mastic sealant.

3.2 ADJUST AND CLEAN

A. 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.

B. 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.

C. Instruct Owner's personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustment of hardware.

D. Continued Maintenance Service: Approximately six months after the acceptance of hardware in each area, the Installer, accompanied by the representative of the latch and lock manufacturer, shall return to the project and re-adjust every item of hardware to restore proper function of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and

predictable problems (of substantial nature) in the performance of the hardware.

3.3 HARDWARE CRITERIA SCHEDULE

A. Acceptable Manufacturers:

Butts: Hager, Soss, Lawrence, McKinney, Stanley*

Locks: Corbin, Russwin, Sargent, Schlage*, Yale, Best

Push/Pull: Baldwin, Brookline, Hager*, Ives, Builders Brass Works

Overhead Closers: LCN*, Sargent, Rixson-Firemark

Thresholds and Weatherstripping: Zero, National Guard*, Pemko, Reese

Kickplates: Baldwin, Builders Brass Works, Hager*

B. Additional Requirement: See drawing for hand, frame and door materials, fire rating, and other conditions affecting final hardware schedules.

C. Schedule: Each door leaf to be as scheduled unless noted.

Hardware Heading #1 Door #1 & 13 Storefront Door:

1 Cylinder
Balance of Hardware by Door Manufacturer

Hardware Heading #2 Pair Door #19:

1	Deadbolt	B660R	US26D
3	PR Butts	191	4½ x 4½ NRP US32D
2	Surface Bolts		
2	OH Holders	GJ 794H	
2	Silencers		

Hardware Heading #3 Door #2 & 3:

Each Door to Have:

1½	PR Butts	FBB191	4½ X 4½ NRP US32D
1	Lockset	L905OR 17L	US26D
1	Cylinder		
1	Closer	4041 PA/CUSH/STOP 100 Dtg.	AL.
1	Threshold	426 X DW	AL
1	Set Weatherstripping	701 PA X Door Perimeter X FATT	AL
1	Door Bottom	C 607A X DW	AL

Hardware Heading #4 - Doors #14 & 15:

1½	PR Butts	FBB 191	4½ X 4½ US32D
1	Push	30S 4" X 16"	US26D
1	Pull	33G 4" X 16"	US26D
1	Deadbolt	B 663R	US26D
1	Cylinder		
1	Closer	4011	AL
1	Threshold	426 X DW	AL
1	Set Weatherstripping	701PA X Door Perimeter X FATT	AL
1	Door Bottom	C 607A X DW	AL
1	Stop	236W	US26D

Hardware Heading #5 - Door #17:

1½	PR Butts	191	4½ X 4½ US32D
1	Lockset	L9050R 17L	US26D
1	Cylinder		
1	OH Stop	GJ 794H	
3	Silencers		

Hardware Heading #6 - Door #12 & 18:

1½	PR Butts	191	4½ X 4½ US32D
1	Lockset	L9050R 17L	US26D
1	Cylinder		
1	Stop	236W	US26D
3	Silencers		

Hardware Heading #7 - Door #16:

1½	PR Butts	191	4½ X 4½ US32D
1	Privacy Set	L9040 17L	US26D

1	Stop	236W	US26D
3	Silencers		

Hardware Heading #8 - Existing Doors #17 & 18:

Existing to Remain.

END OF SECTION 08710

SECTION 08800

GLASS AND GLAZING

1PART - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Extent of glass and glazing work is indicated on drawings and schedules.

B. Types of work in this section include glass and glazing for:

Window units
Entrances and other doors

C. Packaged mirror glass is specified in Division 10.

D. Preglazed window and door units are specified in other Division 8 sections.

1.3 SYSTEM DESCRIPTION

A. Provide glass and glazing that has been produced, fabricated, and installed to withstand normal thermal movement, wind loading and impact loading, without failure, including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials, or other defects in the work.

B. Normal thermal movement is that resulting from an ambient temperature range of 120EF (67EC) and from a consequent temperature range within glass and glass framing members of 180EF (100EC).

1.4 SUBMITTALS

A. Product Data: Submit manufacturer's technical data for insulated glazing material and fabricated glass product, including installation and maintenance instructions.

B. Samples: For verification, submit 12" square samples of each type of glass except for clear single pane units, and 12" long samples of each color (except black) for each type of sealant or gasket exposed to view.

1.5 QUALITY ASSURANCE

SECTION 08800

GLASS AND GLAZING

A. Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FGMA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated.

B. Safety Glazing Standard: Provide safety glass products which comply with ANSI Z97.1 (2003) and testing requirements of 16 CFR Part 1201 (2003) for category II materials in the following hazardous locations:

1. All glass in doors with dimension at lease 8" or larger.
2. Glass within 12" of a door opening whose bottom edge is less than 60" above the walking surface.
3. Glass in excess of 9 sq.ft. and whose bottom is less than 18" above the walking surface and not protected by a crash bar mounted between 24"-36".

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.

C. Fire Resistance Rated Wire Glass: Provide wire glass products that are tested per ASTM E163 (UL 9)(2001), labeled and listed by UL.

D. Single Source Responsibility for Glass: Provide materials produced by a single manufacturer or fabricator for each kind and condition of glass and composed of primary glass obtained from a single source for each type and class.

1.6 WARRANTY

A. General: Warranties shall be in addition to, and not a limitation of, other rights the Owner may have under the Contract Documents. Warranties shall be signed by the Manufacturer agreeing to furnish FOB point of manufacture, freight allowed project site replacement glass for units developing manufacturing defects.

B. Manufacturer's Special Project Warranty of Insulating Glass: Manufacturing defects are 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, 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 shall be Manufacturer's standard but not less than 10 years after date of substantial completion.

2PART - PRODUCTS

2.1 MANUFACTURERS

Subject to compliance with requirements, provide products of one of the following:

A. Manufacturers of clear, tinted float, annealed and heat strengthened or tempered glass:

AFG Industries, Inc.
Ford Glass Division
Guardian Industries Corporation
LOT Glass, Inc.
PPG Industries, Inc.
Saint Gobain/Euroglass

B. Manufacturers of wire glass:

AFG Industries, Inc.
Guardian Industries Corporation
Hordis Brothers, Inc.
Pilkington Sales (North America) Limited

C. Manufacturers of insulating glass:

Advanced Coating Technology
Environmental Glass Products
Ford Glass Division
Guardian Industries Corporation
Hordis Brothers, Inc.
Independent Insulating Glass, Inc.
PPG Industries, Inc.
Spectrum Glass Products Division
Viracon, Inc.

2.2 GLASS PRODUCTS, GENERAL

A. Primary Glass Standard: Comply with ASTM C1036 (2005).

B. Heat-Treated Glass Standard: Comply with ASTM C1048 (2003).

C. Sizes: Fabricate glass to sizes for glazing openings, 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.

2.3 PRIMARY GLASS PRODUCTS

A. Clear Float Glass: Type I (transparent glass, flat), Class 1 (clear), Quality q3 (glazing select).

B. Wired Glass: Type II (patterned and wired glass, flat), Class 1 (translucent), Quality q8 (glazing); complying with ANSI Z97.1 (2003); 1/4" thick; Form 1 (wired, polished both sides), Square Mesh m2.

2.4 HEAT-TREATED GLASS PRODUCTS

A. Manufacturing Process: Manufacture heat-treated glass by vertical (tong-held) or horizontal (roller hearth) process, at manufacturer's option, except provide horizontal process where indicated as "tongless" or "free of tong marks".

B. Clear or Tinted Heat-Treated Float Glass: Condition A (uncoated surfaces) or Condition C (coated surfaced), Type I (transparent glass, flat), Class 1 or Class 2 (tinted heat absorbing and light reducing), Quality q3 (glazing select), with tint color and performance characteristics for 1/4" thick glass matching those indicated for non-heat-treated tinted float glass; fully tempered except where heat strengthened permitted.

2.5 SEALED INSULATING GLASS UNITS

A. General: Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space and complying with ASTM E774, (2002) Class A, and other requirements specified.

B. 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.

C. Characteristics:

1. Exterior Light: 1/4" tinted.
2. Interior Light: 1/4" clear.
3. Overall Thickness: 1".
4. Sealing System: Manufacturer's standard.
5. Glass shall be heat-strengthened or tempered in accordance with Manufacturer's analysis for each size, type, exposures and as required to comply with hazardous location provisions.

2.6 ELASTOMERIC GLAZING SEALANTS AND PREFORMED GLAZING TAPES

A. Compatibility: Provide 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.

B. Suitability: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants and tapes which have performance characteristics suitable for applications and conditions.

2.7 MISCELLANEOUS GLAZING MATERIALS

Compatibility: Provide materials with proven record of compatibility with surfaces contacted in installation. Provide cleaners, primers, sealers, spacers, setting blocks, filler rods, edge blocks as recommended by Manufacturer for a complete installation.

3PART - EXECUTION

3.1 EXAMINATION

A. Glazier shall 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. Glazier shall report in writing listing conditions detrimental to performance of glazing work. Glazing work shall not proceed until unsatisfactory conditions have been corrected.

3.2 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.

3.3 GLAZING, GENERAL

A. 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.

B. 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.

C. Apply primers to joint surfaces where required for adhesion of sealants.

3.4 GLAZING

A. 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.

B. 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.

C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

D. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

3.5 PROTECTION AND CLEANING

A. Protect 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.

B. Protect glass from contact with contaminating substances resulting from construction operations. If contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

C. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

D. Wash glass on both faces not more than four days prior to substantial completion. Wash glass by method recommended by glass manufacturer.

3.6 SCHEDULE

1. Interior Doors and Windows: ¼" tempered glass, clear.
2. Exterior Storefront Windows: 1" insulated, tempered, clear glass with Low-E coating.
3. Exterior Storefront and Hollow Metal Doors: ¼" tempered clear.

END OF SECTION 08800

SECTION 09900

PAINTING - BUILDING

1PART - GENERAL

1.1 SECTION INCLUDES

A. Surface preparation and field application of paints and coatings.

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

C. 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.

D. 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 or paintings are designated in "schedules". Where items or surfaces are not specifically mentioned, paint the same as similar adjacent materials or areas. In finished areas, piping, conduits, ductwork, hangers, and other similar items shall also be painted. Paint electrical plywood backboards before installation.

E. 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) toilet enclosures, prefinished partition systems, acoustic materials, and finished mechanical and electrical equipment, including light fixtures, switchgear and distribution cabinets. Do not paint exterior concrete retaining wall or light pole bases unless noted. Do not paint galvanized metal siding and trim.

F. 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.

G. 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.

H. 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.

I. Do not paint over code-required labels, such as Underwriters' Laboratories and Factory Mutual, or equipment identification, performance rating, name, nomenclature plates or sprinkler heads.

SECTION 09900

PAINTING

1.2 RELATED SECTIONS

A. Section 02513, Asphalt Concrete Paving

B. Section 05120, 05500, 08110, shop-primed items

C. Section 09960, Seamless Epoxy Flooring

1.3 REFERENCES

A. ASTM D16 (2003) - Definitions of Terms Relating to Paint, Varnish, Lacquer, and Related Products.

B. ASTM D2016 (2004)- Test Method for Moisture Content of Wood.

C. NACE (National Association of Corrosion Engineers) - Industrial Maintenance Painting (2002).

D. PDCA (Painting and Decorating Contractors of America) - Painting - Architectural Specifications Manual (2001).

1.4 DEFINITIONS

A. Conform to ASTM D16 (2003) for interpretation of terms used in this Section.

1.5 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Provide data on all finishing products. Reference applicable product specified.

C. Samples: Submit one sample, illustrating range of colors and textures available for each surface finishing product scheduled.

D. Manufacturer's Instructions: Indicate special surface preparation procedures, substrate conditions requiring special attention.

1.6 QUALIFICATIONS

A. Applicator: Company specializing in performing the work of this section with minimum 3 years documented experience.

1.7 REGULATORY REQUIREMENTS

A. Conform to applicable code for flame and smoke rating requirements for finishes.

B. Conform to Federal, State and Local laws and regulations, regarding lead content, VOC, and disposal.

1.8 FIELD SAMPLES

A. Provide field sample of paint under provisions of Section 01400.

B. Provide field sample panel, 2' long x 2' wide, illustrating coating color, texture, and finish. All color selections are preliminary and subject to change until approval of actual field samples applied on representative surfaces. The Architect shall make color selections.

C. Locate where directed.

D. **Final acceptance of colors, texture, sheen and application will be from samples applied on the job on actual substrates. The Architect may change the color or sheen based upon this test sample. DO NOT PROCEED WITH PAINTING WITHOUT THE ARCHITECT'S APPROVAL OF FIELD SAMPLES.**

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, protect and handle products to site under provisions of Section 01600.

B. Deliver products to site in sealed and labeled containers; inspect to verify acceptability.

C. Container label to include manufacturer's name, type of paint, brand name, lot number, brand code, coverage, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

D. Store paint materials at minimum ambient temperature of 45EF (7EC) and a maximum of 90EF (32EC), in ventilated area, and as required by manufacturer's instructions.

1.10 ENVIRONMENTAL REQUIREMENTS

A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.

B. Do not apply exterior coatings during rain or snow, or when relative humidity is outside the humidity ranges required by the paint product manufacturer.

C. Minimum Application Temperatures for Latex Paints: 45EF (7EC) for interiors; 50EF (10EC) for exterior; unless required otherwise by manufacturer's instructions.

D. Minimum Application Temperature for Varnish Finishes: 65EF (18EC) for interior or exterior, unless required otherwise by manufacturer's instructions.

E. Provide lighting level of 50 footcandles measured mid-height at substrate surface.

F. Provide adequate ventilation of occupied spaces exposed to paint fumes or agents. Where occupied spaces are adjacent to painting or connected by means of HVAC system. Seal off these spaces from exposure of paint fumes including erection of temporary barriers, scaling HVAC, providing fresh air or paint applications during non-occupied hours to minimize exposure.

2PART - PRODUCTS

2.1 MANUFACTURERS: Unless otherwise listed, provide product of one of the following.

A. Paint:

1. Duron
2. Dulux Paints
3. Sherwin-Williams (SW)
4. Porter
5. Benjamin Moore

B. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

A. Coatings: Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; good flow and brushing properties; capable of drying or curing free of streaks or sags.

B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials not specifically indicated but necessary or recommended to achieve the finishes specified, of commercial quality.

3PART EXECUTION

3.1 EXAMINATION

A. Verify that surfaces and substrate conditions are ready to receive work as instructed by the product manufacturer.

B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.

C. Test shop applied primer for compatibility with subsequent cover materials.

D. Measure moisture content of surfaces using an electronic moisture meter before applying coatings and continuing when conditions change. Do not apply coating unless the moisture content is below the following maximum values:

1. Wood: 15 percent
2. Horizontal Concrete: 8 percent
3. Masonry, plaster, stucco, gypsum soffits and horizontal concrete: 12 percent

3.2 PREPARATION GENERAL

A. Prepare surfaces as recommended by the paint manufacturer and as requested herein.

B. Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.

C. Correct defects and clean surfaces which affect work of this section. [Remove existing coatings that exhibit loose surface defects.] Surfaces to be painted must be free of foreign objects and imperfections.

D. Seal with shellac and seal marks which may bleed through surface finishes.

E. Impervious Surfaces: Remove mildew by scrubbing with solution of tri-sodium phosphate and bleach. Rinse with clean water and allow surface to dry.

F. Aluminum Surfaces Scheduled for Paint Finish: Remove surface contamination by steam or high pressure water. Remove oxidation with acid etch and solvent washing. Apply etching primer immediately following cleaning.

G. Uncoated Steel and Iron Surfaces: Remove grease, mill scale, weld splatter, dirt, and rust.

Where heavy coatings of scale are evident, remove by hand wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts are similarly cleaned. Spot prime paint after repairs.

H. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces. Prime metal items including shop primed items.

I. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.

J. Interior Wood Items Scheduled to Receive Transparent Finish: Wipe off dust and grit prior to sealing, seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after sealer has dried; sand lightly between coats.

K. Wood Doors: Seal top and bottom edges with primer. Reseal where wood doors are trimmed.

L. Cementitious Materials: Prepare cementitious surfaces of concrete, concrete block (CMU) and cement plaster to be painted by removing efflorescence, chalk, dust, dirt, grease, oils, and by roughening to remove glaze. Prepare in accordance with ASTM E84 (2005). Rub block to remove loose mortar. Joints shall be uniform. Fill irregularities with cement grout, finish flush to adjacent surface with smooth uniform surface.

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. Generally allow cementitious surfaces not less than 30 days to cure before painting.

Clean concrete floor surfaces scheduled to be painted with a commercial solution of muriatic acid, or other etching cleaner. Flush floor with clean water to neutralize acid, and allow to dry before painting. Rub concrete masonry units to remove loose mortar. Fill irregularities with cement grout and prime.

M. Galvanized Surfaces: Clean free of oil and surface contaminants with non-petroleum based solvent.

N. Gypsum Drywall: Fill minor cracks and holes with spackle and sand smooth. Remove all foreign matter and surface defects.
For surfaces designated to receive gloss, semi-gloss or epoxy finishes, roller apply a batter

consistency mixture of wallboard joint compound and water to entire surface. Remove with broad knife without leaving ridges. Sand smooth.

3.3 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Do not apply finishes to surfaces that are not dry.

C. Apply each coat to uniform finish.

D. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.

E. Sand wood and metal lightly between coats to achieve required finish.

F. Vacuum clean surfaces free of loose particles. Use tack cloth just prior to applying next coat.

G. Allow applied coat to dry before next coat is applied.

H. Where clear finishes are required, tint fillers to match wood. Work fillers into the grain before set. Wipe excess from surface.

I. Prime concealed surfaces of interior and exterior woodwork with primer paint.

J. Prime concealed surfaces of interior woodwork scheduled to receive stain or varnish finish with gloss varnish reduced 25 percent with mineral spirits.

K. Where a portion of a surface is damaged or unsatisfactory, refinish an entire surface plane from corner to corner, floor to ceiling. Spot touch-up is not acceptable.

3.4 CLEANING

A. Clean work under provisions of 01700.

B. Collect waste material which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.5 WORKMANSHIP

A. Coverage and hide shall be complete and uniform in color, texture, sheen, and finish.

B. Finish surfaces shall be free of runs, ridges, laps, drops, waves, and brush or roller marks.

C. Rework and refinish surfaces not in conformance with the requirements under Preparation and Application, or finish until satisfactory results are obtained.

3.6 PAINT SCHEDULE (MATERIALS):

A. Exterior Acrylic Latex Flat House Paint

	Ben.Moore 183 Super Spec 100% Acrylic Flat House Paint
Duron	WeatherShield Flat O6
Dulux	Professional Flat
SW	A100 Exterior Latex Flat A6
Porter	929 AcriPro 100 Exterior Acrylic Flat

B. Exterior Acrylic Latex Semi-Gloss House Paint

	Ben.Moore 170 Super Spec 100% Acrylic Semi-Gloss House Paint
Duron	WeatherShield Semi-Gloss O3
Dulux	Professional Semi-Gloss
SW	A100 Exterior Latex Semi-Gloss A8
Porter	6029 AcriPro 100 Exterior Acrylic Semi Gloss

C. Exterior Elastomeric Waterproof Coating

	Ben.Moore 056 Moorlatic Acrylic Elastomeric Coating
Duron	Dura Clad Premium "10" Elastomeric
Dulux	2260 XXXX Decra-Flex High Build Elastomeric UV cured smooth
SW	Elastomeric Coating A5W100
Porter	6000 Porter Flex Elastomeric Coating, Smooth

D. Exterior Silicone Alkyd Gloss Enamel

	Ben.Moore M21 I.M.C. Silicone Alkyd Gloss Enamel
Duron	Dura Clad 93-040
Dulux	(Glidden) 5539 Glid-Guard
SW	Silicone Alkyd Enamel B56Z Vol.Solid 59%
Porter	Porter Guard 2200 Silicone Alkyd Enamel

E. Exterior Acrylic Gloss Enamel

	Ben.Moore M28 I.M.C. 100% Acrylic Gloss Enamel

Duron	Dura Clad DTM 95-056
Dulux	Acrylic Waterborne Gloss Enamel 4208
SW	DTM Acrylic Gloss, B66-100
Porter	Porter Guard DTM Acrylic Gloss Enamel, 2909

F. Exterior Concrete Masonry Latex Block Filler

	Ben.Moore 285 Super Spec Acrylic Latex Block Filler
Duron	Block Kote 08-126
Dulux	3010 XXXX Ultra-Hide Block Filler
SW	PreRite Latex Block Filler B-25W25
Porter	6223 ProMaster 2000 Latex Block Filler

G. Exterior Concrete Acrylic Primer

	Ben.Moore 068 Masonry Bonding Primer
Duron	Bond 'N' Seal 08-124
Dulux	2000 Decrashield Acrylic Primer
SW	A24 Series Loxon Acrylic Primer
Porter	6010 Porter Lock Acrylic Masonry Sealer

H. Exterior Wood Acrylic Primer

	Ben.Moore 169 Super Spec Acrylic Latex Primer
Duron	08/124 Bond 'N' Seal
Dulux	Professional Acrylic Primer
SW	A-100 Latex Primer B42W41
Porter	6010 335 AcriPro 100 Exterior Acrylic Primer

I. Exterior Ferrous Metal Acrylic Primer

	Ben.Moore M06 I.M.C. Alkyd Metal Primer
Duron	95-05 Dura Clad DTM
Dulux	4020 XXXX Devflex DTM
SW	B66W1
Porter	212/215 PorterGuard DTM Primer Finish

J. Exterior/Interior Alkyd Galvanized Metal or Aluminum Primer

	Ben.Moore M04 I.M.C. Acrylic Metal Primer
Duron	N/A

Dulux	Devguard 4120
SW	Galvite H5 B50WZ30
Porter	299 PorterGuard Alkyd Zinc Dust Coating

K. Interior Acrylic Latex Flat

	Ben. Moore 275 Super Spec Acrylic Laatex Flat
Duron	38 Series Ultra Deluxe Vol.Solids 30%
Dulux	1210 XXXX Ultra-Hide Vol.Solids 31.5%
SW	ProMar B30W200 Vol.Solids 34%
Porter	6109 ProMaster 2000 Vol. Solids 33%

L. Interior Acrylic Latex Eggshell

	Ben.Moore 274 Super Spec Acrylic Latex Eggshell
Duron	36XX Ultra Deluxe Solids 35%
Dulux	1412 XXXX Ultra-Hide Solids 35.4%
SW	B20W200 ProMar 200 Solids 34%
Porter	6129 ProMaster 2000 Latex Eggshell Solids 35%

M. Interior Acrylic Latex Semi-Gloss

	Ben.Moore 276 Super Spec Acrylic Latex Semi-Gloss
Duron	35XX Ultra Deluxe Vol.Solids 35%
Dulux	1416 XXXX Ultra-Hide Vol.Solids 36%
SW	B31W200 ProMar 200 Vol.Solids 36%
Porter	6139 ProMaster 2000 Latex S.G. Vol. Solids 37%

N. Interior Acrylic Latex Gloss

	Ben.Moore M28 I.M.C. Acrylic Gloss Enamel
Duron	Plastic Kote Interior Acrylic
Dulux	3028 XXXX Ultra-Hide
SW	B21W200 ProMar 200
Porter	6149 ProMaster 2000 Acrylic Gloss

O. Interior Alkyd Eggshell

	Ben.Moore 305 Dulamel Alkyd Eggshell Enamel
Duron	45XX Wall Kote
Dulux	1512 Ultra-Hide

SW	B33W200 ProMar 200
Porter	129 ProMaster 2000 Alkyd Satin

P. Interior Alkyd Semi-Gloss

Ben.Moore	271 Super Spec Aklyd Semi-Gloss Enamel
Duron	55 Series Craft Kote
Dulux	1516 Ultra-Hide
SW	B34W200 ProMar 200
Porter	149 ProMaster 2000 Alkyd S.G.

Q. Interior Alkyd Gloss

Ben.Moore	M22 I.M.C. Alkyd Gloss Enamel
Duron	49XX Wall Kote
Dulux	B54 Devguard Industrial
SW	4308 Industrial Enamel
Porter	2749 Porter Guard Alkyd Gloss

R. Interior Waterborne Polyamide Epoxy Gloss

Ben.Moore	M42 I.M.C. Waterborne Polyamide Epoxy
Duron	95-080 Dura Clad
Dulux	4408 Tru-Glaze
SW	B73-100 Waterbase Tile Clad Amine Epoxy
Porter	9371 Dura Glaze

S. Interior Solvent Epoxy

Ben.Moore	M36 I.M.C. Polyamide Epoxy-Gloss
Duron	93-02 Dura Clad Polyamide
Dulux	4508 Tru-Glaze
SW	B-622 Tile Clad HS
Porter	4000 Porter Glaze

T. Interior Polyurethane Varnish Gloss

Ben.Moore	428 Benwood Polyurethane Clear Gloss
Duron	15-015 Permathane
Dulux	1908 Woodpride
SW	A67 Series

Porter	858 Wood Guardian Gloss Poly

U. Interior Latex Primer Drywall, Concrete

Ben.Moore	253 Super Spec Acrylic Latex Primer/Sealer
Duron	04-126 Ultra Deluxe
Dulux	1030 PVA
SW	B28W200 PrepRite 200 Wall Primer
Porter	867 ProMaster 2000 Latex Primer

V. Interior Acrylic Latex Block Filler

Ben.Moore	285 Super Spec Acrylic Latex Block Filler
Duron	08-126 Block Kote
Dulux	3010 Ultra-Hide
SW	B25W25 Block Filler
Porter	6223 ProMaster 2000 Block Filler

W. Interior Stain

Ben.Moore	234 Benwood Alkyd Wood Stain
Duron	28 Series Penetrating
Dulux	1700 Woodpride
SW	A48 - 100 Wood Classic Oil Stain
Porter	832 Wood Guardian DL Stain

X. Interior Wood Polyurethane Varnish Satin

Ben.Moore	435 Benwood Polyurethane Low Luster Clear
Duron	15-011 Permathane
Dulux	1902 Woodpride
SW	A67 Series
Porter	857 Wood Guardian Satin Poly

Y. Interior: Low Odor Finish: Zero VOC Primer Coat

Ben.Moore	211 Pristine EcoSpec 100% Acrylic Primer Sealer
Duron	71-218 Terminator Primer Sealer
Dulux	LM9116 Lifemaster Vinyl Acrylic Interior Primer Sealer
SW	B11W44 Harmony Latex Primer Sealer
Porter	9-2 Pure Performance Latex Interior Zero VOC Primer

Z. Interior: Low Odor Zero VOC Finish

Ben.Moore 212 Pristine EcoSpec 100% Acrylic Interior Flat Wall Paint
213 Pristine EcoSpec 100% Acrylic Eggshell Enamel
214 Pristine EcoSpec 100% Acrylic Semi-Gloss Enamel
Duron 60 Series Genesis Vinyl Acrylic Flat Wall Paint
79 Series Genesis Vinyl Acry Low Sheen Enamel
83 Series Genesis Acrylic Semi-Gloss Enamel
Dulux LM 9100 Lifemaster Vinyl Acrylic Interior Flat Paint
LM 9300 Lifemaster Vinyl Acrylic Eggshell Enamel
LM 9200 Lifemaster Vinyl Acrylic Semi-Gloss Enamel
SWB5 Series Harmony Latex Flat Wall Paint
B9 Series Harmony Latex Eggshell Enamel
B10 Series Harmony Latex Semi-Gloss Enamel
Porter 9-110 Pure Performance Flat Wall Paint
9-411 Pure Performance Eggshell Enamel
9-510 Pure Performance Semi-Gloss Enamel

AA. Other Products: Provide Manufacturer's recommended, first quality sealers, fillers, primers, and other products compatible with substrate and finish.

3.7 IDENTIFICATION

A. In concealed space above finished ceilings, permanently identify smoke partitions, fire rated partitions, and firewalls with painted 6" high stencil lettering reading, as appropriate: "1 HOUR FIRE AND SMOKE BARRIER--PROTECT ALL OPENINGS" or "SMOKE BARRIER--PROTECT ALL OPENINGS." Change fire rating to suit wall assembly. **Provide on each face of each such partition with a minimum of one identification each surface and at 12'-0" o.c.**

3.8 COLORS

A. Colors shall be as selected by the Architect. Custom colors may be required.
B. The interior walls will be finished with accent colors requiring changes in colors at changes in wall plane. Color changes shall be masked to produce a straight and even edge. The painting contractor shall assume that 10% of all wall planes will be accent colors.

3.9 PAINT SCHEDULE, EXTERIOR

A. Steel - Unprimed:

1. One coat ferrous metal primer
2. Two coats acrylic gloss

B. Steel - Primed:

1. Touch-up primer
2. Two coats acrylic gloss

C. Steel - Galvanized:

1. Two coats exterior latex gloss

D. Wood: Post, soffits and other exposed wood.

1. Two coats acrylic latex semi-gloss house paint

E. Cement Board: (CB) Pre-primed.

1. Two coats acrylic satin house paint.

F. CMU:

1. One coat primer.
2. Two coats elastomeric coating.

G. Steel Columns and Guard Rails: Special coating system.

1. Shop primer (coordinate with steel supplier) Tnemec 66 121. Epoxoline 3.0-5.0 DFM

2. One Coat - Tnemec 66 Hi-Build Epoxoline 3.0-5.0 DFM
3. Final Coat - Tnemec 73 Endura Shield 3.0-5.0 DFM

3.10 PAINT SCHEDULE, INTERIOR

A. Steel - Unprimed:

1. One coat DTM acrylic primer

2. Two coats latex gloss enamel

B. Steel - Primed:

1. Touch-up primer
2. Two coats latex gloss enamel

C. Steel - Galvanized:

1. One coat DTM acrylic primer
2. Two coats latex gloss enamel

D. CMU (except epoxy):

1. One coat latex primer
2. Two coats acrylic latex eggshell

E. CMU - Epoxy:

1. One coat waterborne epoxy block filler.
2. Two coats waterborne polyamide epoxy gloss.

F. Wood (opaque):

3. One coat primer
4. Two coats latex gloss enamel

END OF SECTION 09900

SECTION 09910

PAINTING

SKATE PARK

PART 1 GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This Section includes surface preparation and field painting of the following:

1. Miscellaneous exposed exterior items and surfaces.

B. Paint exposed surfaces, except where the paint schedules indicate that a surface or material is not to be painted or is to remain natural. If the paint schedules do not specifically mention an item or a surface, paint the item or surface the same as similar adjacent materials or surfaces whether or not schedules indicate colors. If the schedules do not indicate color or finish, the Owner Representative will select from standard colors and finishes available.

1. Painting includes field painting of exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

C. Do not paint prefinished items, concealed surfaces, finished metal surfaces, operating parts, and labels.

1. Finished metal surfaces include the following if used:

a. Stainless steel

b. Bronze and brass

c. Iron

2. Labels: Do not paint over Underwriters Laboratories (UL), Factory Mutual (FM), or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

D. Related Sections include the following:

1. Division 5 Section "Metal Fabrications" for shop priming ferrous metal.

1.03 DEFINITIONS

A. General: Standard coating terms defined in ASTM D 16 (2003) apply to this Section.

1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.

2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.

3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.

4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.

5. Full gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.04 SUBMITTALS

A. Product Data: For each paint system specified. Include block fillers and primers.

1. Material List: Provide an inclusive list of required coating materials. Indicate each material and cross-reference specific coating, finish system, and application. Identify each material by manufacturer's catalog number and general classification.

2. Manufacturer's Information: Provide manufacturer's technical information, including label analysis and instructions for handling, storing, and applying each coating material proposed for use.

3. Certification by the manufacturer that products supplied comply with local regulations controlling use of volatile organic compounds (VOCs).

B. Samples for Initial Selection: Manufacturer's color charts showing the full range of colors available for each type of finish-coat material indicated.

1. After color selection, the Owner Representative will furnish color chips for surfaces to be coated.

C. Samples for Verification: Of each color and material to be applied, with texture to simulate actual conditions, on representative Samples of the actual substrate.

1. Provide stepped Samples, defining each separate coat, including block fillers and primers. Use representative colors when preparing Samples for review. Resubmit until required sheen, color, and texture are achieved.

2. Provide a list of materials and applications for each coat of each sample. Label each sample for location and application.

3. Submit Samples on the following substrates for the Owner Representative's review of color and texture only:

a. Ferrous Metal: Provide two 4-inch [10.16mm] square samples of flat metal and two 8-inch [20.32cm] long samples of solid metal for each color and finish.

D. Qualification Data: For firms and persons specified in the "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of Owner Representatives and owners, and other information specified.

1.05 QUALITY ASSURANCE

A. Applicator Qualifications: Engage an experienced applicator who has completed painting system applications similar in material and extent to that indicated for this Project with a record of successful in-service performance.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the Project Site in manufacturer's original, unopened packages and containers bearing manufacturer's name and label, and the following information:

1. Product name or title of material.

2. Product description (generic classification or binder type).

3. Manufacturer's stock number and date of manufacture.

4. Contents by volume, for pigment and vehicle constituents.

5. Thinning instructions.

6. Application instructions.

7. Color name and number.

B. Store materials not in use in tightly covered containers in a well-ventilated area at a minimum ambient temperature of 45°F [7°C]. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

C. Protect from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.07 PROJECT CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50°F and 90°F [10°C and 32°C].

B. Apply solvent-thinned paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 45°F and 95°F [7°C and 35°C].

C. Do not apply paint in snow, rain, fog, or mist; or when the relative humidity exceeds 85 percent; or at temperatures less than 5°F (3°C) above the dew point; or to damp or wet surfaces.

1.08 EXTRA MATERIALS

A. Furnish extra paint materials from the same production run as the materials applied in the quantities described below. Package paint materials in unopened, factory-sealed containers for storage and identify with labels describing contents. Deliver extra materials to the Owner.

1. Quantity: Furnish the Owner with an additional 5 percent, but not less than 1 gallon [3.79l] or 1 case, as appropriate, of each material and color applied.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in the paint schedules.

2.02 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide fillers, primers, undercoats, and finish-coat materials that are compatible with one another and the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

1. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish manufacturer's material data and certificates of performance for proposed substitutions.

C. Colors: Provide color selections made by the Owner's Representative.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas, and conditions, with the Applicator present, under which painting will be performed for compliance with paint application requirements.

1. Do not begin to apply paint until unsatisfactory conditions have been corrected and surfaces receiving paint are thoroughly dry.

2. Start of painting will be construed as the Applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

1. Notify the Owner Representative about anticipated problems using the materials specified over substrates primed by others.

3.02 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, and similar items already installed that are not to be painted. If removal is impractical or impossible because of the size or weight of the item, provide surface-applied protection before surface preparation and painting.

1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings. Remove oil and grease before cleaning.

1. Schedule cleaning and painting so dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particularl substrate condition and as specified.

1. Provid barrier coats over incompatible primers or remove and reprime.

2. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.

a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.

3. Ferrous Metals: Clean ungalvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with the Steel Structures Painting Council's (SSPC) recommendations.

   a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with the same primer as the shop coat.

D. Materials Preparation: Mix and prepare paint materials according to manufacturer's written instructions.

1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.

2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.

3. Use only thinners approved by paint manufacturer and only within recommended limits.

3.03 APPLICATION

A. General: Apply paint according to manufacturer's written instructions. Use applicators and techniques best suited for substrate and type of material being applied.

1. Paint colors, surface treatments, and finishes are indicated in the schedules.

2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

3. Provide finish coats that are compatible with primers used.

4. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, covers, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.

5. Sand lightly between each succeeding enamel or varnish coat.

B. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

1. The number of coats and the film thickness required are the same regardless of application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. If sanding is required to produce a smooth, even surface according to manufacturer's written instructions, sand between applications.

2. Omit primer on metal surfaces that have been shop primed and touchup painted.

3. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance. Give special attention to ensure edges, corners, crevices, welds, and exposed fasteners receive a dry film thickness equivalent to that of flat surfaces.

4. Allow sufficient time between successive coats to permit proper drying. Do not recoat surfaces until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

C. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.

1. Brushes: Use brushes best suited for the type of material applied. Use brush of appropriate size for the surface or item being painted.

2. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

3. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

D. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer.

E. Fillers: Apply fillers at a rate to ensure complete coverage of pores filled.

F. Prime Coats: Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque 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.

H. Completed Work: Match approved samples for color, texture, and coverage. Remove, refinish, or repaint work not complying with requirements.

3.04 CLEANING

A. Cleanup: At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

1. After completing painting, clean paint-spattered surfaces. Remove spattered paint by washing and scraping. Be careful not to scratch or damage adjacent finished surfaces.

3.05 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Owner Representative.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

1. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1 (2004).

3.06 EXTERIOR PAINT SCHEDULE

A. Ferrous Metal: Provide the following finish systems over exterior ferrous metal. Primer is not required on shop-primed items.

1. Primer:

   a. Type: Rust-inhibitive, chemical and corrosion-resistant coating system for protection against abrasion, moisture and chemical contact.

   b. Application: Apply at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 4.0 mils.

   c. Product: "Series 66 Hi-build Epoxoline" by Tnemec Co., Inc., or equal.

   d. Color: Same color as finish coats.

2. Intermediate Coat:

   a. Type: Per Manufacturer's current printed specifications.

   b. Color: Same color as finish coats.

3. Finish Coats:

   a. Type: Highly resistant to abrasion, wet conditions, corrosive fumes and chemical contact. Outstanding retention of initial color and gloss on long-term weather exposure.

   b. Application: Apply two coats at spreading rate recommended by the manufacturer to achieve a total dry film thickness of not less than 2.5 mils.

   c. Product: "Series 73 Endura-Shield", by Tnemec Co., Inc., or equal.

   d. Color: Unless otherwise noted in the plans the finish color to be selected by Owner's Representative.

END OF SECTION 09900

SECTION 09960

SEAMLESS EPOXY FLOORING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Cast-in-place seamless epoxy flooring.

B. Drawings and general provisions of Contract, including General and Supplementary Conditions and other Division l Specification sections, apply to this Section.

1.2 RELATED WORK

A. Concrete floor slab, Section 03300.

1.3 QUALITY ASSURANCE

A. Application: A firm with not less than three years successful experience in application of this type flooring and who is acceptable to the manufacturer.

1.4 JOB CONDITIONS

A. Concrete slab shall have cured a minimum of 28 days. Slab shall be cured by damp curing method and not by application of curing compounds.

B. Do not proceed with application when ambient temperature or slab temperature is less than 50EF (10EC) when surface has become wet.

C. Manufacturer representative shall inspect all floor surfaces to be coated and provide written report insuring proper preparation and application.

1.5 SUBMITTALS

A. In accordance with Section 01300, submit manufacturer product data, installation instructions, texture and color samples.

PART 2 - PRODUCTS

2.1 ACCEPTABLE SYSTEM

A. "Epoxy colored aggregate" floor system as manufactured and furnished by Benjamin Moore & Company.

B. Other manufacturers offering products of similar function, performance and appearance may submit for prior approval. See Section 00100, Instructions to Bidders.

2.2 PRODUCTS

A. Completed system shall be as follows:

1. Floor Sealer: M41 fast dry epoxy sealer - (3.0 mils DFT)
2. Interm: M40 100% solids amine epoxy gloss floor coating.
3. Quartz Aggregate: Decorative quartz aggregate in colors selected.
4. Finish: M40 100% solids amine epoxy gloss floor coating (8.0 mils DFT).

PART 3 - EXECUTION

3.1 GENERAL

A. Inspect, prepare, install, and finish epoxy flooring in accordance with Manufacturer's instructions.

3.2 INSPECTION

A. Inspect all surfaces which receive flooring application and job conditions to determine acceptability. Do not proceed until conditions are satisfactory.

B. Verify that the slab has cured a minimum of 28 days and the surface is dry. Test for alkalinity and moisture are not exceeding levels acceptable to manufacturer.

C. Verify that the slab is level within 1/4" in 10'-0".

D. Verify surface is free of oil, resins, and other compounds or substances which would be detrimental to epoxy flooring system.

3.2 PREPARATION

A. Clean slab to remove dust, dirt, and debris by sweeping and final vacuum cleaning. Patch defects.

B. Wash thoroughly with household bleach and TSP. Rinse and allow to thoroughly dry.

C. Etch concrete surface using manufacturers recommended pretreatment and etch. Saturate and scrub with stiff-bristle broom. Allow to activate a minimum of five minutes. Thoroughly remove by washing with clean water at least three separate times. Continue etching until surface resembles 100 grit sandpaper texture. Alternately, floor can be prepared by shotblasting.

3.3 APPLICATION

A. Prime surface to receive flooring.

B. Mix and apply epoxy flooring system over primer in accordance with Manufacturer's directives. After primer is dry apply interm epoxy coat and heavy broadcast of aggregate color while coat is wet. After drying sweep excess aggregate and apply finish coat.

C. Completed installation shall be uniform in appearance and free of defects.

D. Clean and protect completed installation.

END OF SECTION 09960

SECTION 10171

SOLID PLASTIC TOILET COMPARTMENTS

1PART - GENERAL

1.1 SECTION INCLUDES

A. Solid plastic toilet compartments, floor mounted, overhead braced.

B. Urinal screens; wall mounted.

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

1.2 RELATED SECTIONS

A. Section 06100, Rough Carpentry: Framing and plates within walls, Framing above ceiling for partition panel support.

B. Section 10800, Toilet and Bath Accessories.

1.3 REFERENCES

A. ASTM A167, (2004) - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Shop Drawings: Indicate partition plan, elevation views, dimensions, details of supports, door swings and cutouts for toilet accessories.

C. Product Data: Provide data on panel construction, hardware, and accessories.

D. Samples: Submit one actual sample of partition panels, illustrating panel finish, colors available, and sheen.

E. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and care instructions.

1.5 REGULATORY REQUIREMENTS

A. Conform to ANSI A117.1 (2005) code for access for the handicapped.
B. Panels shall have Class "B" flame spread rating as tested by ASTM E84 (2005).

SECTION 10171

SOLID PLASTIC TOILET COMPARTMENTS

1.6 FIELD MEASUREMENTS

A. Verify that field measurements are as indicated on shop drawings.

2PART - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

A. General Partitions - H.D.P.

B. Capitol Partitions - Poly-Pro and Poly-Pro Plus.

C. Comtec Industries - Product S200 and D400 Series.

D. Santana - Product Poly-Mar HD and Poly-Granite HD.

E. Substitutions: Under provisions of Section 01600.

2.2 MATERIALS

A. Solid Panel: Solid HDPE resin (high density polyethylene), Class B flame spread.

2.3 ACCESSORIES

A. Head Rails: Hollow aluminum tube, 1"x1-5/8" size, with anti-grip strips and cast socket wall brackets.

B. Attachments, Screws, and Bolts: Stainless steel; tamper proof type, heavy duty extruded aluminum brackets.

C. Through Bolts and Nuts: Stainless steel with tamper proof heads.

D. Hardware: Stainless Steel. Aluminum and Zamac not acceptable except as noted with covers and concealed fasteners.

1. Hinges: Surface mounted heavy duty, self-closing, 16 gage stainless steel continuous piano hinge 2" wide. Thru bolted with one way sex bolts. Run full height of door with a minimum of 6 thru bolts to panel and door.

2. Coat Hook: Chrome plated Zamak with rubber bumper, one per door.
3. Latch & Strike: Surface mounted and stainless steel slide latch through bolted to door. Wrap around strike with bumper, stainless steel.

4. Bracket: Continuous "U" shaped full height with clear anodized finish, extruded clear anodized aluminum.

5. Door Pull for Outswing Doors: Chrome plated Zamak.

6. Bumper for out-swing doors: chrome plated Zamak with rubber bumper.

2.4 FABRICATION

A. Fabricate partitions by forming solid plastic with finished faces and edges. Finish edges convex.

B. Bevel corners and edges of cutouts.

C. Doors and Panels:

1. Thickness: 1".
2. Door Width: 24" in-swing.
3. Door Width for Handicapped Use: 32" minimum clear out-swinging or as shown.
4. Height: 58".

D. Thickness of Pilasters: 1".

2.5 FINISHING

A. Solid Plastic, Color: Doors and panels in colors selected by Architect. Up to four colors may be selected with different colors for panels and doors. Color may be selected from either product listed.

B. Stainless Steel Surfaces: No. 4 finish.

C. Aluminum: Clear anodized.

3PART - EXECUTION

3.1 EXAMINATION

A. Verify correct spacing of and between plumbing fixtures.

B. Verify correct location of built-in framing, anchorage, and bracing.

3.2 INSTALLATION

A. Install partitions secure, rigid, plumb, and level in accordance with manufacturer's instructions.

B. Attached continuous panel brackets securely to walls using anchor devices.

C. Attach panels and pilasters to brackets with tamper proof through bolts and nuts. Locate head rail joints at pilaster center lines.

D. Anchor urinal screen panels to walls with continuous panel brackets with anchors not less than 12" o.c.

E. Provide adjustment for floor variations with screw jack through steel saddles integral with pilaster. Conceal floor fastenings with pilaster shoes.

F. Equip each door with two heavy duty or one continuous hinge, one door latch, one coat hook and bumper; out-swinging door with pull.

G. Install door strike and keeper with door bumper on each pilaster in alignment with door latch.

H. Field touch-up of scratches or damaged finish will not be permitted. Replace damaged or scratched materials with new materials.

3.3 ADJUSTING

A. Adjust work under provisions of Section 01700.

B. Adjust and align hardware to uniform clearance at vertical edge of doors, not exceeding 3/16" (5 mm).

C. Adjust hinges to position doors in partial opening position when unlatched, and return out swinging doors to closed position.

D. Adjust adjacent components for consistency of line or plane.

END OF SECTION 10171

SECTION 10440

SPECIALITY SIGNS

1PART - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

A. Extent of specialty signs is shown on the drawings.

B. Forms of specialty signs required include the following:

Plastic signs with raised letters

1.3 QUALITY ASSURANCE

A. Uniformity of Manufacturer: For each sign form and graphic image process indicated furnish products of a single manufacturer.

B. Examine the on-site conditions prior to fabricating. Field measure for all dimensions. Report in writing any defects in construction or field conditions prior to commencing work.

C. ADA Accessibility: Comply with requirements of ANSI A117.1 (2005) for Handicapped accessibility of signs.

1.4 SUBMITTALS

A. Shop Drawings: Submit shop drawings for fabrication and erection of specialty signs. Include plans, elevations, and a large scale details of sign wording and lettering layout. Show anchorages and accessory items. Furnish location template drawings for items supported or anchored to permanent construction.

Furnish full-size spacing templates for individual building mounted letters and numbers.

B. Product Data: Submit manufacturer's technical data and installation instructions for each type of sign required. Provide copy of product data for Maintenance Manual. Submit color chart for selection by the Architect.

SECTION 10440

SPECIALITY SIGNS

1.5 FEES AND PERMITS

A. Obtain and pay for all necessary permits, fees, inspections, and tests required by regulating authorities.

2PART - PRODUCTS

2.1 MATERIALS

A. Aluminum Sheet: Provide aluminum sheet of alloy and temper recommended by the aluminum producer or finisher for the type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B209 (2004) for 5005-H15.

B. Aluminum Extrusions: Provide aluminum extrusions of ally and temper recommended by the aluminum producer or finisher for the type of use and finish indicated, and with not less than the strength and durability properties specified in ASTM B221 (2005) for 6063-T5.

C. Stainless Steel Plate, Sheet and Strip: Provide stainless steel plate, sheet or strip, AISI Type 304, (2002) complying with the requirements of ASTM A666.2 (2003).

D. Fasteners: Unless otherwise indicated, use concealed fasteners fabricated from stainless steel.

E. Paint: All steel to receive rust inhibiting prime coat of paint.

2.2 PLASTIC SIGNS

A. ADA complying signs for mounting beside door as follows:

1. Letter Height: 5/8"-2" sized to suit available spacing.
2. Letter Style: Helvetica upper case.
3. Letters, Raised: 1/32" minimum with Grade 2 braille.
4. Color, Letters and Background: Contrasting style.
5. Corners: Radiused 1/2" to 3/4".
6. Frame (where noted as insert): Nominal 1/2" deep frame with nominal 1/8" face view width. Signs for toilets, stairs, and other nonchangeable function shall have simulated border.
7. Mounting: Vinyl tape on drywall.
8. Finish: Nonglare.
9. Material: Scratch resistant, nonstatic, fire retardant melamine suitable for raised lettering.

SECTION 10440

SPECIALITY SIGNS

3PART - EXECUTION

3.1 INSTALLATION

A. Locate sign units and accessories where shown or schedules, using mounting methods of the type described and in compliance with the manufacturer's instructions.

Install sign units level, plumb and at the height indicated, with sign surfaces free from distortion or other defects in appearance. Unless otherwise indicated, mount door signs 60" from finish floor to centerline of sign and on wall adjacent to strike side door jamb.

3.2 CLEANING AND PROTECTION

A. At completion of the installation, clean soiled sign surfaces in accordance with the manufacturer's instructions. Protect units from damage until acceptance by the Architect.

3.3 SIGN SCHEDULE

A. Nominal 8"W x 8"H "WOMEN" with graphic pictogram and handicapped access symbol.

B. Nominal 8"W x 8"H "MEN" with graphic pictogram and handicapped access symbol.

C. Nominal 8"W x 8" H "UNISEX RESTROOM" with graphic pictogram of women and men and handicapped access symbol.

END OF SECTION 10440

SECTION 10500

METAL LOCKERS

1PART - GENERAL

1.1 RELATED DOCUMENTS

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes coin operated welded metal lockers and related equipment as indicated.

1.3 SUBMITTALS

A. Submit product data and installation instructions for metal locker units and related equipment.

B. Submit color samples on squares of same metal for selection.

C. Shop drawings that show metal lockers in dimensioned relation to adjacent surfaces. Show lockers in detail, method of installation, fillers, trim, base, and accessories. Include locker numbering sequence information and for combination locks their respective locker numbers.

1.4 QUALITY ASSURANCE

A. Uniformity: Provide metal lockers that are standard products of single manufacturer, with interchangeable like parts. Include necessary mounting accessories, fittings, and fastenings.

1.5 JOB CONDITIONS

A. Do not deliver metal lockers until building is enclosed and ready for locker installation. Protect from damage.

2PART - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturer: Subject to compliance with requirements, provide products of one of the following:

SECTION 10500

METAL LOCKERS

Art Metal Products
DeBourgh
Hallowell
Lyon Metal Products
Medart, Inc.
Penco Products, Inc.
Republic Storage Systems
List Industries, Inc.

2.2 LOCKERS

A. Size and Type: Closed box mounted, four tier, each 12" wide x 15" deep x 15" high, with sloped hood.

B. Sheet Steel: Mild cold-rolled and leveled furniture steel, free from buckle, scale, and surface imperfections.

C. Body: Fabricate back and sides of minimum 18-gage steel, with double- flanged connections extending full height. Form top, bottom and shelves of not less than 16-gage steel, with flanged edges. Form exposed ends of non-recessed lockers of minimum 16-gage steel.

D. Door: One piece, minimum 14-gage sheet steel, flanged at all edges, constructed to prevent springing when opening or closing. Fabricate to swing 180 degrees. Provide extra bracing or reinforcing on inside of doors over 15 inches wide. Provide stamped, louvered vents top and bottom of door face.

E. Hinges: Continuous 16-gage piano hinge riveted to door and frame for the full height.

F. Recessed Handle and Latch: Housing to form recess for latch lifter and locking devices; nonprotruding latch lifter; and automatic, prelocking, pry-resistant latch mechanism with 1-point latching.

Coin Operated Locks: Provide coin collect/pay type lock with fee of two (2) quarters. Provide individual four (4) change keys for each lock and two (2) master keys.

G. Number Plates: Manufacturer's standard etched, embossed, or stamped, nonferrous metal number plates with numerals not less than 3/8" high. Number lockers in sequence as directed by Architect. Attach plates to each locker door, near top, centered, with at least two fasteners of same finish as number plate.

H. Continuous Sloping Tops: Not less than 20-gage sheet steel, approximately 25E pitch, in lengths as long as practicable but not less than 4 lockers. Provide closures at ends.

Finish to match lockers. Provide intermediate supports at no less than every other locker.

I. ADA Act (1994): Provide ADA compliant lock on one locker (2 second tier).

J. Base: 4" high closed base.

2.3 FABRICATION GENERAL

A. Construction: Pre-assemble lockers square, rigid, and without warp, with metal faces flat and free of dents or distortion. Make exposed metal edges safe to touch. Weld frame members together to form rigid, one piece structure. Grind exposed welds flush. Do not use bolts or screws to assemble lockers. Use all welded construction..

B. Finishing: Chemically pretreat metal with degreasing and phosphatizing process. Apply baked-on or 2mm powder coat enamel finish to all surfaces, exposed and concealed, except plates and nonferrous metal. Provide locker units in color(s) selected by Architect from manufacturer's standards. Concealed parts may be manufacturer's standard neutral color.

3PART - EXECUTION

3.1 INSTALLATION

A. Install metal lockers in accordance with manufacturer's instructions for plumb, level, rigid, and flush installation. Secure to wall with anchors not to exceed 36" o.c., unless otherwise recommended by manufacturer, and apply through backup reinforcing plates where necessary to avoid metal distortion, using concealed fasteners. Anchor all lockers to wall and/or floor construction. Attach number plates in schedule and sequence.

B. Install trim, metal base, sloping top units, and metal filler panels and end panels, using concealed fasteners. Provide flush, hairline joints against adjacent surfaces.

3.2 ADJUST AND CLEAN

A. Adjust doors and latches to operate easily without binding. Verify that integral locking devices are operating properly and will securely lock.

B. Touch up marred finishes, but replace units that cannot be restored to factory-finished appearance. Use only materials and procedures recommended or furnished by locker manufacturer.

SECTION 10500

METAL LOCKERS

END OF SECTION 10500

SECTION 10522

FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DESCRIPTION OF WORK

Extent of fire extinguishers, cabinets and accessories is indicated on drawings or so specified herein. Identified as "F.E." on drawings.

1.3 SUBMITTALS

Product Data: Submit product data for each type of product. 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.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

Manufacturer: Subject to compliance with requirements, provide products of one of the following:

J.L. Industries
Larsen's Manufacturing Company
Kidde

2.2 FIRE EXTINGUISHERS

Provide Type II extinguishers unless otherwise specified.

TYPE I - Water: UL-rated 2-A, 2-1/2 gallon nominal capacity, in stainless steel container with pressure indicating gauge, for Class A fires.

TYPE II - Multi-Purpose: UL rated 4-A:60:B:C, in enameled steel container.

2.3 MOUNTING BRACKETS

Provide manufacturer's standard brackets 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.

2.4 FIRE EXTINGUISHER CABINETS

A. 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.

B. Cabinet Type:

Recessed. Cabinet box fully recessed in walls of sufficient depth to suit style of trim indicated. Fabricate trim in one piece with corners mitered, welded, and ground smooth of same material as door. One-piece combination trim and perimeter door frame overlapping surrounding wall surface with exposed trim face and wall return at outer edge (backbend).

Square-Edge Trim: Square edges with 1/2" backbend depths.

C. Door Material and Construction: Manufacturer's standard door construction with vertical tempered glass panel coordinated with cabinet types and trim styles selected. Provide red vinyl letters reading "FIRE EXTINGUISHER."

D. Door Hardware: 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 degrees.

E. Factory Finishing of Fire Extinguisher Cabinets:

1. Baked Enamel Finish: Immediately after cleaning and pretreatment, apply cabinet manufacturer's standard baked enamel finish system to the interior of cabinet. Color selected by Architect.

2. Field-Paintable Factory Finish: Immediately after cleaning and pretreatment, apply to exterior of cabinet and door 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."

PART 3 - EXECUTION

SECTION 10522

FIRE EXTINGUISHERS, CABINETS AND ACCESSORIES

3.1 INSTALLATION

Install items in this section in locations and at mounting heights indicated at heights to comply with applicable regulations of governing authorities. Securely fasten mounting brackets and fire extinguisher cabinets to structure, square and plumb, to comply with manufacturer's instructions.

END OF SECTION 10522

SECTION 10800

TOILET AND BATH ACCESSORIES

1PART GENERAL

1.1SECTION INCLUDES

A. Toilet accessories.

B. Grab bars.

C. Attachment hardware.

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

1.2PRODUCTS INSTALLED BUT NOT FURNISHED UNDER THIS SECTION

Placement of concealed anchor devices which require being built-in.

1.3REFERENCES

A. ANSI A117.1, (2005) - Safety Standards for the Handicapped.

B. ASTM A123, (2002) - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

C. ASTM A167, (2004) - Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

D. ASTM A269, (2004) - Seamless and Welded Austenitic Stainless Steel Tubing for General Service.

E. ASTM A366, (2001) - Steel, Carbon, Cold-Rolled Sheet, Commercial Quality.

F. ASTM B456 (2003) - Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium.

1.4SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.

C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention, and cutout and reinforcements of partitions.

SECTION 10800

TOILET AND BATH ACCESSORIES

1.5REGULATORY REQUIREMENTS

A. Conform to ANSI A117.1 code (2005) for access for the handicapped.

1.6COORDINATION

A. Coordinate the work with the placement of internal wall reinforcement and reinforcement of toilet partitions to receive anchor attachments.

2PART PRODUCTS

2.1MANUFACTURERS

A. Products specified are by Bobrick Washroom Equipment, Inc., unless otherwise noted.

B. Other acceptable manufacturers offering equivalent products:

1. American Specialties
2. Bradley Corporation
3. Hallmark-Nutone/Div. Scovill

C. Substitutions: Under provisions of Section 01600.

2.2MATERIALS

A. Sheet Steel: ASTM A366, (2001) 20 gage minimum.

B. Stainless Steel Sheet: ASTM A167, (2004) Type 304, 22 gage minimum.

C. Tubing: ASTM A269, (2004) stainless steel.

D. Adhesive: Two component epoxy type, contact type, waterproof.

E. Fasteners, Screws, and Bolts: Hot dip galvanized, if concealed, stainless steel exposed, tamper-proof, and security type.

2.3FABRICATION

A. Weld and grind joints of fabricated components, smooth.

B. Form exposed surfaces from single sheet of stock, free of joints. Form surfaces flat without distortion. Maintain surfaces without scratches or dents. Seams shall be tight and exposed

edges rolled.

C. Shop assemble components and package complete with anchors and fittings.

D. Provide steel anchor plates, adapters, and anchor components for installation. Anchors shall be concealed.

2.4KEYING

A. Supply two keys for each accessory to Owner.

2.5FINISHES

A. Galvanizing: ASTM A123, (2002) G60. Galvanize ferrous metal and fastening devices.

B. Shop Primed Ferrous Metals: Pretreat and clean, spray apply one coat primer and bake.

C. Enamel: Pretreat to clean condition, apply one coat primer and minimum two coats [epoxy] [electrostatic] baked enamel.

D. Chrome/Nickel Plating: ASTM B456, (2003) Type SC 2 satin finish.

E. Stainless Steel: No. 4 satin luster finish.

F. Back paint components where contact is made with building finishes to prevent electrolysis.

3PART EXECUTION

3.1EXAMINATION

A. Verify that site conditions are ready to receive work and dimensions are correct.

B. Verify exact location of accessories for installation.

3.2PREPARATION

A. Deliver inserts and rough-in frames to site for timely installation.

B. Provide templates and rough-in measurements as required.

3.3INSTALLATION

A. Install accessories in accordance with manufacturer's instructions and ANSI A117.1. (2005)

B. Install plumb and level, securely and rigidly anchored to substrate.

3.4SCHEDULE

Products are identified on the drawings by their abbreviation noted in (). Provide quantity as shown and/or scheduled.

ITEM	MODEL #	FURNISH
A. Toilet Paper Holder (TPH)	B-274	Provide 1 each water closet Provide 2740 for handicapped water closet
B. Multi-purpose Unit (MPU)	B-3944	Provide 1 in single person restroom
C. Grab Bars w/Satin Finish (GB X length)	B-6106 Series	Provide pair of 42"x32" each handicapped water closet
D. Mirror (M x size)	B-165	Provide 1 each lavatory
E. Soap Dispenser (SD)	B-2112	Provide 1 each lavatory
F. Mop Holder (MH)	B-223x36	Provide 1 each janitor closet
G. Sanitary Napkin Disposal (SND)	B-270	Provide 1 each female water closet & at single person restroom
H. Sanitary Napkin Dispenser (SN)	B-3500 x 2	Provide 1 at female restroom.
I. Diaper Changing Station	100-EH	Brocar, Bobrick or Bradley. Provide 1 each multiperson restroom
J. Hand Dryer	B-708	Surface mounted 115V, 20A 2300W

END OF SECTION 10800

SECTION 16010

ELECTRICAL GENERAL REQUIREMENTS

SITE DEVELOPMENT

PART 1 - GENERAL

1.1 SCOPE OF WORK:

A. Contractor shall install all electrical work covered by the below specifications and approved drawings. Provide all material, labor transportation, tools, supervision, etc., necessary to complete the total electrical job. All items not specifically mentioned herein which are obviously necessary to make a complete working installation shall be provided by the contractor, including any necessary field engineering and/or detail drawings required. Drawings shall be submitted for approval as provided for "Shop Drawings".

B. The work shall consist of, but shall not be limited to, the installation of the following systems:

1. Exterior and interior electrical systems for site lighting and site sound system.

2. Power connections to equipment specified in specifications and approved drawings.

1.2 CODES AND FEES:

A. All work shall be done in accordance with the requirements of the National Electrical Code, NFPA #70, 2005 Edition and all local and state codes.

B. The contractor shall obtain and pay for all permits and inspections required by the building and safety codes and ordinances and the rules and regulations of any legal body having jurisdiction.

C. All electrical items covered by this specification shall be U.L. labeled and listed for the purpose.

1.3 DRAWINGS:

A. The drawings indicate the general arrangement of electrical equipment. The contractor shall review architectural drawings for door swings, cabinets, counters and other built-in equipment; conditions indicated on architectural plans shall govern for this work. Coordinate installation of electrical equipment with the structural and mechanical equipment and access thereto. Coordinate installation of recessed electrical equipment with concealed ductwork and piping, and wall thickness.

B. Do not scale drawings. Dimensions for layout of equipment shall be obtained from architectural and/or mechanical unless specifically indicated on electrical drawings.

C. Discrepancies shown on different drawings, between drawings and specifications or between documents and field conditions shall be promptly brought to the attention of the Owner's Representative.

1.4 SHOP DRAWINGS:

A. The contractor shall submit for review by the owner's representative, eight sets of complete schedules and data of materials and equipment to be incorporated in the work. Submittals shall be supported by descriptive materials, such as catalog sheets, product data sheets, diagrams, performance curves, and charts published by the manufacturer, to show conformance to specification and drawing requirements, model numbers alone will not be acceptable. Data submitted for review shall contain all information required to indicate compliance with equipment specified. Complete electrical characteristics shall be provided for all equipment. Submittals for lighting fixtures shall include photometric data. The owner's representative reserves the right to require sample of any equipment to be submitted for approval.

B. Each individual submittal item for materials and equipment shall be marked to show specification section and paragraph number which pertains to the item.

C. Prior to submitting shop drawings, the contractor shall review the submittal for compliance with the contract documents and place a stamp or other confirmation thereon which states that the submittal complies with contract requirements. Submittals without such verification will be returned without review.

D. Eight complete sets of Submittals shall be made for each of the following items:

Lighting Fixtures	Poles
Sound System Equipment	Inground Junction Boxes

1.5 RECORD DRAWINGS:

A. At the time of final inspection, provide three (3) sets of complete data on electrical equipment used in the project and Reproducible (Vellum) As-Built drawings reflecting all field changes. This data shall be in bound form and shall include the following items:

1. Test results required by these specifications.

2. Panelboard shop drawings and copies of the final circuit directories reflecting all field changes.

3. Data sheets indicating electrical characteristics of all devices and equipment.

4. The As-Built Drawings shall have the Contractor's name, address, telephone number, fax number, date and indicate that the drawings are "As-Built".

1.6 SITE INVESTIGATION:

A. Prior to submitting bids of the project, the contractor shall visit the site of the work To become aware of existing conditions which may affect the cost of the project.

1.7 COOPERATION:

A. The contractor shall coordinate his electrical activities with other trades so as to avoid delays, interference's, and any unnecessary work.

1.8 GUARANTEE:

A. For guarantee of work under Division 16, refer to the general and special conditions.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Materials or equipment specified by manufacturer's name shall be used or approved equivalent material or equipment may be used.

B. Where substitution of materials alters space requirement indicated on the drawings, submit shop drawings indicating proposed layout of space, all equipment to be installed therein, and clearances between equipment.

C. All material shall be new and shall conform to the applicable standard or standards where such have been established for the particular material in question. Publications and standards of the organization listed below are applicable to materials specified herein.

1. American Society for Testing and Materials (ASTM).

2. Underwriters' Lab (UL).

3. National Electrical Manufacturer Association (NEMA).

4. Insulated Cable Engineers Association (ICEA).

5. Institute of Electrical and Electronic Engineers (IEEE).

6. Edison Electric Institute (EEI).

7. National Fire Protection Association (NFPA).

8. American Wood Preservers Association (AWPA).

9. American National Standards Institute (ANSI).

D. Material of the same type shall be the product of one manufacturer.

E. All cost incurred by the acceptance of substitutions shall be borne by the contractor. Proof for all substitution shall be by the contractor.

PART 3 - EXECUTION

3.1 WORKMANSHIP:

A. All work shall be neatly, orderly, and securely installed with conduits, panels, boxes, switches, etc., perpendicular and/or parallel with the principle structural members. Exposed raceways shall be offset where they enter surface mounted equipment. Wiring installed in panels and other enclosures shall be looped and laced and not wadded or bundled.

3.2 TESTS:

A. At final inspection, a test will be made and the entire system shall be shown to be in proper working order as per these specifications and the approved drawings.

B. Contractor shall provide all instruments, labor and materials for any essential intermediate and final testing.

C. Equipment covers (i.e., panelboard trims, motor controls, device plates, and junction box covers) shall be removed, as directed, for inspection of internal wiring. All circuits throughout project shall be energized and shall be tested for operation and equipment connections in compliance with contract requirements. Accessible ceiling shall be removed, as directed, for inspection of equipment installed above ceilings.

D. Perform the following test after the installation but prior to energizing equipment:

1. Megger test all feeders and branch circuits 50 Amps or greater. Allowances for leakages shall be within the manufacturers recommend tolerances. Testing methods shall be per the cable manufacturer's recommendations. Certified test results and the manufacturers data/recommendations shall be provided to the Owner's representative as indicated below.

2. The Contractor shall perform any other test which may be required by any legal authority having jurisdiction to verify this installation meets that requirement or requirements.

3.3 IDENTIFICATION:

A. Contractor shall identify each device such as circuit breakers, panelboards, controllers, etc. with Black on White Phenolic Tags using machine cut letters, 1/4" minimum height, unless otherwise noted. Permanently attach to each device as required, do not use screws for any NEMA 3R device. For all panelboards, switchboards, transformers, fusible disconnecting motor starters and fusible disconnect switches include name, voltage, phase, number of wires, ampacity rating, short circuit rating and name/location of feed to the device.

3.4 CLEANING AND PAINTING:

A. Oil, dirt, grease, and other foreign materials shall be removed from all raceways, fittings, boxes, panelboard trims, and cabinets to provide a clean surface for painting. Scratched or marred surfaces of lighting fixtures, panelboard and cabinet trims, switchboard, or other equipment enclosures shall be touched up with paint furnished by the equipment manufacturers specifically for that purpose. Painting in general is specified under other sections of the specifications.

B. Trim covers for flush-mounted panelboards, telephone cabinets, pull boxes, junction boxes and control cabinets shall not be painted unless specifically required by the owner's representative. Where such painting is required, trim covers shall be removed for painting. Under no conditions shall locks, latches or exposed trim clamps be painted.

C. Unless specifically indicated to the contrary, all painting shall be done under the Painting Section of these specifications.

3.5 EXCAVATION, TRENCHING AND BACKFILLING:

A. The contractor shall perform all excavation to install the electrical work herein specified. During excavation, material for backfilling shall be piled back from the banks of the trench to avoid overloading and to prevent slides and cave-ins. All excavated materials not to be used for backfill shall be removed and disposed of by the contractor. Grading shall be done to prevent surface water from flowing into trenches and other excavation and any water accumulating therein shall be removed by pumping. All excavation shall be made by open cut. No tunneling shall be done. Any area disturbed during excavation shall be repaired back to its original condition, i.e.: paving, grassing, sod, gravel, etc.

B. The bottom of the trenches shall be graded to provide uniform bearing and support for conduits, cables, or duct bank on undisturbed soil at every point along its entire length. Overdepths shall be backfilled with loose, granular, moist earth, tamped. Remove unstable soil that is not capable of supporting equipment or installation and replace with specified material for a minimum of 12" below invert of equipment or installation.

C. The trenches shall be backfilled with the excavated materials approved for backfilling, consisting of earth, loam, sandy clay, sand and gravel or soft shale, free from large clods of earth and stones, deposited in 6" layers and rammed until the installation has a cover of not less than the adjacent ground but not greater than 2" above existing ground. The backfilling shall be carried on simultaneously on both sides of the trench so that injurious pressures do not occur. The compaction of the filled trench shall be at least equal to 95% of the maximum density as determined by the Standard Proctor Test. Settling the backfill with water will not be permitted. Re-open any trenches not meeting compaction requirements or where settlement occurs, refill, compact, and restore the surface to the grade and compaction indicated, mounded over and smoothed off.

D. Contractor shall repair all surfaces disturbed by the installation of all underground conduit systems back to their original condition with the same type of material and construction and/or up-grade as approved by the owner's representative.

E. All conduits shall be buried a minimum of 36" below finished grade. Provide and install magnetic warning tape 12" below finished grade over the entire length of all buried conduits.

END OF SECTION 16010

SECTION 16100

BASIC MATERIALS & METHODS

SITE DEVELOPMENT

PART 1 - GENERAL

1.1 GENERAL:

A. Provide complete conduit system including boxes, fittings and supports. All empty conduits shall be left with fiber polyline pull cord. Conduits shall be concealed except in unfinished spaces such as areas without ceilings or as indicated on the Contract Drawings.

1.2 RACEWAYS:

A. Contractor shall install all conduits as per the below requirements.

1. Intermediate Metal Conduit (IMC) shall be ferrous galvanized conduit and shall comply with Article #342 of the National Electrical Code (2005).

2. Rigid steel conduit shall be ferrous galvanized conduit and shall comply with Article #344 of the National Electrical Code (2005).

3. Rigid nonmetallic conduit shall be polyvinyl chloride Schedule 40 or Schedule 80 PVC and comply with Article #352 of the National Electrical Code (2005) Schedule 40 or Schedule 80 PVC conduits shall be used only in underground conduit runs, use rigid steel or IMC 90 degree bend below grade to transition to above grade. No exposed Schedule 40 PVC conduits will be allowed.

B. Coordinate all raceways with the mechanical ductwork and plumbing work installed in the job.

PART 2 - PRODUCTS

2.1 CONDUCTORS:

A. All conductors shall be copper and have 600 volt type THHN/THWN insulation except where noted on drawings. Conductors installed where fixtures are used as raceway shall be 90°C Type THHN or XHHN.

B. All branch circuits shall be a minimum of #12 AWG solid or stranded copper except for motor leads, which shall be a minimum #12 AWG stranded copper, unless oth-

erwise noted on drawings.

C. All branch circuit and feeder conductors, No. 8 AWG and smaller shall be color coded as follows: 208Y/120 volt, three phase system, Phase A--Black, Phase B--Red, Phase C--Blue, Neutral--White, Ground--Green.

2.2 PULLBOXES:

A. All pull boxes shall be constructed of code gauge galvanized sheet steel and comply with Article 314 of the National Electrical Code (2005), for the number, size and position of conduits entering the box, size of box and maximum number of conductors in a box.

PART 3 - EXECUTION

3.1 RACEWAYS:

A. Exposed conduits shall be installed parallel or at right angles to existing walls, ceilings, and structural members. Support exposed conduits at not more than ten foot intervals and within three feet of outlets, junction boxes, cabinets and fittings. Individual runs of conduits shall be supported by one hole conduit straps; groups of conduits shall be supported on 1 1/2" X 1 1/2" fourteen gauge channel; Kindorf, Unistrut or Powers, suspended from structure with 3/8" threaded steel rods with spring steel conduit supporters. Attach rods to structure with swivel type clamps. Individual runs of exposed conduits attached to structural steel shall be supported by beam clamps. Where conduits must pass through structural members obtain approval of architect with respect to location and size of hole prior to drilling.

B. Concealed branch circuit conduits shall be supported at intervals not exceeding ten feet and within three feet of each outlet, junction box, cabinet or fitting. Individual branch circuit conduits shall be attached to structural steel members with spring steel type conduit clips and to non-metallic structural members with one hole conduit straps. Where branch circuit conduits must be suspended below structure, conduits shall be supported by trapeze type support, typical to the type for exposed conduits indicated above. Conduits shall not be attached to channels of ceiling suspension system or suspension wires. Concealed feeder conduits larger than one inch trade diameter, above ceiling, shall be attached to structure on intervals not exceeding twelve feet with conduit beam clamps, one hole conduit straps or trapeze type support in accordance with conditions encountered.

C. Conduit support device shall be attached to structure with wood screws on wood, toggle bolts on hollow masonry, lead shield on solid masonry and machine bolts, clamps or spring steel clips on steel. Nails are not acceptable.

D. Rigid conduit shall be attached to sheet metal enclosures with two bonding type lock nuts and insulated bushing. EMT connectors and couplings shall be watertight compression type and manufactured by Thomas and Betts or Appleton. All connectors shall be of the insulated throat type. Rigid conduit stub ups not attached to enclosure shall be terminated with steel insulated throat, grounding type bushing. All connectors and couplings shall be approved for the purpose.

E. Expansion fittings shall be provided in all feeder conduits where conduits pass through building expansion joints. All conduits penetrating rated fire walls or rated fire floors shall be installed with devices to maintain the fire rating of the wall or floor penetrated. Use O.Z. Gedney "Fire-Seal" or approved alternate. Contractor shall caulk holes on both sides of smoke walls where conduits penetrate.

F. Protect conduits against dirt, plaster, and foreign debris with conduit plugs. Plugs shall remain in place until all masonry work is complete.

G. All conduits entering buildings from below grade shall be sealed with fiber and insulating electrical putty to prevent entrance of moisture.

H. Conduit seals shall be used where noted on drawings and per Article #300.5 and #300.7 of the National Electrical Code (2005). Seals shall be Crouse-Hinds Type "EYS", Appleton Type "EYF" or O.Z. Gedney Type "EY" or "EYA".

3.2 PULL OR JUNCTION BOXES:

A. Pull boxes shall be provided where specifically indicated and where required to facilitate the installation of conductors. Pull boxes shall be installed exposed only in unfinished spaces, unless otherwise specifically indicated, and shall be installed to be fully accessible.

B. Where pull boxes are installed in finished spaces, boxes shall be standard screw cover
j-boxes and galvanized switch boxes, gangable, where not exposed to the weather. Surface mounted boxes shall be Type "FD" with blank covers.

C. Pull boxes required for horizontal feeders containing more than one feeder shall be provided with reinforced flange and removable 12 gauge 1 1/2" x 1 1/2" galvanized channel for support of conductors. Wood supports within pull boxes are not acceptable.

D. Splices shall not be permitted in pull boxes except when specifically approved in writing by the architect or where specifically shown on the drawings. Where splices are permitted, splices shall be made with splicing sleeves attached to conductors with hydraulic crimping tool. Split bolt connectors are not acceptable for splices

within pull boxes.

E. Feeders within pull boxes shall be individually laced with nylon tie straps of the type with enlarged tab to permit identification of each feeder within pull box.

F. Minimum pull or junction box size shall be as per the National Electrical Code (2005).

3.3 CONDUCTORS:

A. All feeder and branch circuit conductors No. 6 AWG and larger shall be phase identified in each accessible enclosure by 1" wide plastic tape attached to conductors in a readily visible location. Tape colors shall match color requirements specified herein.

B. All branch circuit conductors shall be connected as indicated on the drawings. Common neutrals and ground wires may be pulled in conduits where only opposite phase conductors are run. All conduits shall have a ground wire pulled and shall comply with Article 250 of the National Electrical Code (2005).

C. Splices in conductors shall be made only within junction boxes, wiring troughs and other enclosures as permitted by the National Electrical Code, 2005 Edition. Do not splice conductors in panelboards, safety switches, or motor control enclosures. Splices in conductors No. 10 AWG or smaller shall be made with Waterproof Skotchlok insulated spring connectors or Waterproof Ideal wing nuts. Splices in conductors No. 8 AWG and larger shall be made with waterproof mechanical connectors.

D. Phase rotation established at service equipment shall be maintained throughout entire project.

E. Pull wires shall be 500# minimum test continuous fiber polyline.

END OF SECTION 16100

SECTION 16450

GROUNDING

SITE DEVELOPMENT

PART 1 - GENERAL

1.1 GROUNDING:

A. Shall comply with Article 250 of the National Electrical Code (2005) and all state and local codes and the requirements of the utility company serving the site.

B. Grounding shall be provided as per these specifications and the Contract Drawings.

C. The building electrical system shall be a grounded wye supplemented with equipment grounding systems. All non-current carrying parts of the electrical system i.e., raceways, equipment enclosures and frames, junction and outlet boxes, machine frames and other conductive items in close proximity with electrical circuits, shall be grounded to provide a low impedance path for potential ground faults.

PART 2 - PRODUCTS

2.1 PRODUCTS:

A. Ground rods shall be 3/4" copperweld sectional rods 10'-0" in length. Top of the ground rod shall be twelve (12) inches below finished grade. Connection to the ground rod shall be made by chemical weld process. Resistance to ground shall not exceed twenty-five (25) ohms.

PART 3 - EXECUTION

3.1 GROUNDING:

A. A grounding conductor shall be installed in all power and lighting conduit installations. All circuit grounding conductors shall be sized as per Table 250.122 of the National Electrical Code (2005).

END OF SECTION 16450

SECTION 16500

LIGHTING FIXTURES

SITE DEVELOPMENT

PART 1 - GENERAL

1.1 GENERAL:

A. Lighting fixtures shall be selected from those fixtures included on the Drawings or alternate fixtures may be used if the alternate fixture is an approved equivalent.

B. Fixtures shall be selected from the fixture schedule not only by catalog number, but with consideration to mounting, number and types of lamps, and reference notes all as contained in the fixture schedule and/or drawings.

C. Lamps shall be provided for all fixtures in accordance with fixture schedule and/or manufacturer's recommendations.

D. Verify fixture numbers, before placing order, to assure that fixtures will be furnished with proper frames, fitting and devices for installation in the ceiling system into which it is to be installed.

PART 2 - PRODUCTS

2.1 LAMPS:

A. All lamps shall be furnished and installed by the contractor.

B. Lamps shall be Sylvania or General Electric or approved equivalent. Ventura lamps are not approved for this project.

PART 3 - EXECUTION

3.1 MANUFACTURER'S RECOMMENDATIONS:

A. Install all lighting fixtures in accordance with the manufacturer's recommendations, as herein specified, or as indicted on the drawings.

END OF SECTION 16500

SECTION 16700

SOUND SYSTEM EQUIPMENT

SITE DEVELOPMENT

PART 1 - GENERAL

1.1 GENERAL:

A. Provide and install all Sound System Equipment as indicated herein and as indicated on the Drawings. The system shall be a complete working system for both public address and background music.

PART 2 - PRODUCTS

2.1 SOUND SYSTEM EQUIPMENT:

A. The Sound System shall consist of the following components, alternate components may be used insofar the Contractor can show compliance to these specifications:

1. Public Address Mixer/Amplifier/CD/AM/FM Tuner - Speco Technologies # P-60FACD, 60 watt RMS power unit
2. Power Amplifier/Mixer - Atlas Sound # CP700 - 700 watt unit
3. Desk Microphone - Shure Model 550L with cable
4. Horn Speaker (Mounted onto the Light Poles) - Atlas Sound # CJ-46 W/#PD60AT driver
5. Rock Speakers - Speco Technologies #SP-RK65CG/T
6. Cables - West Penn # AQ296

PART 3 - EXECUTION

3.1 MANUFACTURER'S RECOMMENDATIONS:

A. Install all sound system equipment in accordance with the manufacturer's recommendations, as herein specified, or as indicted on the drawings.

END OF SECTION 16700