PROJECT MANUAL

City of Highland Park
Ives Field
Park Renovations

Highland Park, Michigan

PREPARED FOR:

City of Highland Park

12050 Woodward Ave
Highland Park, MI 48203

PROJECT NO.: 15750

ISSUE DATE: September 3, 2025

ISSUED FOR: BID

SMITHGROUP
ANN ARBOR, MICHIGAN

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APPENDIX

SECTION 001113 - ADVERTISEMENT FOR BIDS

1.1 PROJECT INFORMATION

A. Notice to Bidders: Qualified bidders may submit bids for project as described in this Document. Submit bids according to the Instructions to Bidders.

1. Regulatory Requirements: The City of Highland Park shall govern submittal, opening, and award of bids.

B. Project Identification: Ives Field

1. Project Location: 179 Midland Street, Highland Park, Michigan 48203

C. Owner: City of Highland Park

1. Sue Norander, City of Highland Park 12050 Woodward Avenue, 49202 313.580.3280 snorander@highlandparkmi.gov

D. Landscape Architect/Civil Engineer: Mark Woodhurst, mark.woodhurst@smithgroup.com SmithGroup 201 Depot Street Ann Arbor, Michigan 48104. 517.927.4959

E. Project Description: Project consists of site clearing, erosion control measures, earthwork, concrete foundations, softball field backstops, concrete flatwork, asphalt, court surfacing, chain link fencing, restoration and landscape.

A. Construction Contract: Bids will be received for the following Work:

1. General Contract (all trades).
2. Multiple Contract Project consisting of the following prime contracts:

1.2 BID SUBMITTAL AND OPENING

A. Owner will receive sealed lump sum bids until the bid time and date at the location given below (either hand-delivered or delivered by U.S. mail that are received prior to the bid due date). Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:

1. Bid Due Date: October 1, 2025
2. Bid Time: 2:00pm, Eastern Standard Time (local time).
3. Location: City Clerk, Highland Park City Hall, 12050 Woodward Avenue, Highland Park, MI 48203

B. Bids will be thereafter publicly opened and read aloud.

1. Bid Opening Date: October 6, 2025
2. Bid Time: 7:00pm, Eastern Standard Time (local time)
3. Location: City Clerk, Highland Park City Hall, 12050 Woodward Avenue, Highland Park, MI 48203

BID SECURITY

C. Bid security shall be submitted with each bid in the amount of 5 percent of the bid amount. No bids may be withdrawn for a period of 60 days after opening of bids. Owner reserves the right to reject any and all bids and to waive informalities and irregularities.

1.3 PREBID MEETING

A. Prebid Meeting: A (non-mandatory) Prebid meeting for all bidders will be held at the existing fitness equipment area, 179 Midland Avenue, Highland Park, Michigan 48203., September 25, 2025 at 11:00am, local time.

1. Bidders' Questions: City of Highland Park and Landscape Architect will provide responses at Prebid conference to bidders' questions received up to (3) three business days prior to conference.
2. Questions at the meeting may be answered but will not be part of a formal addendum. Only questions submitted via email/in writing will be accepted and responded to by City of Highland Park and Landscape Architect.

a. Email questions to Robert Burgess at rburgess@highlandparkmi.gov and Mark Woodhurst at mark.woodhurst@smithgroup.com

1.4 DOCUMENTS

A. Contracting Documents: Drawings and Specifications for the project will be available on BidNet and other construction posting websites determined by City of Highland Park.

1.6 TIME OF COMPLETION AND LIQUIDATED DAMAGES

A. Successful bidder shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time. Work is subject to liquidated damages.

1.7 BIDDER'S QUALIFICATIONS

A. Bidders must be properly licensed under the laws governing their respective trades and be able to obtain insurance and bonds required for the Work. A Performance Bond, separate Labor and Material Payment Bond, and Insurance in a form acceptable to Owner will be required of the successful Bidder.

1.8 NOTIFICATION

A. This Advertisement for Bids document is issued by the City of Highland Park.

1.9 BID SCORING CRITERIA

A. City of Highland Park and SmithGroup will use the below criteria and point system for evaluating contractors.

B. Competitive Bid Process Requirements – Contractor Scoring and Selection Criteria:

Criteria	Points
Quality of the Work Plan/Approach	35
Personnel (experience, qualifications, knowledge of project area/community, specific experience with public parks and projects funded by MDNR, state and federal grants)	30
Capability (firm experience, references, ability to complete project tasks on time and budget)	25
Completeness of Response	10
Total Available Points	**100**

END OF SECTION

SECTION 002113 - INSTRUCTIONS TO BIDDERS

1.1 INSTRUCTIONS TO BIDDERS

A. AIA Document A701, "Instructions to Bidders," is hereby incorporated into the Procurement and Contracting Requirements by reference.

1. A copy of AIA Document A701, "Instructions to Bidders," is bound in this Project Manual.

B. Refer to SECTION 007213 – GENERAL CONDITIONS OF THE CONTRACT, included by reference.

1. Bidders must comply with all applicable state and federal regulations, including prevailing wage requirements under the Davis-Bacon Act for federally funded projects.

END OF SECTION

SECTION 003132 - GEOTECHNICAL DATA

PART 1 - GENERAL

1.1 Summary

A. Borings were taken on-site by SME ON April 25, 2024 – Report was completed on July 3, 2025

B. Borings were taken for the previous Fitness Equipment Project and have also been included in the appendix. Geotechnical Report by FK Engineering Associates dated October 29, 2019.

C. Geotechnical Report and boring logs have been included in project manual as an Appendix.

1.2 Use of Data

A. Soil borings were completed only for the use of design and are not part of the contract documents.

B. Bidders should visit the site and acquaint themselves with all existing conditions. Prior to bidding, bidders may make their own subsurface investigations to satisfy themselves as to site and subsurface conditions, but all such investigations shall be performed only under time schedules and arrangements approved in advance by the Owner's Representative.

C. The Contractor shall assume full responsibility for interpreting testing data and for the conclusions drawn from the information furnished, and from inspection of available information at the site.

END OF SECTION

SECTION 004123 - BID FORM - CONSTRUCTION MANAGEMENT (SINGLE-PRIME CONTRACT)

1.1 BID INFORMATION

A. Bidder: _____.

B. Project Name: Ives Field Park Renovations

C. Project Location: 179 Midland Street, Highland Park, Michigan 48203

D. Owner: Wayne County

E. Landscape Architect: SmithGroup

F. Architect Project Number: 15750

1.2 CERTIFICATIONS AND BASE BID

A. Base Bid, Single-Prime (All-Trades) Contract: The undersigned Bidder, having carefully examined the Procurement and Contracting Requirements, Conditions of the Contract, Drawings, Specifications, and all subsequent Addenda, as prepared by SmithGroup and the Architect's consultants, having visited the site, and being familiar with all conditions and requirements of the Work, hereby agrees to furnish all material, labor, equipment and services, including all scheduled allowances, necessary to complete the construction of above-named Project, according to the requirements of the Procurement and Contracting Documents, for the stipulated sum of:

1. _____ Dollars ($_____).
2. The above amount may be modified by amounts indicated by the Bidder on the attached Bid Supplement - Alternates and Bid Supplement - Unit Prices.

1.3 BID GUARANTEE

A. The undersigned Bidder agrees to execute a contract for this Work in the above amount and to furnish surety as specified within 10 days after a written Notice of Award, if offered within 30 days after receipt of bids, and on failure to do so agrees to forfeit to Owner the attached cash, cashier's check, certified check, U.S. money order, or bid bond, as liquidated damages for such failure, in the following amount constituting five percent (5%) of the Base Bid amount above:

1. _____ Dollars ($_____).

B. In the event Owner does not offer a Notice of Award within the time limits stated above, Owner will return to the undersigned the cash, cashier's check, certified check, U.S. money order, or bid bond.

1.4 SUBCONTRACTORS AND SUPPLIERS

A. The following companies shall execute subcontracts for the portions of the Work indicated:

1. Concrete Work: _____

2. Asphalt Work:_____

3. Earth Moving: _____

4. Landscape: _____

5. Chain Link Fencing: _____

6. Softball Fields Infield Mix & Placement_____

1.5 ALTERNATE PRICING

A. Contractor to provide pricing for Alternate Items below:

Alternate 1 – Backstop Hood for Field 1 and 6-5/8" dia end posts

ALT 1 Price_____

Alternate 2 – Foul Line Fencing, and Dugout Fencing for Field 1

ALT 2 Price_____

Alternate 3 – Dugout Concrete Pads for Field 1

ALT 3 Price_____

Alternate 4 – Foul Line Fencing, and Dugout Fencing for Field 2

ALT 4 Price_____

Alternate 5 – Dugout Concrete Pads for Field 2

ALT 5 Price_____

Alternate 6 – Concrete Connection Walk from Playground to Field 2

ALT 6 Price_____

Alternate 7 – Concrete Walk by Fitness Pad

ALT 7 Price_____

Alternate 8 – Concrete Walk for Shelter Area

ALT 8 Price_____

Alternate 9 – Concrete Foundations for Shelter

ALT 9 Price_____

Alternate 10 – Specialty Painting for Pickleball Court

ALT 10 Price_____

1.6 TIME OF COMPLETION

A. The undersigned Bidder proposes and agrees hereby to commence the Work of the Contract Documents on a date specified in a written Notice to Proceed to be issued by Owner, and shall fully complete the Work within timeframe specified by Owner and with the Schedule.

1.7 ACKNOWLEDGEMENT OF ADDENDA

A. The undersigned Bidder acknowledges receipt of and use of the following Addenda in the preparation of this Bid:

1. Addendum No. 1, dated _____.
2. Addendum No. 2, dated _____.
3. Addendum No. 3, dated _____.
4. Addendum No. 4, dated _____.

1.8 BID SUPPLEMENTS

A. The following supplements are a part of this Bid Form and are attached hereto:

1. Bid Form Supplement - Alternates.
2. Bid Form Supplement - Unit Prices.
3. Bid Form Supplement - Allowances.
4. Bid Form Supplement - Bid Bond Form (AIA Document A310).

1.9 CONTRACTOR'S LICENSE

A. The undersigned further states that it is a duly licensed contractor, for the type of work proposed, in The State of Michigan / Wayne County and that all fees, permits, etc., pursuant to submitting this proposal have been paid in full.

1.10 SUBMISSION OF BID

A. Respectfully submitted this ____ day of _____, 2025.

B. Submitted By:_____(Name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

F. Witnessed By:_____(Handwritten signature).

G. Attest:_____(Handwritten signature).

H. By:_____(Type or print name).

I. Title:_____(Corporate Secretary or Assistant Secretary).

J. Street Address:_____.

K. City, State, Zip:_____.

L. Phone:_____.

M. License No.:_____.

N. Federal ID No.:_____(Affix Corporate Seal Here).

END OF SECTION

SECTION 004322 - UNIT PRICES FORM

1.1 BID INFORMATION

A. Prime Contract Bidder: _____.

B. Project Name: Ives Field Renovations

C. Project Location: 179 Midland Avenue, Highland Park Michigan 48203

D. Owner: City of Highland Park

E. Landscape Architect/Civil Engineer: SmithGroup

F. Architect Project Number: 15750

1.2 BID FORM SUPPLEMENT

A. This form is required to be attached to the Bid Form.

B. The undersigned Bidder proposes the amounts below be added to or deducted from the Contract Sum on performance and measurement of the individual items of Work and for adjustment of the quantity given in the Unit-Price Allowance for the actual measurement of individual items of the Work.

C. If the unit price does not affect the Work of this Contract, the Bidder shall indicate "NOT APPLICABLE."

1.3 UNIT PRICES

A. Unit-Price No. 1: Earthwork

1. _____ Dollars ($_____) CY

B. Unit-Price No. 2: Asphalt (Pickleball Courts)

1. _____ Dollars ($_____) TON.

C. Unit-Price No. 3: Softball Field Backstop and Foundations (1)

1. _____ Dollars ($_____) LS.

D. Unit-Price No. 4: Chain Link Fencing (4’-0” HT)

1. _____ Dollars ($_____) LF.

E. Unit-Price No. 5: Court Surfacing

1. _____ Dollars ($_____) SF

A. Unit-Price No. 6: Concrete Walks

1. _____ Dollars ($_____) SF

1.4 SUBMISSION OF BID SUPPLEMENT

A. Respectfully submitted this ____ day of _____, 2025.

B. Submitted By:_____(Insert name of bidding firm or corporation).

C. Authorized Signature:_____(Handwritten signature).

D. Signed By:_____(Type or print name).

E. Title:_____(Owner/Partner/President/Vice President).

END OF SECTION

SECTION 004373 - PROPOSED SCHEDULE OF VALUES FORM

1.1 BID FORM SUPPLEMENT

A. A completed Proposed Schedule of Values form is required to be attached to the Bid Form.

1.2 PROPOSED SCHEDULE OF VALUES FORM

A. Proposed Schedule of Values Form: Provide a breakdown of the bid amount, including alternates, in enough detail to facilitate continued evaluation of bid. Coordinate with the Project Manual table of contents. Provide multiple line items for principal material and subcontract amounts in excess of five percent of the Contract Sum.

B. Contractor to use attached Schedule of Values Form

C. Arrange schedule of values consistent with format of AIA Document G703.

1. Copies of AIA standard forms may be obtained from the American Institute of Architects; http://www.aia.org/contractdocs/purchase/index.htm; docspurchases@aia.org; (800) 942-7732.
2. Copies of EJCDC standard forms may be obtained from The Engineers Joint Contract Documents Committee; www.nspe.org/resources/shop-nspe/ejcdc-contract-documents; (703) 684-2800.

END OF SECTION

SECTION 007213 - GENERAL CONDITIONS OF THE CONTRACT
INCLUDED BY REFERENCE

COMPLETE CONSTRUCTION TO ALL APPLICABLE LOCAL, STATE AND FEDERAL CODES, AS AMENDED; INCLUDING BUT NOT LIMITED TO THE FEDERAL AMERICANS WITH DISABILITIES ACT (ADA) OF 2010, AS AMENDED; THE PERSONS WITH DISABILITIES CIVIL RIGHTS ACT, ACT 220 OF 1976, AS AMENDED; THE PLAYGROUND EQUIPMENT SAFETY ACT, P.A.16 OF 1997, AS AMENDED; THE UTILIZATION OF PUBLIC FACILITIES BY PHYSICALLY LIMITED ACT, P.A. 1 OF 1966, AS AMENDED; THE ELLIOTT-LARSEN CIVIL RIGHTS ACT, ACT 453 OF 1976, AS AMENDED; AND THE 2013 ACCESS BOARD'S FINAL GUIDELINES FOR OUTDOOR DEVELOPED AREAS.

ELLIOTT LARSON CIVIL RIGHTS/NON-DISCRIMINATION:

COMPLY WITH LEGAL REQUIREMENTS RELATING TO NONDISCRIMINATION AND NONDISCRIMINATORY USE OF FEDERAL FUNDS. THOSE REQUIREMENTS INCLUDE ENSURING THAT ENTITIES RECEIVING FEDERAL FINANCIAL ASSISTANCE FROM THE TREASURY DO NOT DENY BENEFITS OR SERVICES, OR OTHERWISE DISCRIMINATE ON THE BASIS OF RACE, COLOR, NATIONAL ORIGIN (INCLUDING LIMITED ENGLISH PROFICIENCY), DISABILITY, AGE, OR SEX (INCLUDING SEXUAL ORIENTATION AND GENDER IDENTITY), IN ACCORDANCE WITH THE FOLLOWING AUTHORITIES: TITLE VI OF THE CIVIL RIGHTS ACT OF 1964 (TITLE VI) PUBLIC LAW 88-352, 42 U.S.C. 2000D-1 ET SEQ., AND THE DEPARTMENT'S IMPLEMENTING REGULATIONS, 31 CFR PART 22; SECTIONS 504 OF THE REHABILITATION ACT OF 1973 (SECTION 504), PUBLIC LAW 93-112, AS AMENDED BY PUBLIC LAW 93-516, 29 U.S.C. 794; TITLE IX OF THE EDUCATION AMENDMENTS OF 1972 (TITLE IX), 20 U.S.C. 1681 ET SEQ., AND THE DEPARTMENT'S IMPLEMENTING REGULATIONS AT 31 CFR PART 23. IN ORDER TO CARRY OUT ITS ENFORCEMENT RESPONSIBILITIES UNDER TITLE VI OF THE CIVIL RIGHTS ACT, TREASURY WILL COLLECT AND REVIEW INFORMATION FROM RECIPIENTS TO ASCERTAIN THEIR COMPLIANCE WITH THE APPLICABLE REQUIREMENTS BEFORE AND AFTER PROVIDING FINANCIAL ASSISTANCE. TREASURY'S IMPLEMENTING REGULATIONS, 31 CFR PART 22, AND THE DEPARTMENT OF JUSTICE (DOJ) REGULATIONS, COORDINATION OF NON-DISCRIMINATION IN FEDERALLY ASSISTED PROGRAMS, 28 CFR PART 42, PROVIDE FOR THE COLLECTION OF DATA AND INFORMATION FROM RECIPIENTS (SEE 28 CFR 42.406). TREASURY MAY REQUEST THAT RECIPIENTS SUBMIT DATA FOR POST-AWARD COMPLIANCE REVIEWS, INCLUDING INFORMATION SUCH AS A NARRATIVE DESCRIBING THEIR TITLE VI COMPLIANCE STATUS.

WOMEN, VETERAN, MINORITY OWNED BUSINESS LANGUAGE INCLUDED:

DIVIDE TOTAL REQUIREMENTS, WHERE ECONOMICALLY FEASIBLE, INTO SMALLER TASKS OR QUANTITIES TO PERMIT MAXIMUM PARTICIPATION BY VETERAN-OWNED, SMALL AND MINORITY BUSINESSES, AND WOMEN'S BUSINESS ENTERPRISES.

DAVIS BACON WAGE RATES:

COMPLY WITH THE DAVIS-BACON ACT, AS AMENDED (40 U.S.C. 3141-3148). WHEN REQUIRED BY FEDERAL PROGRAM LEGISLATION, ALL PRIME CONSTRUCTION CONTRACTS IN EXCESS OF $2,000 AWARDED BY NON-FEDERAL ENTITIES MUST INCLUDE A PROVISION FOR COMPLIANCE WITH THE DAVIS-BACON ACT (40 U.S.C. 3141-3144, AND 3146-3148) AS SUPPLEMENTED BY DEPARTMENT OF LABOR REGULATIONS (29 CFR PART 5, “LABOR STANDARDS PROVISIONS APPLICABLE TO CONTRACTS COVERING FEDERALLY FINANCED AND ASSISTED CONSTRUCTION”). IN ACCORDANCE WITH THE STATUTE, CONTRACTORS MUST BE REQUIRED TO PAY WAGES NOT LESS THAN ONCE A WEEK. THE NON-FEDERAL ENTITY MUST PLACE A COPY OF THE CURRENT PREVAILING WAGE DETERMINATION ISSUED BY THE DEPARTMENT OF LABOR IN EACH SOLICITATION. THE DECISION TO AWARD A CONTRACT OR SUBCONTRACT MUST BE CONDITIONED UPON THE ACCEPTANCE OF THE WAGE DETERMINATION. THE NON-FEDERAL ENTITY MUST REPORT ALL SUSPECTED OR REPORTED VIOLATIONS TO THE FEDERAL AWARDING AGENCY. THE CONTRACT MUST ALSO INCLUDE A PROVISION FOR COMPLIANCE WITH THE COPELAND “ANTI-KICKBACK” ACT (40 U.S.C. 3145), AS SUPPLEMENTED BY DEPARTMENT OF LABOR REGULATIONS (29 CFR PART 3, “CONTRACTORS AND SUBCONTRACTORS ON PUBLIC BUILDING OR PUBLIC WORK FINANCED IN WHOLE OR IN PART BY LOANS OR GRANTS FROM THE UNITED STATES”). THE ACT PROVIDES THAT EACH CONTRACTOR OR SUBRECIPIENT MUST BE PROHIBITED FROM INCLUDING, BY ANY MEANS, ANY PERSON EMPLOYED IN THE CONSTRUCTION, COMPLETION, OR REPAIR OF PUBLIC WORK, TO GIVE UP ANY PART OF THE COMPENSATION TO WHICH HE OR SHE IS OTHERWISE ENTITLED. THE NON-FEDERAL ENTITY

MUST REPORT ALL SUSPECTED OR REPORTED VIOLATIONS TO THE FEDERAL AWARDING AGENCY.

CONTRACT WORK HOURS AND SAFETY STANDARDS ACT:

COMPLY WITH CONTRACT WORK HOURS AND SAFETY STANDARDS ACT (40 U.S.C. 3701-3708). WHERE APPLICABLE, ALL CONTRACTS AWARDED BY THE NON-FEDERAL ENTITY IN EXCESS OF $100,000 THAT INVOLVE THE EMPLOYMENT OF MECHANICS OR LABORERS MUST INCLUDE A PROVISION FOR COMPLIANCE WITH 40 U.S.C. 3702 AND 3704, AS SUPPLEMENTED BY DEPARTMENT OF LABOR REGULATIONS (29 CFR PART 5). UNDER 40 U.S.C. 3702 OF THE ACT, EACH CONTRACTOR MUST BE REQUIRED TO COMPUTE THE WAGES OF EVERY MECHANIC AND LABORER ON THE BASIS OF A STANDARD WORK WEEK OF 40 HOURS.

PERSONS WITH DISABILITIES CIVIL RIGHTS ACT:

PERSONS WITH DISABILITIES CIVIL RIGHTS ACT (ACT 220 OF 1976) – ARTICLE 3: PUBLIC ACCOMMODATIONS AND SERVICES
SECTION 301 – DEFINITIONS
(A) "PLACE OF PUBLIC ACCOMMODATION" MEANS A BUSINESS, EDUCATIONAL INSTITUTION, REFRESHMENT, ENTERTAINMENT, RECREATION, HEALTH, OR TRANSPORTATION FACILITY OF ANY KIND, WHETHER LICENSED OR NOT, WHOSE GOODS, SERVICES, FACILITIES, PRIVILEGES, ADVANTAGES, OR ACCOMMODATIONS ARE EXTENDED, OFFERED, SOLD, OR OTHERWISE MADE AVAILABLE TO THE PUBLIC.

(B) "PUBLIC SERVICE" MEANS A PUBLIC FACILITY, DEPARTMENT, AGENCY, BOARD, OR COMMISSION OWNED, OPERATED, OR MANAGED BY OR ON BEHALF OF THIS STATE OR A SUBDIVISION OF THIS STATE, A COUNTY, CITY, VILLAGE, TOWNSHIP, OR INDEPENDENT OR REGIONAL DISTRICT IN THIS STATE OR A TAX EXEMPT PRIVATE AGENCY ESTABLISHED TO PROVIDE SERVICE TO THE PUBLIC.
NOTE: PUBLIC SERVICE DOES NOT INCLUDE A STATE OR COUNTY CORRECTIONAL FACILITY WITH RESPECT TO ACTIONS OR DECISIONS REGARDING AN INDIVIDUAL SERVING A SENTENCE OF IMPRISONMENT.

SECTION 302 – PROHIBITED CONDUCT
EXCEPT WHERE PERMITTED BY LAW, A PERSON SHALL NOT:

(A) DENY AN INDIVIDUAL THE FULL AND EQUAL ENJOYMENT OF THE GOODS, SERVICES, FACILITIES, PRIVILEGES, ADVANTAGES, AND ACCOMMODATIONS OF A PLACE OF PUBLIC ACCOMMODATION OR PUBLIC SERVICE BECAUSE OF A DISABILITY THAT IS UNRELATED TO THE INDIVIDUAL'S ABILITY TO UTILIZE AND BENEFIT FROM THEM, OR BECAUSE OF THE USE OF ADAPTIVE DEVICES OR AIDS.

(B) PRINT, CIRCULATE, POST, MAIL, OR OTHERWISE CAUSE TO BE PUBLISHED A STATEMENT, ADVERTISEMENT, OR SIGN WHICH INDICATES THAT THE FULL AND EQUAL ENJOYMENT OF THE GOODS, SERVICES, FACILITIES, PRIVILEGES, ADVANTAGES, AND ACCOMMODATIONS OF A PLACE OF PUBLIC ACCOMMODATION OR PUBLIC SERVICE WILL BE REFUSED, WITHHELD FROM, OR DENIED AN INDIVIDUAL BECAUSE OF A DISABILITY THAT IS UNRELATED TO THE INDIVIDUAL'S ABILITY TO UTILIZE AND BENEFIT FROM THEM, OR BECAUSE OF THE USE OF ADAPTIVE DEVICES OR AIDS.

SECTION 303 – EXEMPTIONS
THIS ARTICLE SHALL NOT APPLY TO A PRIVATE CLUB OR OTHER ESTABLISHMENT NOT IN FACT OPEN TO THE PUBLIC, EXCEPT TO THE EXTENT THAT:

THE GOODS, SERVICES, FACILITIES, PRIVILEGES, ADVANTAGES, OR ACCOMMODATIONS OF THE PRIVATE CLUB OR ESTABLISHMENT ARE MADE AVAILABLE TO THE CUSTOMERS OR PATRONS OF ANOTHER ESTABLISHMENT THAT IS A PLACE OF PUBLIC ACCOMMODATION, OR
IF IT IS LICENSED, CHARTERED, OR CERTIFIED BY THE STATE OR ANY OF ITS POLITICAL SUBDIVISIONS.

STATE AND FEDERAL REQUIREMENTS:

COUNCIL OF MICHIGAN FOUNDATIONS GRANT BY THE STATE OF MICHIGAN FROM ARPA FUNDING, RELEVANT STATE OR FEDERAL REQUIREMENTS APPLY.

END OF SECTION

DRAFT

AIA® Document A101™ – 2017

Standard Form of Agreement Between Owner and Contractor

where the basis of payment is a Stipulated Sum

AGREEMENT made as of the « » day of « » in the year « »
(In words, indicate day, month and year.)

BETWEEN the Owner:
(Name, legal status, address and other information)

« »« »
« »
« »
« »

and the Contractor:
(Name, legal status, address and other information)

« »« »
« »
« »
« »

for the following Project:
(Name, location and detailed description)

« »
« »
« »

The Architect:
(Name, legal status, address and other information)

« »« »
« »
« »
« »

The Owner and Contractor agree as follows.

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

The parties should complete A101™–2017, Exhibit A, Insurance and Bonds, contemporaneously with this Agreement. AIA Document A201™–2017, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.

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User Notes: (1231903284)

TABLE OF ARTICLES

ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement, and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

§ 3.1 The date of commencement of the Work shall be:
(Check one of the following boxes.)

[« »] The date of this Agreement.

[« »] A date set forth in a notice to proceed issued by the Owner.

[« »] Established as follows:
(Insert a date or a means to determine the date of commencement of the Work.)

« »

If a date of commencement of the Work is not selected, then the date of commencement shall be the date of this Agreement.

§ 3.2 The Contract Time shall be measured from the date of commencement of the Work.

§ 3.3 Substantial Completion

§ 3.3.1 Subject to adjustments of the Contract Time as provided in the Contract Documents, the Contractor shall achieve Substantial Completion of the entire Work:
(Check one of the following boxes and complete the necessary information.)

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User Notes: (1231903284)

[« »] Not later than « » (« ») calendar days from the date of commencement of the Work.

[« »] By the following date: « »

§ 3.3.2 Subject to adjustments of the Contract Time as provided in the Contract Documents, if portions of the Work are to be completed prior to Substantial Completion of the entire Work, the Contractor shall achieve Substantial Completion of such portions by the following dates:

Portion of Work	Substantial Completion Date

§ 3.3.3 If the Contractor fails to achieve Substantial Completion as provided in this Section 3.3, liquidated damages, if any, shall be assessed as set forth in Section 4.5.

ARTICLE 4 CONTRACT SUM

§ 4.1 The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be « » ($ « »), subject to additions and deductions as provided in the Contract Documents.

§ 4.2 Alternates

§ 4.2.1 Alternates, if any, included in the Contract Sum:

Item	Price

§ 4.2.2 Subject to the conditions noted below, the following alternates may be accepted by the Owner following execution of this Agreement. Upon acceptance, the Owner shall issue a Modification to this Agreement.
(Insert below each alternate and the conditions that must be met for the Owner to accept the alternate.)

Item	Price	Conditions for Acceptance

§ 4.3 Allowances, if any, included in the Contract Sum:
(Identify each allowance.)

Item	Price

§ 4.4 Unit prices, if any:
(Identify the item and state the unit price and quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price per Unit ($0.00)

§ 4.5 Liquidated damages, if any:
(Insert terms and conditions for liquidated damages, if any.)

« »

§ 4.6 Other:
(Insert provisions for bonus or other incentives, if any, that might result in a change to the Contract Sum.)

« »

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ARTICLE 5 PAYMENTS

§ 5.1 Progress Payments

§ 5.1.1 Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

§ 5.1.2 The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

« »

§ 5.1.3 Provided that an Application for Payment is received by the Architect not later than the « » day of a month, the Owner shall make payment of the amount certified to the Contractor not later than the « » day of the « » month. If an Application for Payment is received by the Architect after the application date fixed above, payment of the amount certified shall be made by the Owner not later than « » (« ») days after the Architect receives the Application for Payment.
(Federal, state or local laws may require payment within a certain period of time.)

§ 5.1.4 Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form, and supported by such data to substantiate its accuracy, as the Architect may require. This schedule of values shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 In accordance with AIA Document A201™–2017, General Conditions of the Contract for Construction, and subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

§ 5.1.6.1 The amount of each progress payment shall first include:

.1 That portion of the Contract Sum properly allocable to completed Work;

.2 That portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction, or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing; and

.3 That portion of Construction Change Directives that the Architect determines, in the Architect's professional judgment, to be reasonably justified.

§ 5.1.6.2 The amount of each progress payment shall then be reduced by:

.1 The aggregate of any amounts previously paid by the Owner;

.2 The amount, if any, for Work that remains uncorrected and for which the Architect has previously withheld a Certificate for Payment as provided in Article 9 of AIA Document A201–2017;

.3 Any amount for which the Contractor does not intend to pay a Subcontractor or material supplier, unless the Work has been performed by others the Contractor intends to pay;

.4 For Work performed or defects discovered since the last payment application, any amount for which the Architect may withhold payment, or nullify a Certificate of Payment in whole or in part, as provided in Article 9 of AIA Document A201–2017; and

.5 Retainage withheld pursuant to Section 5.1.7.

§ 5.1.7 Retainage

§ 5.1.7.1 For each progress payment made prior to Substantial Completion of the Work, the Owner may withhold the following amount, as retainage, from the payment otherwise due:
(Insert a percentage or amount to be withheld as retainage from each Application for Payment. The amount of retainage may be limited by governing law.)

« »

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§ 5.1.7.1.1 The following items are not subject to retainage:
(Insert any items not subject to the withholding of retainage, such as general conditions, insurance, etc.)

« »

§ 5.1.7.2 Reduction or limitation of retainage, if any, shall be as follows:
(If the retainage established in Section 5.1.7.1 is to be modified prior to Substantial Completion of the entire Work, including modifications for Substantial Completion of portions of the Work as provided in Section 3.3.2, insert provisions for such modifications.)

« »

§ 5.1.7.3 Except as set forth in this Section 5.1.7.3, upon Substantial Completion of the Work, the Contractor may submit an Application for Payment that includes the retainage withheld from prior Applications for Payment pursuant to this Section 5.1.7. The Application for Payment submitted at Substantial Completion shall not include retainage as follows:
(Insert any other conditions for release of retainage upon Substantial Completion.)

« »

§ 5.1.8 If final completion of the Work is materially delayed through no fault of the Contractor, the Owner shall pay the Contractor any additional amounts in accordance with Article 9 of AIA Document A201–2017.

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

§ 5.2 Final Payment

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

.1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Article 12 of AIA Document A201–2017, and to satisfy other requirements, if any, which extend beyond final payment; and

.2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

« »

§ 5.3 Interest

Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.
(Insert rate of interest agreed upon, if any.)

« » % « »

ARTICLE 6 DISPUTE RESOLUTION

§ 6.1 Initial Decision Maker

The Architect will serve as the Initial Decision Maker pursuant to Article 15 of AIA Document A201–2017, unless the parties appoint below another individual, not a party to this Agreement, to serve as the Initial Decision Maker.
(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

« »
« »
« »
« »

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§ 6.2 Binding Dispute Resolution

For any Claim subject to, but not resolved by, mediation pursuant to Article 15 of AIA Document A201–2017, the method of binding dispute resolution shall be as follows:
(Check the appropriate box.)

[« »] Arbitration pursuant to Section 15.4 of AIA Document A201–2017

[« »] Litigation in a court of competent jurisdiction

[« »] Other *(Specify)*

« »

If the Owner and Contractor do not select a method of binding dispute resolution, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.

ARTICLE 7 TERMINATION OR SUSPENSION

§ 7.1 The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2017.

§ 7.1.1 If the Contract is terminated for the Owner's convenience in accordance with Article 14 of AIA Document A201–2017, then the Owner shall pay the Contractor a termination fee as follows:
(Insert the amount of, or method for determining, the fee, if any, payable to the Contractor following a termination for the Owner's convenience.)

« »

§ 7.2 The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2017.

ARTICLE 8 MISCELLANEOUS PROVISIONS

§ 8.1 Where reference is made in this Agreement to a provision of AIA Document A201–2017 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

§ 8.2 The Owner's representative:
(Name, address, email address, and other information)

« »
« »
« »
« »
« »
« »

§ 8.3 The Contractor's representative:
(Name, address, email address, and other information)

« »
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§ 8.4 Neither the Owner's nor the Contractor's representative shall be changed without ten days' prior notice to the other party.

§ 8.5 Insurance and Bonds

§ 8.5.1 The Owner and the Contractor shall purchase and maintain insurance as set forth in AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum, Exhibit A, Insurance and Bonds, and elsewhere in the Contract Documents.

§ 8.5.2 The Contractor shall provide bonds as set forth in AIA Document A101™–2017 Exhibit A, and elsewhere in the Contract Documents.

§ 8.6 Notice in electronic format, pursuant to Article 1 of AIA Document A201–2017, may be given in accordance with AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, if completed, or as otherwise set forth below:
(If other than in accordance with AIA Document E203–2013, insert requirements for delivering notice in electronic format such as name, title, and email address of the recipient and whether and how the system will be required to generate a read receipt for the transmission.)

« »

§ 8.7 Other provisions:

« »

ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 This Agreement is comprised of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013 incorporated into this Agreement.)

« »

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding or proposal requirements are not part of the Contract Documents unless the bidding or proposal requirements are also enumerated in this Article 9.

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

[« »] AIA Document E204™–2017, Sustainable Projects Exhibit, dated as

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indicated below:
(Insert the date of the E204-2017 incorporated into this Agreement.)

« »

[« »] The Sustainability Plan:

Title	Date	Pages

[« »] Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents, if any, listed below:
(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201™–2017 provides that the advertisement or invitation to bid, Instructions to Bidders, sample forms, the Contractor's bid or proposal, portions of Addenda relating to bidding or proposal requirements, and other information furnished by the Owner in anticipation of receiving bids or proposals, are not part of the Contract Documents unless enumerated in this Agreement. Any such documents should be listed here only if intended to be part of the Contract Documents.)

« »

This Agreement entered into as of the day and year first written above.

OWNER *(Signature)*	**CONTRACTOR** *(Signature)*
« »« »	« »« »
(Printed name and title)	*(Printed name and title)*

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DRAFT

AIA® Document A201™ – 2017

General Conditions of the Contract for Construction

for the following PROJECT:
(Name and location or address)

« »
« »

THE OWNER:
(Name, legal status and address)

« »« »
« »

THE ARCHITECT:
(Name, legal status and address)

« »« »
« »

TABLE OF ARTICLES

ADDITIONS AND DELETIONS: The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, Guide for Supplementary Conditions.

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(Topics and numbers in bold are Section headings.)

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ARTICLE 1 GENERAL PROVISIONS

§ 1.1 Basic Definitions

§ 1.1.1 The Contract Documents

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

§ 1.1.2 The Contract

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

§ 1.1.3 The Work

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

§ 1.1.4 The Project

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

§ 1.1.5 The Drawings

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

§ 1.1.6 The Specifications

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

§ 1.1.7 Instruments of Service

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

§ 1.1.8 Initial Decision Maker

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

§ 1.2 Correlation and Intent of the Contract Documents

§ 1.2.1 The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

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§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

§ 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

§ 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

§ 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

§ 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

§ 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

§ 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or

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relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

ARTICLE 2 OWNER

§ 2.1 General

§ 2.1.1 The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

§ 2.1.2 The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

§ 2.2 Evidence of the Owner's Financial Arrangements

§ 2.2.1 Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

§ 2.2.2 Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

§ 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

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§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner shall furnish surveys describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

§ 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

§ 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

ARTICLE 3 CONTRACTOR

§ 3.1 General

§ 3.1.1 The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

§ 3.1.2 The Contractor shall perform the Work in accordance with the Contract Documents.

§ 3.1.3 The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

§ 3.2 Review of Contract Documents and Field Conditions by Contractor

§ 3.2.1 Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

§ 3.2.2 Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as

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the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

§ 3.2.3 The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

§ 3.2.4 If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

§ 3.3 Supervision and Construction Procedures

§ 3.3.1 The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

§ 3.3.2 The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

§ 3.3.3 The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

§ 3.4 Labor and Materials

§ 3.4.1 Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

§ 3.4.2 Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

§ 3.4.3 The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

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§ 3.5 Warranty

§ 3.5.1 The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

§ 3.5.2 All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

§ 3.6 Taxes

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

§ 3.7 Permits, Fees, Notices and Compliance with Laws

§ 3.7.1 Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

§ 3.7.2 The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

§ 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence of such remains or features may be made as provided in Article 15.

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§ 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- **.1** allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- **.2** Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- **.3** whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

§ 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

§ 3.10 Contractor's Construction and Submittal Schedules

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

§ 3.11 Documents and Samples at the Site

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and

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similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

§ 3.12 Shop Drawings, Product Data and Samples

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

§ 3.12.6 By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

§ 3.12.7 The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

§ 3.12.8 The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

§ 3.12.9 The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

§ 3.12.10 The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

§ 3.12.10.1 If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will

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specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents.

§ 3.12.10.2 If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

§ 3.13 Use of Site

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

§ 3.14 Cutting and Patching

§ 3.14.1 The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

§ 3.14.2 The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

§ 3.15 Cleaning Up

§ 3.15.1 The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

§ 3.15.2 If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

§ 3.16 Access to Work

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

§ 3.17 Royalties, Patents and Copyrights

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

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§ 3.18 Indemnification

§ 3.18.1 To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

§ 3.18.2 In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

ARTICLE 4 ARCHITECT

§ 4.1 General

§ 4.1.1 The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

§ 4.1.2 Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.

§ 4.2 Administration of the Contract

§ 4.2.1 The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

§ 4.2.2 The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

§ 4.2.3 On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

§ 4.2.4 Communications

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

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§ 4.2.5 Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

§ 4.2.6 The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

§ 4.2.7 The Architect 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 Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. 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 Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

§ 4.2.8 The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

ARTICLE 5 SUBCONTRACTORS

§ 5.1 Definitions

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in

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number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

§ 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

§ 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- **.1** assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- **.2** assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

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When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

§ 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

§ 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

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§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

§ 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

ARTICLE 7 CHANGES IN THE WORK

§ 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

§ 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- **.1** The change in the Work;
- **.2** The amount of the adjustment, if any, in the Contract Sum; and
- **.3** The extent of the adjustment, if any, in the Contract Time.

§ 7.3 Construction Change Directives

§ 7.3.1 A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

§ 7.3.2 A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

§ 7.3.3 If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- **.1** Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- **.2** Unit prices stated in the Contract Documents or subsequently agreed upon;
- **.3** Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- **.4** As provided in Section 7.3.4.

§ 7.3.4 If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- **.1** Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;

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.2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;

.3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;

.4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and

.5 Costs of supervision and field office personnel directly attributable to the change.

§ 7.3.5 If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

§ 7.3.6 Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

§ 7.3.7 A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

§ 7.3.8 The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

§ 7.3.9 Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

§ 7.3.10 When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

§ 7.4 Minor Changes in the Work

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

ARTICLE 8 TIME

§ 8.1 Definitions

§ 8.1.1 Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

§ 8.1.2 The date of commencement of the Work is the date established in the Agreement.

§ 8.1.3 The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

§ 8.1.4 The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

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§ 8.2 Progress and Completion

§ 8.2.1 Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

§ 8.2.2 The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

§ 8.2.3 The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

§ 8.3 Delays and Extensions of Time

§ 8.3.1 If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

§ 8.3.2 Claims relating to time shall be made in accordance with applicable provisions of Article 15.

§ 8.3.3 This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

ARTICLE 9 PAYMENTS AND COMPLETION

§ 9.1 Contract Sum

§ 9.1.1 The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

§ 9.1.2 If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

§ 9.2 Schedule of Values

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

§ 9.3 Applications for Payment

§ 9.3.1 At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

§ 9.3.1.1 As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

§ 9.3.1.2 Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

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§ 9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

§ 9.3.3 The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

§ 9.4 Certificates for Payment

§ 9.4.1 The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

§ 9.4.2 The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

§ 9.5 Decisions to Withhold Certification

§ 9.5.1 The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- **.1** defective Work not remedied;
- **.2** third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- **.3** failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- **.4** reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- **.5** damage to the Owner or a Separate Contractor;
- **.6** reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or

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.7 repeated failure to carry out the Work in accordance with the Contract Documents.

§ 9.5.2 When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

§ 9.5.3 When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

§ 9.5.4 If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

§ 9.6 Progress Payments

§ 9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

§ 9.6.2 The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

§ 9.6.3 The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.

§ 9.6.4 The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

§ 9.6.5 The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

§ 9.6.6 A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

§ 9.6.7 Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

§ 9.6.8 Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

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§ 9.7 Failure of Payment

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

§ 9.8 Substantial Completion

§ 9.8.1 Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

§ 9.8.2 When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

§ 9.8.3 Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

§ 9.8.4 When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

§ 9.8.5 The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

§ 9.9 Partial Occupancy or Use

§ 9.9.1 The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

§ 9.9.2 Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

§ 9.9.3 Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

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§ 9.10 Final Completion and Final Payment

§ 9.10.1 Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

§ 9.10.2 Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

§ 9.10.3 If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- **.1** liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- **.2** failure of the Work to comply with the requirements of the Contract Documents;
- **.3** terms of special warranties required by the Contract Documents; or
- **.4** audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

§ 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

§ 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- **.1** employees on the Work and other persons who may be affected thereby;

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.2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and

.3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

§ 10.2.8 Injury or Damage to Person or Property

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

§ 10.3 Hazardous Materials and Substances

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed

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by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

§ 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

ARTICLE 11 INSURANCE AND BONDS

§ 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 Notice of Cancellation or Expiration of Contractor's Required Insurance. Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the

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procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

§ 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 Failure to Purchase Required Property Insurance. If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 Notice of Cancellation or Expiration of Owner's Required Property Insurance. Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

§ 11.3 Waivers of Subrogation

§ 11.3.1 The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

§ 11.3.2 If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance

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The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

§11.5 Adjustment and Settlement of Insured Loss

§ 11.5.1 A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

§ 11.5.2 Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

ARTICLE 12 UNCOVERING AND CORRECTION OF WORK

§ 12.1 Uncovering of Work

§ 12.1.1 If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

§ 12.2 Correction of Work

§ 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

§ 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

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§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

§ 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

ARTICLE 13 MISCELLANEOUS PROVISIONS

§ 13.1 Governing Law

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

§ 13.2 Successors and Assigns

§ 13.2.1 The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

§ 13.2.2 The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

§ 13.3 Rights and Remedies

§ 13.3.1 Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

§ 13.3.2 No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

§ 13.4 Tests and Inspections

§ 13.4.1 Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect

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timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

§ 13.4.2 If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

§ 13.4.3 If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 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 and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

§ 13.4.4 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.

§ 13.4.5 If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

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

§ 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

§ 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- **.1** Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- **.2** An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- **.3** Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- **.4** The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract

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Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

§ 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- **.1** repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- **.2** fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- **.3** repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- **.4** otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- **.1** Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- **.2** Accept assignment of subcontracts pursuant to Section 5.4; and
- **.3** Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

§ 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- **.1** that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- **.2** that an equitable adjustment is made or denied under another provision of the Contract.

§ 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- **.1** cease operations as directed by the Owner in the notice;
- **.2** take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- **.3** except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work

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properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

ARTICLE 15 CLAIMS AND DISPUTES

§ 15.1 Claims

§ 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

§ 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

§ 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

§ 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

§ 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

§ 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating 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.

§ 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

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.1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and

.2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

§ 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

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§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

§ 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

§ 15.4 Arbitration

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

§ 15.4.4 Consolidation or Joinder

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party

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provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

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SECTION 011000 - SUMMARY

PART 1 - GENERAL

1.1 SUMMARY

A. The following General Requirements are in addition and supplementary to the terms and conditions stated in the "The Contract Agreement." It is the intent of these General Requirements to work together with the specified requirements of the Contract Agreement to define the terms and conditions agreed to between the City of Highland Park and the Contractor for the performance of the Work. In the event there are any conflicts or specific contradictions between the Sections, the terms set forth in the Contract Agreement shall take precedence. Unless specifically mentioned otherwise, all costs to meet the conditions and requirements of these General Requirements shall not be paid for separately but shall be incorporated into the Contractor's pay item pricing.

B. Work covered by Contract Documents is as stipulated within this project manual and as accompanied by drawings.

C. Definitions. The following terms are used throughout the Contract Documents. The work will be governed in accord with the definitions.

1. Owner: Shall mean City of Highland Park.
2. Owner's Representative: Onsite representative from City of Highland Park.
3. Professional Service Consultant: Shall mean SmithGroup. Note that any reference to Inspection or Inspector in Division 01 through Division 35 shall not be defined as SmithGroup, but shall mean the testing agent, inspector, permit reviewer, compliance officer or other as defined within each section. Coordinate with Owner's Representative.
4. Fabricated: Fabricated pertains to items specifically assembled or made of selected materials or components to meet individual design requirements.
5. Manufactured: Manufactured means standard units, usually mass-produced by an established manufacturer of the respective item.
6. Provide: Provide means furnish and install.
7. Shop fabricated or shop made: Shop fabricated or shop made refers to items made by a Contractor or Subcontractor in their own Shop.

1.2 SUBMITTAL OF SHOP DRAWINGS

A. The Contractor shall submit the requisite shop drawings and catalog documents for any material or equipment proposed to be utilized in the performance of the Work to the Owner's Construction Engineering Inspection Consultant, which shall distribute the Submittals to the Landscape Architect/Civil Engineer with a copy to the Owner. The Contractor shall transmit said submittals to the Landscape Architect/Civil Engineer in a form and manner that would allow the Landscape Architect/Civil Engineer to review the submittals in an efficient and timely manner. The Design Engineer will review each submittal for compliance with the Contract Documents. If a submittal is found to be non-compliant, then the submittal will be returned to the Contractor to be corrected. Finally, after the Landscape Architect/Civil Engineer have reviewed and approved the submittals, the Contractor shall distribute the final submittal copies to the Owner as part of the close out documents.

1.3 AS-BUILT RECORDS

A. A set of Construction Documents shall be marked as As-Built Drawings and be maintained at the Project site by the Contractor for the purposes of making all changes, revisions, relocations, reroutes, or variances in the Work that differ from the Construction Documents. The As-Built Drawings shall be made accessible to all of the Contractor's subcontractors for recording any changes, field sketches, revisions, relocations, reroutes, or variances in the Work. The completed set of As-Built Drawings shall be transmitted to the Owner upon completion of the Work provided in a timely manner and in AutoCAD 2010 version or later, to the County. Field sketches and installation records, other than shop, fabrication, or field installation drawings, shall not be submitted separately but shall be recorded on the As-Built Drawing set only.

1.4 PROJECT MEETINGS

A. The Contractor shall arrange and conduct scheduled biweekly progress meeting and prepare and distribute meeting minutes. Special meetings for the purposes of coordinating and monitoring the work progress, identifying problems, informing subcontractor and Project participants of project status, stressing safety, coordinating construction details and inspecting quality conformance shall be conducted as required to assure the smooth and uninterrupted progression of the Work.

1.5 FIELD OFFICE BUILDINGS, SHEDS, AND TEMPORARY STORAGE AREAS

A. The Contractor shall provide all temporary field offices and storage area enclosures to conduct the Work and properly administrate the Work. The Contractor may locate field offices and storage areas on site at Contractor’s discretion, and subject to Owner Representative’s location approval, but Contractor will have full responsibility to maintain access to the Work and the work of the Owner. Any relocation of the Contractor’s temporary facilities required to provide access for installation of utilities or the Owner shall be done to maintain the schedule at no cost to the County. The appearance of field offices is subject to the reasonable approval of the County.

1.6 TEMPORARY PROJECT SIGN

A. The Contractor, may at its own expense design, fabricate and construct one (1) Project Identification Sign for the purpose of advertising the Project. Contractor to coordinate with Landscape Architect/Civil Engineer for rendered graphics of proposed site. The sign shall be constructed of exterior grade wood, with weather resistant graphics and hardware and shall be a maximum of 16 square feet. The design and content of the sign shall be subject to the approval of the County.

1.7 CONSTRUCTION SEQUENCING AND NOTIFICATION PLAN

A. The Contractor must submit to the Owner’s Representative, Landscape Architect and Owner a detailed plan, which shall delineate the sequence of the various construction activities that will occur on the Project Site, all road closure requirements (including closure time duration on a per block basis) and proposed measures to maintain reasonable and safe access for the stakeholders and business owners which may be affected by construction activities. The Construction Sequence and Lane closure plan shall be provided to the Owner’s representative at the time of the Contractor’s first proposed Schedule submittal to the County, due within 7 days of the County providing the Contractor with a Notice to Proceed. The County at its sole discretion will determine the reasonableness of the Contractor’s plan to provide and maintain pedestrian and vehicular access. The Plan has to be approved by the Owner’s Representative, Landscape Architect and Owner before the Contractor will be allowed to commence work on the Project Site. Owner’s Representative to provide dates and limitations to site for Fairground events during the time of construction.

B. The Contractor shall designate only one (1) individual who will be assigned to the work throughout its entirety to be responsible for all communications with the stakeholders in the project area. The Contractor shall notify the stakeholders in writing at least thirty (30) days prior to the anticipated start of construction activities and again not less than seven (7) days prior to the actual start of construction activities. The Contractor may be required to fabricate and post signage in various locations on the project site advising the stakeholders in the project area of the forthcoming construction activity.

1.8 CONSTRUCTION PARKING

A. The Contractor shall be responsible for its employees' and subcontractors' vehicles while parked on or off the construction site. Any vehicle found to be owned by the Contractor's employee or an employee of the Contractor's subcontractor parked illegally may be towed away by the County and charged to the Contractor by Change Order. The County reserves the right to deny parking privileges on the Project site to any individual who parks a vehicle improperly or operates any vehicle in an unsafe manner.

1.9 WATER SERVICE

A. If required for construction purposes, the Contractor will arrange for, or otherwise furnish, and pay for water required for the Work. The Contractor shall be responsible to provide and maintain connections, backwater valves, valves, and pipe that may be required to supply water at a point convenient to the work area. The locations of the connections shall be acceptable to Water Department.

1.10 TEMPORARY POWER, LIGHTING AND PHONE SERVICE

The Contractor will furnish and pay for electrical power and telephone service necessary for the Work including labor, equipment and materials required to make connections to power sources and to provide and pay for any required temporary electrical power and light at location of work. Temporary equipment and wiring for power, lighting and distribution requirements shall be in accordance with applicable provisions of governing laws, codes and ordinances. The Contractor shall maintain temporary wiring and related equipment so as not to constitute a hazard to persons or property. County may possibly provide electric to site. Temporary electrical power may be needed for portion of work.

1.11 TOILET FACILITIES

A. The Contractor shall arrange for, provide (per OSHA guidelines) and maintain temporary on-site sanitary toilet facilities for use by the Contractor and County for the duration of the Work.

1.12 WEATHER PROTECTION

A. The Contractor shall provide weather protection, including pumping water and temporary heat and ventilation as required during construction to protect the Work from damage due from freezing, frost, rain, dampness, excessive heat or other adverse elements and as required to maintain the continuous progression of the Work without stoppage due to the weather. This shall include hot and cold weather concrete placement protections recommended by the American Concrete Institute.

1.13 EXISTING SITE CONDITIONS

A. The information in this Bid Package is intended to orient the Contractor to the site. The Contractor will be responsible to thoroughly evaluate the site conditions for construction requirements. It is the responsibility of the Contractor in conjunction with the utility companies to verify the exact types and locations of existing utilities. All damage to existing utilities, caused by the Contractor, shall be repaired at Contractor’s expense, in accordance with the standards of the applicable City department or private utility company.

1.14 UTILITY SHUT-OFF REQUIREMENTS

A. The Contactor shall coordinate all utility shut-offs with the Utility Companies and departments to permit the proper and safe performance of the Work as scheduled. The Contractor shall have the full responsibility for contacting MISSDIG at least 72-hours prior to any subsurface excavation.

1.15 PROTECTION

A. The Contractor shall provide site protection, traffic controls and barricades as required to secure the site from trespassers and the general public. The Contractor shall install, in conformance to the requirements of the governing road/street authority, traffic controls for all work performed in the rights-of-way including curb cuts and utility taps.

1.16 REPLACEMENT OF DAMAGED WORK

A. The Contractor shall be responsible to pay all costs for the timely (within schedule parameters) replacement or restoration of any portion of the Facility damaged by fire or other cause during construction to the extent that such damage is a result of the negligence or a faulty installation made by the Contractor or its subcontractors.

1.17 EMERGENCIES

A. In any emergency affecting the safety of persons or property, the Contractor shall act at its discretion to prevent threatened damage, injury or loss, provided that the Contractor shall have determined that there is not sufficient time to advise and consult with the County prior to taking such action.

1.18 FIRE HAZARDS

A. The Contractor shall take all necessary precautions to eliminate possible fire hazards and to prevent damage to construction work, equipment, temporary field offices, storage sheds, and other property. During construction, the Contractor shall provide fire extinguishers and fire hose in accordance with the appropriate OSHA and construction industry rules and regulations.

1.19 FLAMMABLE HAZARDS

A. Gasoline, benzene, other combustible materials, oils, solvents, or chemicals shall not be poured into sewers, manholes, or traps. All casual spills shall be immediately cleaned up and all contaminated soil removed from the site and legally disposed. Tarpaulins and other materials used for temporary enclosures, coverings and protection shall be flameproofed. The Contractor shall comply with County, State and Federal regulations with respect to barrels and tanks containing flammable or hazardous materials, and shall remove any such materials immediately at the request of the County.

1.20 EXPLOSIVE CHARGES

A. Any fastening device, powder activated stud gun or any other device or system of any kind using an explosive charge for activation may not be used in performing work at the Project site unless it is specifically approved by OSHA or the County Health Department. It shall be the responsibility of the Contractor to secure all permits and permissions without extra cost to the County and to assure the safe use of any such devices by trained individuals.

1.21 FIRST AID

A. A completely equipped first-aid kit shall be provided and maintained by the Contractor at the site in a clean orderly condition and shall be readily accessible at all times to all the Contractor's employees. The Contractor shall designate certain employees who are properly instructed to be in charge of first aid. At least one such employee shall be available at the site whenever work is being carried on.

1.22 HOURS OF WORK

A. The Contractor shall conduct the work during normal working hours in cooperation with the existing property owners and occupants. At the beginning of work on this Contract, the Contractor shall notify the County, in writing, the schedule of the days and work hours proposed for a normal workweek. The Contractor shall be responsible for contacting in advance all involved parties whenever the Contractor intends to depart from the normal workweek schedule and resolve to the satisfaction of the County any reasonable objections made. All costs incurred, due to the failure of the Contractor to properly notify involved parties, shall be paid by the Contractor or deducted from the Contractor's contract amount.

B. The Contractor shall plan and conduct the Work so as not to create a public nuisance or disturb the peace specifically for any residents near or adjacent to the Project site. Should the Contractor be stopped by order of a public authority from working at such times that are contrary to or in violation of any law, ordinance, permit, or license, the Contractor shall not be entitled to an extension of time or additional compensation due to such stoppage.

C. In an emergency, requiring work to be performed outside the normal work week schedule to save or protect life or property, the requirements for the twenty-four (24) hour notification will be waived. The Contractor shall notify the County as soon as the Contractor determines that an emergency condition exists necessitating the change in or extension of the normal hours of work. However, the Contractor's determination of the existence of the emergency is subject to the review and revision by the County.

D. The normal workweek schedule and/or daily hours of work may be altered as directed by the County, when, in its reasonable judgment, such alteration is necessary to maintain the required progress of the Work.

1.23 SANITARY REQUIREMENT

A. Committing unnecessary acts of nuisance on the Project site is prohibited. Any employee who violates such provisions shall be promptly removed from the Project by the Contractor and not be permitted to work on the project site without the written consent of the County.

1.24 CLEANLINESS OF PROJECT SITE AND STREET

A. The Work and all public or private property used in connection with the Work shall be kept in a neat, clean and orderly condition at all times. Stored materials shall be safely stacked and ordered. Waste materials, rubbish and debris shall removed daily and shall not be allowed to accumulate. No burning of rubbish is permitted.

B. The Contractor shall remove unused construction equipment, temporary buildings and excess materials from the site upon the reasonable request of the EDC. The site shall not be permitted to become a storage yard for the Contractor's equipment and materials not directly involve in the Work. Any stored equipment or unnecessary materials stockpiled shall be removed from the Project site upon the request of the County.

C. During the performance of the Work, the Contractor shall daily inspect and maintain the Project site in a clean condition including control of dust, picking up scattered construction debris, and removal of splattered materials from the surfaces of the new construction. Should the Contractor fail to maintain proper cleanliness or order of the site the County, upon 48 hour notice to the Contractor, shall arrange for the cleaning and removal of extraneous materials accumulated at the site and shall have the right to deduct the costs incurred from the Contract value.

D. Trucks hauling loose material from or to the project site shall be tight and their loads trimmed and tarped to prevent spillage on the public streets. This requirement likewise applies to suppliers making deliveries to the Project site. The Contractor will be held responsible to require compliance by the Contractor's suppliers. The County shall have the right to deny site access to any subcontractor or supplier who refuses to comply with this requirement. The Contractor shall promptly (daily as a minimum) clean streets, sidewalks and alleys dirtied by any cause arising from the Contractor's operations. Should the Contractor fail to maintain proper street cleanliness, the County, upon notice to the Contractor will clean any such public right of ways and shall have the right to deduct the costs incurred from the Contract value.

1.25 DEWATERING

A. The Contractor shall dewater and keep dry all trenches and other excavated areas at the site by evenly grading the surface drainage to eliminate standing water. The Contractor shall be responsible to protect structural bearing subgrades and materials from ponding, standing water or erosion. Dewatering operations shall not be permitted to discharge water to any other private properties. The Contractor shall be responsible for securing Water Department permission prior to discharging any water from the site into public sewers.

1.26 SECURITY

A. The Contractor shall secure and protect from theft, loss or damage all materials and equipment used for or relating to the Work until final completion and acceptance by the County.

1.27 WORKING AREA

A. All the Work under this Contract shall be performed on the Project site. The Contractor shall access the Project site via City streets and rights-of-way. The Contractor shall review the legal loading limit for the access streets and rights-of-way and shall be responsible for coordinating deliveries and shipments that do not exceed the legal load limits.

B. The Contractor shall use Flagmen whenever trucks or equipment enter public roadways from the project site.

C. Should additional working or storage space be desired, the Contractor shall make all arrangements with any property owner and submit to the County written evidence that the Contractor has secured permission to use this property for construction purposes. The Contractor shall pay all expense in connection with its use, and in no way involves or obligates the County by such use.

1.28 SPECIAL SYSTEM INSPECTIONS

A. The Contractor, as part of the Work, shall coordinate all specialty manufacturer inspections and testing required to certify that the installation of the Work meets the manufacturer’s conditions for warranty.

1.29 TIME OF STARTING AND COMPLETION OF WORK

A. The Contractor shall, carry on the construction operations continuously without stoppage so that all items of work are totally complete including punchlist in accordance with the agreed upon completion date. This shall not relieve the Contractor from the responsibility to coordinate the Work with County, and to sequence the Work including interrupting the Work as required by the County.

1.30 TESTING & INSPECTION

A. The County’s separately contracted Construction Engineering & Inspection Consultant shall arrange and pay for all testing and inspection required to verify conformance of the Work with the Contract Documents. All testing and inspection shall be coordinated with the County.

1.31 SOIL EROSION AND SEDIMENT CONTROL

A. The Contractor shall install and maintain, for the duration of the Project, soil erosion protection measures as required by the MDEQ, and Health Department. The Contractor shall provide other temporary soil erosion control as required to eliminate sedimentation from entering sewers and open ditches due to the Contractor’s operations. The Contractor shall remove completely all soil erosion control measures from the site at the end of the Project.

B. The Contractor will promptly remove soil, debris, or other materials spilled, dumped, or otherwise deposited on public streets, highways, or other public thoroughfares by the Contractor's equipment and operations.

C. The Contractor shall abide by the requirements of the "Authorized Public Agency" under the provisions of Section 11 of Act 347 of the Public Acts of 1972, "Soil Erosion and Sedimentation Control Act" as modified or superseded.

D. Current Soil Erosion and Sediment Control Plans included in set are approved by the Health Department.

1.32 DISCLAIMER OF SITE INFORMATION

A. By its own examinations, observations, investigations and tests the Contractor shall make its own determination of the existing site conditions. Information contained in this Bid Package is provided solely for the informational use of the Contractor. The County does not guarantee the accuracy or sufficiency of any site information.

1.33 UNIT PRICES

A. Unit prices, if established during the Project, shall include all permits, fees, labor, material, tools, supervision, equipment, taxes, insurance and bonding necessary for or incidental to the proper completion of the Work.

1.34 TRUCK TICKETS

A. Any excavated materials removed from the site shall be controlled for assurance of legal dumping by (3) part "Truck Tickets" for each load of material removed from the site. The Contractor shall note on each truck ticket the bid package number, date, location of excavation, trucking firms, quantity of material and time of departure for each outgoing truck. The Contractor shall record the disposal site and time of disposal on the "Truck Ticket" and shall obtain the signature of the recipient of the material in verification thereof and return the completed "Truck Ticket" to the County.

1.35 ENVIRONMENTAL COORDINATION

A. Owner shall make available to the Contractor any environmental reports or information in the Owner's possession as reference information .to assist in the Contractor's required production of the Health and Safety Plan, as expressed in paragraph 1.3 of Section VII of the Bid Documents. Unless otherwise noted in the plans and specifications the Contractor shall assume that all excavated material in the right of way is contaminated and shall be taken to a licensed Class II landfill. If the Contractor encounters potential hazardous materials, the Contractor shall notify the EDC for inspection of the condition before proceeding with any Work in that area. The contractor shall continue with the orderly progression of work in non impacted areas. Subject to the nature of the hazardous material encountered and the Contractors qualifications, the EDC reserves the right to require the Contractor to perform any removal/remediation work for hazardous materials on a time and material basis, or negotiated basis according to the provisions of the Contract Documents.

1.36 PROTECTION OF THE PRIVATE AND EXISTING UTILITIES

A. The Contractor shall protect and maintain for the duration of the work all existing improvements and utilities that are to remain. The Contractor will immediately undertake and pay for the repair of any damaged existing improvements or utilities.

B. All unattended excavations, voids, pits, manholes or holes shall be barricaded immediately by the Contractor. Barriers shall be removed promptly by the Contractor when no longer required,

C. Precautions against fire, accidental explosion, excessive dust and accident shall be strictly enforced by the Contractor in cooperation with the County and the EDC.

D. The Contractor shall not allow salvaged material, debris, and trash to accumulate on the project site but shall require all such material to be hauled away on a regular, daily basis.

1.37 PROTECTION OUTSIDE THE PROJECT AREA

A. All existing areas outside the limits of the Work shall be protected from damage. All damage caused by the Contractor shall be corrected at the expense of the Contractor and to abide by City or County Standards.

B. During progress of work, the Contractor shall keep adjacent roads free of trash, debris, and salvage material resulting from the work.

C. The Contractor is advised that other construction activities may be performed by others within the Project area during this the performance of the Work under this Contract Agreement. The Contractor shall plan proposed trucking and all other vehicular routes accordingly in coordination with and at the reasonable direction of the County.

D. All construction traffic control signage and barricading shall conform to the standard requirements of the governmental body having jurisdiction over the street right of way.

1.38 TEMPORARY CONTROLS

A. Surface Water Control – The Contractor shall complete the work in such a manner so as not to entrap surface water on the site. Low areas caused by removals, shall be graded in such a manner to allow drainage to existing storm water structures. The Contractor shall be responsible for drying out and repairing any grade surfaces damaged due to the Contractors failure to properly grade the work area.

B. The Contractor shall secure and pay for all erosion control permits and conduct earth changes in a manner, which will effectively eliminate accelerated soil erosion and resulting sedimentation. Measures to be taken shall include but not be limited to:

C. Provide temporary soil erosion control to eliminate sedimentation from entering sewers and open ditches.

D. Remove sediment caused by accelerated soil erosion from runoff water before it leaves the site.

E. Maintain temporary soil erosion silt fences, sediment traps and control measures for the term of this contract.

F. Promptly remove soil, debris, or other material spilled, dumped, or otherwise deposited on public streets, highways, or other public thoroughfares during transit.

G. The Contractor shall utilize applicable soil erosion details, shown on Contract drawings, in implementing his work.

H. The Contractor shall utilize water trucks and other dust inhibiting methods to control fugitive dust emanating from the work activity performed under this scope of work. Truck and equipment wheels shall be cleaned before exiting the project area. Travel routes shall be established with the prior approval of the County to reduce dust in adjacent areas. Existing roads shall be used wherever practical based on street loading capacity.

1.39 SUSPECTED HAZARDOUS MATERIALS

A. In the event the Contractor encounters excavated materials that are suspected as hazardous, the Contractor shall notify the County for review, and through County's Environmental Consultant the possible characterization and management of the suspect material. If it is determined that the suspect material is hazardous by the County's environmental Consultant, the Consultant will provide a material handling protocol for the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 CONTRACTOR USE OF PREMISES

A. Confine operations at site to areas permitted by:

1. Law
2. Permits
3. Contract
4. Owner's Representative
5. Required use of adjacent existing buildings
6. Contract documents

B. Confer with Owner's Representative and obtain full knowledge of all site rules and regulations affecting work.

C. Conform to site rules and regulations while engaged in project construction.

D. Site rules and regulations take precedence over others that may exist outside such jurisdiction.

E. Employees On Site: The Owner's Representative may examine Contractor's list of employees, including those of his subcontractors and their agents for all employees working on site.

F. Vehicle use: Rigidly enforce the following:

1. Keep all vehicles, mechanized or motorized equipment locked at all times when parked and unattended on Owner’s premises.
2. Do not, under any circumstance, leave any vehicle unattended with motor or engine running, or with ignition key in place.
3. All traffic control subject to Owner's Representative approval.
4. Contractor employee parking shall be limited to areas indicated by Owner's Representative.
5. Contractor shall not park any vehicles within the dripline of trees.

G. Do not unreasonably encumber site with materials or equipment.

H. Assume full responsibility for protection safety and safekeeping of products stored on premises.

I. Move all stored products or equipment, which interferes with operations of Owner or other subcontractors.

J. Obtain and pay for use of additional storage or work area needed for operations.

K. Limit use of site for work and storage:

1. To areas indicated on the drawings.
2. To areas approved in advance by Owner's Representative.

L. The Contractor acknowledges that the Owner will use the adjacent sites and the Contractor must maintain staff and appropriate safety requirements. Contractor to work with Owner's Representative to coordinate with scheduled events. Owner's Representative to provide schedule.

3.2 DUTIES OF CONTRACTOR

A. Except as specifically noted, provide and pay for:

1. Labor, materials and equipment.
2. Tools, construction equipment and machinery.
3. Water, heat and utilities required for construction.
4. Other facilities and services necessary for proper execution and completion of work.

B. Secure and pay for as necessary for proper execution and completion of work, and as applicable at time of receipt of bids.

1. Licenses.

C. Give required notices.

D. Promptly submit written notice to Professional Services Consultant of known or observed variances of Contract Documents from legal requirements.

1. Appropriate modifications to Contract Documents will adjust necessary changes.
2. Assume responsibility for Work known to be contrary to such requirements.

E. Enforce strict discipline and good order among employees. Do not employ on Work:

1. Unfit persons.
2. Persons not skilled in assigned task.

F. Purchase and maintain insurance in accordance with the Contract Agreement.

G. Contractor shall protect existing site from damage. Contractor shall clean areas of construction debris, equipment, and material prior to Date of Completion for such area.

3.3 PERMITS

A. See Section 003143 PERMIT APPLICATION

3.4 TIME OF COMPLETION

A. Completion of work shall be in accordance with the schedule as indicated in the Bid Form.

3.5 JOB OPERATIONS

A. Project Security:

1. Take necessary precautions such as barrier to protect Owner's personnel, the public, in the area of construction.
2. Securely close off all areas of construction after working hours to prevent entry by unauthorized persons.
3. Provide barriers to prevent visitors from construction area.

3.6 WORK LIMITATIONS:

A. Owner's personnel may occupy all spaces around where work will be done. Any work done during times of occupancy shall be limited in scope to prevent disturbing it.

B. Give Owner's representative three days notice before starting Construction Work in any area.

C. All work, including material storage, shall be limited to the project area.

3.7 RELATED DOCUMENTS

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

END OF SECTION

SECTION 012300 - ALTERNATES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for alternates. Any of these alternates can be accepted at any time of the construction of the park at no additional cost or markup to the owner.

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 the 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. Alternates described in this Section are part of the Work only if enumerated in the Agreement.
2. The cost or credit for each alternate is the net addition to or deduction from the Contract Sum to incorporate alternates into the Work. No other adjustments are made to the Contract Sum.

1.4 PROCEDURES

A. Coordination: Revise 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. Execute accepted alternates under the same conditions as other work of the Contract.

C. 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

A. Any alternates as part of this contract may be accepted at any time during the construction process. These may be added after certain milestones of the project are concluded (example Earthwork operations). The alternates are to be accepted at the same price as at the time of bidding. No mark-up will be accepted due to construction in year 2026 or any other reasons. Add pricing to SECTION 004123 Bid Form.

B. Alternate No. 1: Backstop Hood for field 1, and 6 5/8" Diameter End Posts

1. Base Bid: Proposed Backstop with 4" Diameter Posts
2. Alternate 1 – Install 6 5/8" end posts in place of proposed 4" diameter end posts. Add 3/8" or ½" galvanized wire rope with plain ends 9,800 lb. minimum break strength 3,267 lb working load limit to proposed backstop end posts. Tie 1 3/4" square mesh netting to galvanized wire rope and backstop top rail.
3. See alternate pole diameter size for backstop poles (2) that would span the cable wire and netting
4. Note: This alternate to be declined or accepted before the installation of field 1 backstop.

C. Alternate 2: Foul Line Fencing, and Dugout Fencing for Field 1

1. Base Bid: Existing Lawn, No work
2. Alternate 2 – Add concrete foundations, 4' and 8' chain link fence, and posts to both sides of proposed field. Connect dugout 8' chain link fence to proposed backstop.
3. Note: If Alternate 3 is accepted, fencing foundations and posts to be installed prior to alternate 3.

D. Alternate 3: Dugout Concrete Pads for Field 1

1. Base Bid: Existing Lawn, no earthwork
2. Alternate 3 – Add earthwork, concrete dugout, and base aggregate. Add concrete sidewalk from existing asphalt walk to concrete dugout. Restore disturbance with topsoil and lawn seed.
3. Dugout Benches are part of Alternate 3. Benched to be surface mounted in concrete pads.
4. Note: If Alternate 2 is accepted, dugout fencing and foundations to be installed before dugout concrete installation.
5.

E. Alternate 4: Foul Line Fencing, and Dugout Fencing for Field 2

1. Base Bid: Existing Lawn, No work
2. Alternate 4 – Add concrete foundations, 4' and 8' chain link fence, and posts to both sides of proposed field. Connect dugout 8' chain link fence to proposed backstop.
3. Note: If Alternate 5 is accepted, fencing foundations and posts to be installed prior to alternate 5.

F. Alternate 5: Dugout Concrete Pads for Field 2

1. Base Bid: Existing Lawn, no earthwork
2. Alternate 5 – Add earthwork, concrete dugout, and base aggregate. Add concrete sidewalk from existing asphalt walk to concrete dugout. Restore disturbance with topsoil and lawn seed.
3. Dugout Benches are part of Alternate 5. Benched to be surface mounted in concrete pads.
4. Note: If Alternate 4 is accepted, dugout fencing and foundations to be installed before dugout concrete installation.

G. Alternate 6: Concrete Connection Walk from Playground to Field 2

1. Base Bid: Existing Lawn and construction road
2. Alternate 6 – Add earthwork, concrete walk, and base aggregate. Restore disturbance with topsoil and lawn seed.

H. Alternate 7: Concrete Walk by Fitness Pad

1. Base Bid: Existing Lawn, No work
2. Alternate 7 – Add earthwork, concrete walk, and base aggregate. Restore disturbance with topsoil and lawn seed.

I. Alternate 8: Concrete Pad for Shelter Area

1. Base Bid: Earthwork, Topsoil and Lawn Seed
2. Alternate 8 – Add earthwork, concrete pad, and base aggregate.

J. Alternate 9: Concrete Foundations for Shelter

1. Base Bid: Earthwork, Topsoil and Lawn Seed
2. Alternate 9 – Add earthwork, concrete footings, and base aggregate.
3. Note: If both Alternate 8 & 9 are approved, concrete footings to be installed prior to concrete pad.

K. Alternate 10: Specialty Painting for Pickleball Court

1. Base Bid: Asphalt Pickleball Courts, Refer to Drawing CS-501, Detail 1
2. Alternate 10 – Add Specialty Painting. Design to be approved by City of Highland Park and Landscape Architect. Paint to be approved court coating product.

END OF SECTION

SECTION 012500 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

1.3 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1. Substitutions for Cause: Changes proposed by Contractor that are required due to changed Project conditions, such as unavailability of product, regulatory changes, or unavailability of required warranty terms.
2. Substitutions for Convenience: Changes proposed by Contractor or Owner that are not required in order to meet other Project requirements but may offer advantage to Contractor or Owner.

1.4 PROCEDURES

A. Coordination: Revise or adjust affected work as necessary to integrate work of the approved substitutions.

1.5 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but not later than days prior to time required for preparation and review of related submittals.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Substitution request is fully documented and properly submitted.
c. Requested substitution will not adversely affect Contractor's construction schedule.
d. Requested substitution has received necessary approvals of authorities having jurisdiction.
e. Requested substitution is compatible with other portions of the Work.
f. Requested substitution has been coordinated with other portions of the Work.
g. Requested substitution provides specified warranty.
h. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Architect will consider requests for substitution if received within days after [commencement of the Work] [the Notice to Proceed] [the Notice of Award]. Requests received after that time may be considered or rejected at discretion of Architect.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied. If the following conditions are not satisfied, Architect will return requests without action, except to record noncompliance with these requirements:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Substitution request is fully documented and properly submitted.
e. Requested substitution will not adversely affect Contractor's construction schedule.
f. Requested substitution has received necessary approvals of authorities having jurisdiction.
g. Requested substitution is compatible with other portions of the Work.
h. Requested substitution has been coordinated with other portions of the Work.
i. Requested substitution provides specified warranty.
j. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 012510 - SUBSTITUTION REQUEST FORM

Date of Request: _____ CM/GC Tracking No.: _____ SG Tracking No.:

This substitution request is governed by the provisions of Section 012500.

☐ This Substitution Request is submitted during the bidding period.
☐ This Substitution Request is submitted with Proposed Products List dated _____
☐ This Substitution Request is submitted separate from and after submittal of the Proposed Products List.

RE: _____
Specifications Section Title Section No. Page Paragraph

PROPOSED SUBSTITUTION:
Reason for Substitution:

General Description:

The accompanying attachments, per 012500, provide a full description of the proposed substitution.
Proposed change:

☐ To Contract Sum: ☐ None ☐ Add: ☐ Deduct: $_____
☐ To Contract Time: ☐ None ☐ Add: ☐ Deduct: _____ days

Assumption of Responsibility for Equal Performance

Requester affirms that the proposed substitution conforms to required dimensions and meets or exceeds the standards of required function, appearance, and quality set by the specified product. Requester understands and affirms compliance with the provisions of Section 012500.

_____
Requester's Name Date

_____
Requester's Firm

ARCHITECT'S EVALUATION:
The proposed substitution is:
☐Not Reviewed; ☐Not Acceptable; ☐Acceptable As Noted; ☐Acceptable
Remarks: _____

_____
Name Date

cc: Owner; Requester; Contractor

Note: Owner's Acceptance of substitution request is not valid until documented through addendum or contract modification.

END OF DOCUMENT

SECTION 012600 - CONTRACT MODIFICATION PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements for handling and processing Contract modifications.

1.3 MINOR CHANGES IN THE WORK

A. Architect will issue supplemental instructions authorizing minor changes in the Work, not involving adjustment to the Contract Sum or the Contract Time.

1.4 PROPOSAL REQUESTS

A. Owner-Initiated Proposal Requests: will issue a detailed description of proposed changes in the Work that may require adjustment to the Contract Sum or the Contract Time. If necessary, the description will include supplemental or revised Drawings and Specifications.

1. Work Change Proposal Requests issued by are not instructions either to stop work in progress or to execute the proposed change.
2. Within after receipt of Proposal Request, submit a quotation estimating cost adjustments to the Contract Sum and the Contract Time necessary to execute the change.

    a. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
    b. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
    c. Include costs of labor and supervision directly attributable to the change.
    d. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.

B. Contractor-Initiated Proposals: If latent or changed conditions require modifications to the Contract, Contractor may initiate a claim by submitting a request for a change to.

1. Include a statement outlining reasons for the change and the effect of the change on the Work. Provide a complete description of the proposed change. Indicate the effect of the proposed change on the Contract Sum and the Contract Time.
2. Include a list of quantities of products required or eliminated and unit costs, with total amount of purchases and credits to be made. If requested, furnish survey data to substantiate quantities.
3. Indicate applicable taxes, delivery charges, equipment rental, and amounts of trade discounts.
4. Include costs of labor and supervision directly attributable to the change.

5. Include an updated Contractor's construction schedule that indicates the effect of the change, including, but not limited to, changes in activity duration, start and finish times, and activity relationship. Use available total float before requesting an extension of the Contract Time.
6. Comply with requirements in Section 012500 "Substitution Procedures" if the proposed change requires substitution of one product or system for product or system specified.
7. Proposal Request Form: Contractor to provide request form

1.5 ADMINISTRATIVE CHANGE ORDERS

A. Allowance Adjustment: See Section 012100 "Allowances" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect actual costs of allowances.

B. Unit-Price Adjustment: See Section 012200 "Unit Prices" for administrative procedures for preparation of Change Order Proposal for adjusting the Contract Sum to reflect measured scope of unit-price work.

1.6 CHANGE ORDER PROCEDURES

A. On Owner's approval of a Work Change Proposal Request, will issue a Change Order for signatures of Owner and Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 012900 - PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes administrative and procedural requirements necessary to prepare and process Applications for Payment.

1.3 DEFINITIONS

A. Schedule of Values: A statement furnished by Contractor allocating portions of the Contract Sum to various portions of the Work and used as the basis for reviewing Contractor's Applications for Payment.

1.4 SCHEDULE OF VALUES

A. Coordination: Coordinate preparation of the schedule of values with preparation of Contractor's construction schedule.

1. Coordinate line items in the schedule of values with items required to be indicated as separate activities in Contractor's construction schedule.
2. Submit the schedule of values to Architect at earliest possible date, but no later than days before the date scheduled for submittal of initial Applications for Payment.
3. Subschedules for Phased Work: Where the Work is separated into phases requiring separately phased payments, provide subschedules showing values coordinated with each phase of payment.
4. Subschedules for Separate Elements of Work: Where the Contractor's construction schedule defines separate elements of the Work, provide subschedules showing values coordinated with each element.
5. Subschedules for Separate Design Contracts: Where the Owner has retained design professionals under separate contracts who will each provide certification of payment requests, provide subschedules showing values coordinated with the scope of each design services contract, as described in Section 011000 "Summary."

B. Format and Content: Use Project Manual table of contents as a guide to establish line items 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 Architect.
    c. Architect's 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 or Division.
b. Description of the 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 of the following, as a percentage of the Contract Sum to nearest one-hundredth percent, adjusted to total 100 percent. Round dollar amounts to whole dollars, with total equal to Contract Sum.

1) Labor.
2) Materials.
3) Equipment.

3. Provide a breakdown of the Contract Sum in enough detail to facilitate continued evaluation of Applications for Payment and progress reports. Provide multiple line items for principal subcontract amounts in excess of percent of the Contract Sum.
4. 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.

a. Differentiate between items stored on-site and items stored off-site.

5. Allowances: Provide a separate line item in the schedule of values for each allowance. Show line-item value of unit-cost allowances, as a product of the unit cost, multiplied by measured quantity. Use information indicated in the Contract Documents to determine quantities.
6. Purchase Contracts: Provide a separate line item in the schedule of values for each purchase contract. Show line-item value of purchase contract. Indicate Owner payments or deposits, if any, and balance to be paid by Contractor.
7. Overhead Costs: Include total cost and proportionate share of general overhead and profit for each line item.
8. Overhead Costs: Show cost of temporary facilities and other major cost items that are not direct cost of actual work-in-place as separate line items.
9. Closeout Costs. Include separate line items under Contractor and principal subcontracts for Project closeout requirements in an amount totaling percent of the Contract Sum and subcontract amount.
10. Schedule of Values Revisions: Revise the schedule of values when Change Orders or Construction Change Directives result in a change in the Contract Sum. Include at least one separate line item for each Change Order and Construction Change Directive.

1.5 APPLICATIONS FOR PAYMENT

A. Each Application for Payment following the initial Application for Payment shall be consistent with previous applications and payments as certified by Architect and paid for by Owner.

B. Payment Application Times: The date for each progress payment is indicated in the Agreement between Owner and Contractor. The period of construction work covered by each Application for Payment is the period indicated in the Agreement.

1. Submit draft copy of Application for Payment days prior to due date for review by Architect.

C. Application for Payment Forms: Use as form for Applications for Payment.

1. Other Application for Payment forms proposed by the Contractor shall be acceptable to and Owner. Submit forms for approval with initial submittal of schedule of values.

D. Application Preparation: Complete every entry on form. Notarize and execute by a person authorized to sign legal documents on behalf of Contractor. will return incomplete applications without action.

1. Entries shall match data on the schedule of values and Contractor's construction schedule. Use updated schedules if revisions were made.
2. Include amounts for work completed following previous Application for Payment, whether or not payment has been received. Include only amounts for work completed at time of Application for Payment.
3. Include amounts of Change Orders and Construction Change Directives issued before last day of construction period covered by application.
4. Indicate separate amounts for work being carried out under Owner-requested project acceleration.

E. Stored Materials: Include in Application for Payment amounts applied for materials or equipment purchased or fabricated and stored, but not yet installed. Differentiate between items stored on-site and items stored off-site.

1. Provide certificate of insurance, evidence of transfer of title to Owner, and consent of surety to payment for stored materials.
2. Provide supporting documentation that verifies amount requested, such as paid invoices. Match amount requested with amounts indicated on documentation; do not include overhead and profit on stored materials.
3. Provide summary documentation for stored materials indicating the following:

    a. Value of materials previously stored and remaining stored as of date of previous Applications for Payment.
    b. Value of previously stored materials put in place after date of previous Application for Payment and on or before date of current Application for Payment.
    c. Value of materials stored since date of previous Application for Payment and remaining stored as of date of current Application for Payment.

F. Transmittal: Submit signed and notarized original copies of each Application for Payment to by a method ensuring receipt. One copy shall include waivers of lien and similar attachments if required.

1. Transmit each copy with a transmittal form listing attachments and recording appropriate information about application.

G. Waivers of Mechanic's Lien: With each Application for Payment, submit waivers of mechanic's lien from subcontractors, sub-subcontractors, and suppliers for construction period covered by the previous application.

1. Submit partial waivers on each item for amount requested in previous application, after deduction for retainage, on each item.
2. When an application shows completion of an item, submit conditional final or full waivers.
3. Owner reserves the right to designate which entities involved in the Work must submit waivers.
4. Submit final Application for Payment with or preceded by conditional final waivers from every entity involved with performance of the Work covered by the application who is lawfully entitled to a lien.
5. Waiver Forms: Submit executed waivers of lien on forms acceptable to Owner.

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

1. List of subcontractors.
2. Schedule of values.
3. Contractor's construction schedule (preliminary if not final).
4. Combined Contractor's construction schedule (preliminary if not final) incorporating Work of multiple contracts, with indication of acceptance of schedule by each Contractor.
5. Products list (preliminary if not final).
6. Sustainable design action plans, including preliminary project materials cost data.
7. Schedule of unit prices.
8. Submittal schedule (preliminary if not final).
9. List of Contractor's staff assignments.

10. List of Contractor's principal consultants.
11. Copies of building permits.
12. Copies of authorizations and licenses from authorities having jurisdiction for performance of the Work.
13. Initial progress report.
14. Report of preconstruction conference.
15. Certificates of insurance and insurance policies.
16. Performance and payment bonds.
17. Data needed to acquire Owner's insurance.

I. Application for Payment at Substantial Completion: After Architect issues the Certificate of Substantial Completion, submit an Application for Payment showing 100 percent completion for portion of the Work claimed as substantially complete.

1. Include documentation supporting claim that the Work is substantially complete and a statement showing an accounting of changes to the Contract Sum.
2. This application shall reflect Certificate(s) of Substantial Completion issued previously for Owner occupancy of designated portions of the Work.

J. Final Payment Application: After completing Project closeout requirements, submit final Application for Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following:

1. Evidence of completion of Project closeout requirements.
2. Insurance certificates for products and completed operations where required and proof that taxes, fees, and similar obligations were paid.
3. Updated final statement, accounting for final changes to the Contract Sum.
4. AIA Document G706.
5. AIA Document G706A.
6. AIA Document G707.
7. Evidence that claims have been settled.
8. Final meter readings for utilities, a measured record of stored fuel, and similar data as of date of Substantial Completion or when Owner took possession of and assumed responsibility for corresponding elements of the Work.
9. Final liquidated damages settlement statement.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 013110 - REQUEST FOR INFORMATION

(This form is to be transmitted from GC or CM to SmithGroup) **RFI NO.:** _____
DATE TRANSMITTED: _____; Bid Pack: _____; Trade Contract: _____
Response requested from: ☐Civil; ☐Struct; ☐Arch; ☐Mech; ☐Elec; ☐Other _____
Brief description of RFI: (give details below): _____

PROVIDE SPECIFIC REFERENCES:	**Section No.** _____	**Section No.** _____	**Section No.** _____	**Section No.** _____	**example:**	**Section No.** 019999
➔	**Reference No.** _____	**Reference No.** _____	**Reference No.** _____	**Reference No.** _____		**Reference No.** 2.2.A.1

PROVIDE DRAWING REFERENCES: _____
Contractor requests information for the following from SmithGroup:
(Note: Request information for only 1 item per RFI. This permits individual handling and expedites response.)
_____

☐ This box, if checked, indicates a potential change to the Contract Sum associated with this RFI.
The change is in the range of $_____ to $_____.
☐ This box, if checked, indicates a potential change to the Contract Time associated with this RFI.
The change is in the range of _____ days to _____.days
Requested By: (name): _____
(After saving file, email or fax to SmithGroup Project Architect or Project Administrator.)

SmithGroup response: Date Received: _____
_____

☐ SG DOES NOT expect a change to the ☐Contract Sum ☐Contract Time related to this RFI.
☐ SG expect a change to the ☐Contract Sum ☐Contract Time related to this RFI.
Response By: _____Date: _____
Date Transmitted: _____ (Indicate the recipients and the means of transmittal below)

Distributed to: Name, Email Address or Fax Number	Email	Fax	Hand	Mail
_____	☐	☐	☐	☐
_____	☐	☐	☐	☐
_____	☐	☐	☐	☐
_____	☐	☐	☐	☐
_____	☐	☐	☐	☐

SmithGroup: Master Office Files
NOTE: This form is formatted for completion on screen using MS Word. Only form revisions by SmithGroup are valid.

END OF SECTION

SECTION 014200 - REFERENCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 DEFINITIONS

A. General: Basic Contract definitions are included in the Conditions of the Contract.

B. "Approved": When used to convey Architect's action on Contractor's submittals, applications, and requests, "approved" is limited to Architect's duties and responsibilities as stated in the Conditions of the Contract.

C. "As Otherwise Direct": Used in relation to items to be determined after Contract by agreement between Owner, Architect, and Contractor, with input from other entities as appropriate.

D. "Certified": Guaranteed in writing over the signature of an authorized representative of the certifying organization.

E. "Directed": An instruction by Architect. Other terms including "requested," "authorized," "selected," "required," and "permitted" have the same meaning as "directed."

F. "Indicated": Requirements expressed by graphic representations or in written form on Drawings, in Specifications, and in other Contract Documents. Other terms including "shown," "noted," "scheduled," and "specified" have the same meaning as "indicated."

G. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

H. "Furnish": Supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, and similar operations.

I. "Install": Operations including unloading, temporarily storing, unpacking, assembling, erecting, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning, and similar operations at Project site.

J. "N.I.C" or "NIC": Not in Contract.

K. "Necessary": That which is reasonably necessary to the proper completion of the Work.

L. "Per": In accordance with the requirements of.

M. "Products": Materials, equipment, or systems.

N. "Provide": Furnish and install, complete and ready for the intended use.

O. "Project Site": Space available for performing construction activities. The extent of Project site is shown on Drawings and may or may not be identical with the description of the land on which Project is to be built.

P. "Regulations": Laws, ordinances, statutes, and lawful orders issued by authorities having jurisdiction, and rules, conventions, and agreements within the construction industry that control performance of the Work.

Q. "Replace": To put something new in place of.

R. "Required": Referring to requirements of the Contract Documents, unless its use clearly implies a different interpretation.

S. "Shown" or "Indicated": Appearing on the Drawings, unless their use clearly implies a different interpretation.

T. "Supply": Same as Furnish.

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 date of the Contract Documents unless otherwise indicated.

C. Copies of Standards: Each entity engaged in construction on Project should 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, obtain copies directly from publication source.

1.4 ABBREVIATIONS AND ACRONYMS

A. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities indicated in Gale's "Encyclopedia of Associations: National Organizations of the U.S." or in Columbia Books' "National Trade & Professional Associations of the United States."

B. Industry Organizations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. AABC - Associated Air Balance Council; www.aabc.com.
2. AAMA - American Architectural Manufacturers Association; www.aamanet.org.
3. AAPFCO - Association of American Plant Food Control Officials; www.aapfco.org.
4. AASHTO - American Association of State Highway and Transportation Officials; www.transportation.org.
5. AATCC - American Association of Textile Chemists and Colorists; www.aatcc.org.
6. ABMA - American Bearing Manufacturers Association; www.americanbearings.org.
7. ABMA - American Boiler Manufacturers Association; www.abma.com.
8. ACI - American Concrete Institute; (Formerly: ACI International); www.concrete.org
9. ACPA - American Concrete Pipe Association; www.concrete-pipe.org.
10. AEIC - Association of Edison Illuminating Companies, Inc. (The); www.aeic.org.
11. AF&PA - American Forest & Paper Association; www.afandpa.org.
12. AGA - American Gas Association; www.aga.org.
13. AHAM - Association of Home Appliance Manufacturers; www.aham.org.

14. AHRI - Air-Conditioning, Heating, and Refrigeration Institute (The); www.ahrinet.org.
15. AI - Asphalt Institute; www.asphaltinstitute.org.
16. AIA - American Institute of Architects (The); www.aia.org.
17. AISC - American Institute of Steel Construction; www.aisc.org.
18. AISI - American Iron and Steel Institute; www.steel.org.
19. AITC - American Institute of Timber Construction; www.aitc-glulam.org.
20. AMCA - Air Movement and Control Association International, Inc.; www.amca.org.
21. ANSI - American National Standards Institute; www.ansi.org.
22. AOSA - Association of Official Seed Analysts, Inc.; www.aosaseed.com.
23. APA - APA - The Engineered Wood Association; www.apawood.org.
24. APA - Architectural Precast Association; www.archprecast.org.
25. API - American Petroleum Institute; www.api.org.
26. ARI - Air-Conditioning & Refrigeration Institute; (See AHRI).
27. ARI - American Refrigeration Institute; (See AHRI).
28. ARMA - Asphalt Roofing Manufacturers Association; www.asphaltroofing.org.
29. ASCE - American Society of Civil Engineers; www.asce.org.
30. ASCE/SEI - American Society of Civil Engineers/Structural Engineering Institute; (See ASCE).
31. ASHRAE - American Society of Heating, Refrigerating and Air-Conditioning Engineers; www.ashrae.org.
32. ASME - ASME International; (American Society of Mechanical Engineers); www.asme.org.
33. ASSE - American Society of Safety Engineers (The); www.asse.org.
34. ASSE - American Society of Sanitary Engineering; www.asse-plumbing.org.
35. ASTM - ASTM International; www.astm.org.
36. ATIS - Alliance for Telecommunications Industry Solutions; www.atis.org.
37. AWEA - American Wind Energy Association; www.awea.org.
38. AWI - Architectural Woodwork Institute; www.awinet.org.
39. AWMAC - Architectural Woodwork Manufacturers Association of Canada; www.awmac.com.
40. AWPA - American Wood Protection Association; www.awpa.com.
41. AWS - American Welding Society; www.aws.org.
42. AWWA - American Water Works Association; www.awwa.org.
43. BHMA - Builders Hardware Manufacturers Association; www.buildershardware.com.
44. BIA - Brick Industry Association (The); www.gobrick.com.
45. BICSI - BICSI, Inc.; www.bicsi.org.
46. BIFMA - BIFMA International; (Business and Institutional Furniture Manufacturer's Association); www.bifma.org.
47. BISSC - Baking Industry Sanitation Standards Committee; www.bissc.org.
48. BWF - Badminton World Federation; (Formerly: International Badminton Federation); www.bissc.org.
49. CDA - Copper Development Association; www.copper.org.
50. CE - Conformite Europeenne; http://ec.europa.eu/growth/single-market/ce-marking/
51. CEA - Canadian Electricity Association; www.electricity.ca.
52. CEA - Consumer Electronics Association; www.ce.org.
53. CFFA - Chemical Fabrics and Film Association, Inc.; www.chemicalfabricsandfilm.com.
54. CFSEI - Cold-Formed Steel Engineers Institute; www.cfsei.org.
55. CGA - Compressed Gas Association; www.cganet.com.
56. CIMA - Cellulose Insulation Manufacturers Association; www.cellulose.org.
57. CISCA - Ceilings & Interior Systems Construction Association; www.cisca.org.
58. CISPI - Cast Iron Soil Pipe Institute; www.cispi.org.
59. CLFMI - Chain Link Fence Manufacturers Institute; www.chainlinkinfo.org.
60. CPA - Composite Panel Association; www.pbmdf.com.
61. CRI - Carpet and Rug Institute (The); www.carpet-rug.org.
62. CRRC - Cool Roof Rating Council; www.coolroofs.org.
63. CRSI - Concrete Reinforcing Steel Institute; www.crsi.org.
64. CSA - Canadian Standards Association; www.csa.ca.
65. CSA - CSA International; (Formerly: IAS - International Approval Services); www.csa-international.org.
66. CSI - Construction Specifications Institute (The); www.csinet.org.
67. CSSB - Cedar Shake & Shingle Bureau; www.cedarbureau.org.
68. CTI - Cooling Technology Institute; (Formerly: Cooling Tower Institute); www.cti.org.
69. CWC - Composite Wood Council; (See CPA).

70. DASMA - Door and Access Systems Manufacturers Association; www.dasma.com.
71. DHI - Door and Hardware Institute; www.dhi.org.
72. ECA - Electronic Components Association; (See ECIA).
73. ECAMA - Electronic Components Assemblies & Materials Association; (See ECIA).
74. ECIA - Electronic Components Industry Association; www.eciaonline.org.
75. EIA - Electronic Industries Alliance; (See TIA).
76. EIMA - EIFS Industry Members Association; www.eima.com.
77. EJMA - Expansion Joint Manufacturers Association, Inc.; www.ejma.org.
78. ESD - ESD Association; (Electrostatic Discharge Association); www.esda.org .
79. ESTA - Entertainment Services and Technology Association; (See PLASA).
80. ETL - Intertek (See Intertek); www.intertek.com.
81. EVO - Efficiency Valuation Organization; www.evo-world.org.
82. FCI - Fluid Controls Institute; www.fluidcontrolsinstitute.org.
83. FIBA - Federation Internationale de Basketball; (The International Basketball Federation); www.fiba.com.
84. FIVB - Federation Internationale de Volleyball; (The International Volleyball Federation); www.fivb.org.
85. FM Approvals - FM Approvals LLC; www.fmglobal.com.
86. FM Global - FM Global; (Formerly: FMG - FM Global); www.fmglobal.com.
87. FRSA - Florida Roofing, Sheet Metal & Air Conditioning Contractors Association, Inc.; www.floridaroof.com.
88. FSA - Fluid Sealing Association; www.fluidsealing.com.
89. FSC - Forest Stewardship Council U.S.; www.fscus.org.
90. GA - Gypsum Association; www.gypsum.org.
91. GANA - Glass Association of North America; www.glasswebsite.com.
92. GS - Green Seal; www.greenseal.org.
93. HI - Hydraulic Institute; www.pumps.org.
94. HI/GAMA - Hydronics Institute/Gas Appliance Manufacturers Association; (See AHRI).
95. HMMA - Hollow Metal Manufacturers Association; (See NAAMM).
96. HPVA - Hardwood Plywood & Veneer Association; www.hpva.org.
97. HPW - H. P. White Laboratory, Inc.; www.hpwhite.com.
98. IAPSC - International Association of Professional Security Consultants; www.iapsc.org.
99. IAS - International Accreditation Service; www.iasonline.org.
100. IAS - International Approval Services; (See CSA).
101. ICBO - International Conference of Building Officials; (See ICC).
102. ICC - International Code Council; www.iccsafe.org.
103. ICEA - Insulated Cable Engineers Association, Inc.; www.icea.net.
104. ICPA - International Cast Polymer Alliance; www.icpa-hq.org.
105. ICRI - International Concrete Repair Institute, Inc.; www.icri.org.
106. IEC - International Electrotechnical Commission; www.iec.ch.
107. IEEE - Institute of Electrical and Electronics Engineers, Inc. (The); www.ieee.org.
108. IES - Illuminating Engineering Society; (Formerly: Illuminating Engineering Society of North America); www.ies.org.
109. IESNA - Illuminating Engineering Society of North America; (See IES).
110. IEST - Institute of Environmental Sciences and Technology; www.iest.org.
111. IGMA - Insulating Glass Manufacturers Alliance; www.igmaonline.org.
112. IGSHPA - International Ground Source Heat Pump Association; www.igshpa.okstate.edu.
113. ILI - Indiana Limestone Institute of America, Inc.; www.iliai.com.
114. Intertek - Intertek Group; (Formerly: ETL SEMCO; Intertek Testing Service NA); www.intertek.com.
115. ISA - International Society of Automation (The); (Formerly: Instrumentation, Systems, and Automation Society); www.isa.org.
116. ISAS - Instrumentation, Systems, and Automation Society (The); (See ISA).
117. ISFA - International Surface Fabricators Association; (Formerly: International Solid Surface Fabricators Association); www.isfanow.org.
118. ISO - International Organization for Standardization; www.iso.org.
119. ISSFA - International Solid Surface Fabricators Association; (See ISFA).
120. ITU - International Telecommunication Union; www.itu.int/home.
121. KCMA - Kitchen Cabinet Manufacturers Association; www.kcma.org.
122. LMA - Laminating Materials Association; (See CPA).
123. LPI - Lightning Protection Institute; www.lightning.org.

124. MBMA - Metal Building Manufacturers Association; www.mbma.com.
125. MCA - Metal Construction Association; www.metalconstruction.org.
126. MFMA - Maple Flooring Manufacturers Association, Inc.; www.maplefloor.org.
127. MFMA - Metal Framing Manufacturers Association, Inc.; www.metalframingmfg.org.
128. MHIA - Material Handling Industry of America; www.mhia.org.
129. MIA - Marble Institute of America; www.marble-institute.com.
130. MMPA - Moulding & Millwork Producers Association; www.wmmpa.com.
131. MPI - Master Painters Institute; www.paintinfo.com.
132. MSS - Manufacturers Standardization Society of The Valve and Fittings Industry Inc.; www.mss-hq.org.
133. NAAMM - National Association of Architectural Metal Manufacturers; www.naamm.org.
134. NACE - NACE International; (National Association of Corrosion Engineers International); www.nace.org.
135. NADCA - National Air Duct Cleaners Association; www.nadca.com.
136. NAIMA - North American Insulation Manufacturers Association; www.naima.org.
137. NBGQA - National Building Granite Quarries Association, Inc.; www.nbgqa.com.
138. NBI - New Buildings Institute; www.newbuildings.org.
139. NCAA - National Collegiate Athletic Association (The); www.ncaa.org.
140. NCMA - National Concrete Masonry Association; www.ncma.org.
141. NEBB - National Environmental Balancing Bureau; www.nebb.org.
142. NECA - National Electrical Contractors Association; www.necanet.org.
143. NeLMA - Northeastern Lumber Manufacturers Association; www.nelma.org.
144. NEMA - National Electrical Manufacturers Association; www.nema.org.
145. NETA - InterNational Electrical Testing Association; www.netaworld.org.
146. NFHS - National Federation of State High School Associations; www.nfhs.org.
147. NFPA - National Fire Protection Association; www.nfpa.org.
148. NFPA - NFPA International; (See NFPA).
149. NFRC - National Fenestration Rating Council; www.nfrc.org.
150. NHLA - National Hardwood Lumber Association; www.nhla.com.
151. NLGA - National Lumber Grades Authority; www.nlga.org.
152. NOFMA - National Oak Flooring Manufacturers Association; (See NWFA).
153. NOMMA - National Ornamental & Miscellaneous Metals Association; www.nomma.org.
154. NRCA - National Roofing Contractors Association; www.nrca.net.
155. NRMCA - National Ready Mixed Concrete Association; www.nrmca.org.
156. NSF - NSF International; www.nsf.org.
157. NSPE - National Society of Professional Engineers; www.nspe.org.
158. NSSGA - National Stone, Sand & Gravel Association; www.nssga.org.
159. NTMA - National Terrazzo & Mosaic Association, Inc. (The); www.ntma.com.
160. NWFA - National Wood Flooring Association; www.nwfa.org.
161. PCI - Precast/Prestressed Concrete Institute; www.pci.org.
162. PDI - Plumbing & Drainage Institute; www.pdionline.org.
163. PLASA - PLASA; (Formerly: ESTA - Entertainment Services and Technology Association); http://www.plasa.org.
164. RCSC - Research Council on Structural Connections; www.boltcouncil.org.
165. RFCI - Resilient Floor Covering Institute; www.rfci.com.
166. RIS - Redwood Inspection Service; www.redwoodinspection.com.
167. SAE - SAE International; www.sae.org.
168. SCTE - Society of Cable Telecommunications Engineers; www.scte.org.
169. SDI - Steel Deck Institute; www.sdi.org.
170. SDI - Steel Door Institute; www.steeldoor.org.
171. SEFA - Scientific Equipment and Furniture Association (The); www.sefalabs.com.
172. SEI/ASCE - Structural Engineering Institute/American Society of Civil Engineers; (See ASCE).
173. SIA - Security Industry Association; www.siaonline.org.
174. SJI - Steel Joist Institute; www.steeljoist.org.
175. SMA - Screen Manufacturers Association; www.smainfo.org.
176. SMACNA - Sheet Metal and Air Conditioning Contractors' National Association; www.smacna.org.
177. SMPTE - Society of Motion Picture and Television Engineers; www.smpte.org.
178. SPFA - Spray Polyurethane Foam Alliance; www.sprayfoam.org.
179. SPIB - Southern Pine Inspection Bureau; www.spib.org.
180. SPRI - Single Ply Roofing Industry; www.spri.org.

181. SRCC - Solar Rating & Certification Corporation; www.solar-rating.org.
182. SSINA - Specialty Steel Industry of North America; www.ssina.com.
183. SSPC - SSPC: The Society for Protective Coatings; www.sspc.org.
184. STI - Steel Tank Institute; www.steeltank.com.
185. SWI - Steel Window Institute; www.steelwindows.com.
186. SWPA - Submersible Wastewater Pump Association; www.swpa.org.
187. TCA - Tilt-Up Concrete Association; www.tilt-up.org.
188. TCNA - Tile Council of North America, Inc.; www.tileusa.com.
189. TEMA - Tubular Exchanger Manufacturers Association, Inc.; www.tema.org.
190. TIA - Telecommunications Industry Association (The); (Formerly: TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance); www.tiaonline.org.
191. TIA/EIA - Telecommunications Industry Association/Electronic Industries Alliance; (See TIA).
192. TMS - The Masonry Society; www.masonrysociety.org.
193. TPI - Truss Plate Institute; www.tpinst.org.
194. TPI - Turfgrass Producers International; www.turfgrasssod.org.
195. TRI - Tile Roofing Institute; www.tileroofing.org.
196. UL - Underwriters Laboratories Inc.; http://www.ul.com.
197. UNI - Uni-Bell PVC Pipe Association; www.uni-bell.org.
198. USAV - USA Volleyball; www.usavolleyball.org.
199. USGBC - U.S. Green Building Council; www.usgbc.org.
200. USITT - United States Institute for Theatre Technology, Inc.; www.usitt.org.
201. WASTEC - Waste Equipment Technology Association; www.wastec.org.
202. WCLIB - West Coast Lumber Inspection Bureau; www.wclib.org.
203. WCMA - Window Covering Manufacturers Association; www.wcmanet.org.
204. WDMA - Window & Door Manufacturers Association; www.wdma.com.
205. WI - Woodwork Institute; www.wicnet.org.
206. WSRCA - Western States Roofing Contractors Association; www.wsrca.com.
207. WWPA - Western Wood Products Association; www.wwpa.org.

C. Code Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is believed to be accurate as of the date of the Contract Documents.

1. DIN - Deutsches Institut fur Normung e.V.; www.din.de.
2. IAPMO - International Association of Plumbing and Mechanical Officials; www.iapmo.org.
3. ICC - International Code Council; www.iccsafe.org.
4. ICC-ES - ICC Evaluation Service, LLC; www.icc-es.org.

D. Federal Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. Information is subject to change and is up to date as of the date of the Contract Documents.

1. COE - Army Corps of Engineers; www.usace.army.mil.
2. CPSC - Consumer Product Safety Commission; www.cpsc.gov.
3. DOC - Department of Commerce; National Institute of Standards and Technology; www.nist.gov.
4. DOD - Department of Defense; www.quicksearch.dla.mil.
5. DOE - Department of Energy; www.energy.gov.
6. EPA - Environmental Protection Agency; www.epa.gov.
7. FAA - Federal Aviation Administration; www.faa.gov.
8. FG - Federal Government Publications; www.gpo.gov/fdsys.
9. GSA - General Services Administration; www.gsa.gov.
10. HUD - Department of Housing and Urban Development; www.hud.gov.
11. LBL - Lawrence Berkeley National Laboratory; Environmental Energy Technologies Division; www.eetd.lbl.gov.
12. OSHA - Occupational Safety & Health Administration; www.osha.gov.
13. SD - Department of State; www.state.gov.
14. TRB - Transportation Research Board; National Cooperative Highway Research Program; The National Academies; www.trb.org.

15. USDA - Department of Agriculture; Agriculture Research Service; U.S. Salinity Laboratory; www.ars.usda.gov.
16. USDA - Department of Agriculture; Rural Utilities Service; www.usda.gov.
17. USDOJ - Department of Justice; Office of Justice Programs; National Institute of Justice; www.ojp.usdoj.gov.
18. USP - U.S. Pharmacopeial Convention; www.usp.org.
19. USPS - United States Postal Service; www.usps.com.

E. Standards and Regulations: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the standards and regulations in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CFR - Code of Federal Regulations; Available from Government Printing Office; www.gpo.gov/fdsys.
2. DOD - Department of Defense; Military Specifications and Standards; Available from DLA Document Services; www.quicksearch.dla.mil.
3. DSCC - Defense Supply Center Columbus; (See FS).
4. FED-STD - Federal Standard; (See FS).
5. FS - Federal Specification; Available from DLA Document Services; www.quicksearch.dla.mil.
    a. Available from Defense Standardization Program; www.dsp.dla.mil.
    b. Available from General Services Administration; www.gsa.gov.
    c. Available from National Institute of Building Sciences/Whole Building Design Guide; www.wbdg.org/ccb.
6. MILSPEC - Military Specification and Standards; (See DOD).
7. USAB - United States Access Board; www.access-board.gov.
8. USATBCB - U.S. Architectural & Transportation Barriers Compliance Board; (See USAB).

F. State Government Agencies: Where abbreviations and acronyms are used in Specifications or other Contract Documents, they shall mean the recognized name of the entities in the following list. This information is subject to change and is believed to be accurate as of the date of the Contract Documents.

1. CBHF; State of California; Department of Consumer Affairs; Bureau of Electronic and Appliance Repair, Home Furnishings and Thermal Insulation; www.bearhfti.ca.gov.
2. CCR; California Code of Regulations; Office of Administrative Law; California Title 24 Energy Code; www.calregs.com.
3. CDHS; California Department of Health Services; (See CDPH).
4. CDPH; California Department of Public Health; Indoor Air Quality Program; www.cal-iaq.org.
5. CPUC; California Public Utilities Commission; www.cpuc.ca.gov.
6. SCAQMD; South Coast Air Quality Management District; www.aqmd.gov.
7. TFS; Texas A&M Forest Service; Sustainable Forestry and Economic Development; www.txforestservice.tamu.edu.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 015639 - TEMPORARY TREE AND PLANT PROTECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section includes general protection and pruning of existing trees and plants that are affected by execution of the Work, whether temporary or permanent construction.

1.3 DEFINITIONS

A. Caliper: Diameter of a trunk measured by a diameter tape at a height 6 inches above the ground for trees up to and including 4-inch size at this height and as measured at a height of 12 inches above the ground for trees larger than 4-inch size.

B. Caliper (DBH): Diameter breast height; diameter of a trunk as measured by a diameter tape at a height 54 inches above the ground line for trees with caliper of 8 inches or greater as measured at a height of 12 inches above the ground].

C. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

PART 2 - PRODUCTS

PART 3 - EXECUTION

3.1 EXAMINATION

A. Erosion and Sedimentation Control: Examine the site to verify that temporary erosion- and sedimentation-control measures are in place. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

B. Prepare written report, endorsed by arborist, listing conditions detrimental to tree and plant protection.

3.2 PREPARATION

A. Locate and clearly identify trees, shrubs, and other vegetation to remain with tape.

B. Protect tree root systems from damage caused by runoff or spillage of noxious materials while mixing, placing, or storing construction materials. Protect root systems from ponding, eroding, or excessive wetting caused by dewatering operations.

C. Place tree protection fencing outside the dripline of the tree

D. Tree-Protection Zones: Mulch areas inside tree-protection zones and other areas indicated. Do not exceed indicated thickness of mulch.

1. Apply 2-inch uniform thickness of organic mulch unless otherwise indicated. Do not place mulch within 6 inches of tree trunks.

3.3 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove excess excavated material, displaced trees, trash, and debris and legally dispose of them off Owner's property.

END OF SECTION

SECTION 033000 – CAST-IN-PLACE CONCRETE

PART – 1 GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section specifies requirements for concrete cast-in-place on the site.

B. The work includes cast-in-place concrete pavement, walkways bases, unit paver bases, foundations, structures, and thrust blocks.

1.3 REFERENCE STANDARDS

A. References herein are made in accordance with the following abbreviations and all work under this Section shall conform to the latest editions as applicable.

1. American Concrete Institute (ACI):

301	Specifications for Structural Concrete
305R	Hot Weather Concreting
306R	Cold Weather Concreting
325.9R	Guide for Construction of Concrete Pavements and Concrete Bases

2. ASTM International (ASTM):

A82	Standard Specification for Steel Wire, Plain, for Concrete Reinforcement
A1064	Standard Specification for Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
A615	Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
C31	Standard Practice for Making and Curing Concrete Test Specimens in the Field
C33	Standard Specification for Concrete Aggregates
C94	Standard Specification for Ready-Mixed Concrete
C143	Standard Test Method for Slump of Hydraulic-Cement Concrete
C150	Standard Specification for Portland Cement
C171	Standard Specification for Sheet Materials for Curing Concrete
C231	Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method
C260	Standard Specification for Air-Entraining Admixtures for Concrete

C309	Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete
C494	Standard Specification for Chemical Admixtures for Concrete
C1116	Standard Specification for Fiber-Reinforced Concrete

3. Concrete Reinforcing Steel Institute (CRSI):

Manual	Manual of Standard Practice.

4. United States Department of Justice - Americans with Disabilities Act (ADA):

ADA	ADA Accessibility Guidelines for Buildings and Facilities; 28 CFR Part 36.

1.4 QUALITY ASSURANCE

A. Work, materials, and color of the wheelchair ramp paving shall conform to applicable sections of Americans with Disabilities Act (ADA) and State Standards, whichever is more stringent.

B. Dimensions, locations, and details of equipment pads, anchors, supports, and similar features shown on the Drawings are approximate. Manufacturer's approved shop Drawings of equipment to be supported, anchored, or contained thereby shall be consulted for exact location, size, and details.

1.5 SUBMITTALS

A. Submit description of methods and sequence of placement for each type of specially-finished concrete, including description of methods and sequence of placement.

B. Submit manufacturer’s product data for the following:

1. Form release agent.
2. Concrete coloring additive.
3. Preformed joint filler.
4. Concrete reinforcement specification data from manufacturer.
5. Stamp and imprinting tools, manufacturer’s literature.
6. Manufacturer’s literature for protective coating for sidewalks.
7. Detectable Warning including manufacturer’s certification that product complies with ADA

1.6 **TESTING**

A. The Owner shall employ a qualified independent testing laboratory to inspect and test concrete paving and other cast-in-place concrete work.

B. When requested, Contractor shall prepare test specimens in accordance with ASTM C31, standard cylinder size 4-inch x 8 inch.

C. Testing of materials and installed work may occur at any time during progress of the work. Rejected materials and installed work shall be removed and replaced.

PART 2 - PRODUCTS

2.1 STEEL REINFORCEMENT

A. Steel reinforcing bars shall conform to ASTM A615, Grade 60, deformed.

1. Bars employed as dowels shall be hot-rolled plain rounds.

B. Steel Wire: ASTM A82, plain cold drawn steel.

C. Welded Wire Reinforcement: Welded wire reinforcement shall conform to the applicable requirements of ASTM A1064. Fabric reinforcement shall be furnished in flat sheets. Fabric reinforcement in rolls will not be permitted.

D. Supports for Reinforcement: Bolsters, chairs, and other devices for spacing, supporting, and fastening reinforcing bars, and welded wire fabric in place shall be wire bar-type supports complying with CRSI Manual.

1. For slabs-on-grade, use supports with sand plates or horizontal runners where base material will not support chair legs.

2. For exposed-to-view concrete surfaces where legs of supports are in contact with forms, provide supports with legs that are protected by plastic (CRSI Class 1).

2.2 PORTLAND CEMENT CONCRETE

A. Portland cement concrete shall conform to the following:

1. Maximum water-cement ratio shall be 0.45 conforming to ACI 316R.

2. Concrete shall be air-entrained type conforming to ASTM C94. Air content by volume shall be 6 percent + 1.5 percent, tested in accordance with ASTM C260.

3. Slump of concrete shall not be less than 3 inches nor greater than 4 inches, determined in accordance with ASTM C143.

4. Cement for concrete shall be a Portland cement conforming to ASTM C150, Type I or II. Only one color of cement, all of the same manufacturer, shall be used for the work.

5. Fine and coarse aggregates for concrete shall conform to ASTM C33.

6. Concrete shall contain a water reducing agent to minimize cement and water content of the concrete mix at the specified slump. Water reducing agent shall conform to ASTM C494, Type A.

7. Concrete shall contain no calcium chloride or admixtures containing calcium chloride. No admixtures other than those specified shall be used in the concrete without the specific written permission of the Engineer.

8. If MDOT 3500 is preferred, provide above information for comparison.

2.3 CONCRETE AGGREGATES

A. Fine Aggregates: Fine aggregates shall conform to ASTM C33, part 6.

B. Coarse Aggregates: Coarse aggregates shall conform to ASTM C33, Parts 9 through 11 and Tables 2 and 3, with the following Class designations:

1. Class 1S: For footings and foundations not exposed to the weather.

2. Class 4S: For pavements, driveways, curbs, walkways, sidewalks, and retaining walls that are exposed to the weather.

3. Class 1N: For pavements, driveways, curbs, walkways, sidewalks, and retaining walls that are not exposed to the weather.

2.4 CURING MATERIALS FOR UNCOLORED CONCRETE

A. Curing shall be accomplished by the following methods.

1. Moist curing with burlap covering.

2. Curing paper, nonstaining, fiber reinforced laminated Kraft bituminous product conforming to ASTM C171. Four mil polyethylene sheeting may be substituted for curing paper.

3. Curing compound, a resin-base, white pigmented compound conforming to ASTM C309, Type 2.

2.5 EXPANSION JOINTS

A. Expansion joint filler shall be preformed, nonbituminous type conforming to ASTM D1752, Type II, similar to FIBRE EXPANSION JOINT, manufactured by W.R. Meadows, Inc., Elgin, IL 60120, or approved equivalent.

1. Premolded filler shall be one piece for the full depth and width of the joint.

B. Smooth dowel shall be hot rolled plain steel dowel bonded at one end and operating in smooth close fitting sleeve (of same material) at the other end.

2.6 CONTROL JOINTS

A. Joint filler to be polyethylene foam with manufacturer’s recommended sealant.

2.7 FORMS

A. Cylindrical Forms: Sonotube Fibre Forms, wax-impregnated strippable forms manufactured by Sonoco Products Company, General Products Division, ABS or PVC plastic reusable forms, or approved equivalent.

B. Forms for Exposed Finish: Plywood, metal, metal-framed plywood faced, or other acceptable panel materials. Plywood shall conform to U.S. Product Standard PS-1 and APA Graded B-B (Concrete Form) Class I Exterior Grade plywood or B-B or A-C Class I high density overlay concrete form plywood. Formwork materials shall produce smooth, continuous, straight and level surfaces.

C. Forms for Unexposed Finish: Plywood, lumber, or metal, with lumber dressed on at least two edges and one side.

D. Form Ties: Prefabricated, adjustable length galvanized steel snap-off ties, with brackets, cones, corner-locks, and other accessories as necessary.

E. Form Release Agent: Commercial formulation compounds that will not bond with, stain or adversely affect concrete.

F. Imprinting Tools: Mats and tools used to stamp projecting texture and patterns onto plastic concrete surfaces and which shall be specifically designed with rigid back supports to enable a clean, sharp, stamping image. Stamps for curb ramps shall be designed to meet ADA detectable warning requirements.

2.8 FIBROUS REINFORCING

A. Material shall meet ASTM C1116 and shall be as manufactured by NyCon Incorporated, or approved equal.

B. Mix fibrous reinforcement in accordance with manufacturer’s instructions including product data and technical bulletins.

1. Add fibrous reinforcement to concrete mix at the concrete batch facility.

2. Adding and mixing fibrous reinforcement at the job site will not be allowed.

C. Provide job mix design data to show concrete mix will attain specified strength requirements.

PART 3 - EXECUTION

3.1 PREPARATION OF SUBGRADE

A. The subgrade of areas to be paved shall be graded and compacted as specified in Section 321100, “BASE COURSES (PAVEMENT)”.

B. Excavation required in pavement subgrade shall be completed before fine grading and final compaction of subgrade are performed. Where excavation must be performed in completed subgrade, subbase, base, or pavement, subsequent backfill and compaction shall be performed as required by the Engineer and as specified in Section 312000, “EARTH MOVING”.

C. Materials shall not be stored or stockpiled on subgrade.

D. Prepared subgrade will be inspected by the Engineer. Subgrade shall be approved for installation of the gravel base course. Disturbance to subgrade caused by inspection procedures shall be repaired.

3.2 BASE COURSE

A. Base course for concrete paving shall be pavement subbase course or gravel base materials specified in Section 321100, “BASE COURSES (PAVEMENT)“ as shown on the Drawings.

B. Width of base course shall extend beyond edge of the proposed pavement as shown on the Drawings.

C. Material shall be placed in lifts no more than 6 inches thick, compacted measure. Each lift shall be separately compacted to specified density.

1. Material shall be placed adjacent to wall, manhole, catch basin, and other structures only after they have been set to required grade.

2. Rolling shall begin at sides and progress to center of crowned areas, and shall begin on low side and progress toward high side of sloped areas. Rolling shall continue until material does not creep or wave ahead of roller wheels.

3. Surface irregularities which exceed 1/2 inch as measured by means of a 10 foot long straightedge shall be regraded and recompacted.

D. Base course shall be compacted at optimum moisture content to not less than 95 percent of maximum density as determined by ASTM D1557.

E. The base course shall be kept clean and uncontaminated. Less select materials shall not be permitted to become mixed with the base course material.

3.3 STEEL REINFORCEMENT

A. Before being placed in position, reinforcing steel shall be thoroughly cleaned of loose mill and rust scale, dirt, ice, and other foreign material which may reduce the bond between the concrete and reinforcing. Where there is delay in placing concrete after reinforcement is in place, bars shall be re-inspected and cleaned when required.

B. Any bar showing cracks after bending shall be discarded.

C. Unless otherwise shown on the Drawings, reinforcing shall extend within 2 inches of formwork and expansion joints. Reinforcing shall continue through control joints. Adjacent sheets of fabric reinforcing shall lap 6 inches.

D. After forms have been coated with form release agent, but before concrete is placed, reinforcing steel shall be securely wired in the required position and shall be maintained in that position until concrete is placed

and compacted. Chair bars and supports shall be installed in a number and arrangement approved by the Engineer.

3.4 FORMS

A. General: Design, erect, support, brace, and maintain formwork to support vertical, lateral, static, and dynamic loads that might be applied until concrete structure can support such loads. Construct formwork so concrete members and structures are of correct size, shape, alignment, elevation, and position. Maintain formwork construction tolerances and surface irregularities complying with the following ACI 347 limits.

1. Provide Class A tolerances for concrete surfaces exposed to view.

2. Provide Class C tolerances for other concrete surfaces.

B. Construct forms to provide for openings, offsets, sinkages, keyways, recesses, moldings, chamfers, blocking, screeds, bulkheads, anchorages, and inserts, and other features required for the work. Use selected materials to obtain required finishes. Solidly butt joints and provide back-up at joints to prevent cement paste from leaking.

C. Fabricate forms for easy removal without hammering or prying against concrete surfaces. Kerf wood inserts for forming keyways, reglets, recesses, and other features for easy removal.

D. Chamfer exposed corners and edges, using wood, metal, PVC, or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.

E. Thoroughly clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, or other debris just before placing concrete. Re-tighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

3.5 INSTALLING EMBEDDED ITEMS

A. General: Set and build into formwork the anchorage devices and other embedded items required for 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.

B. Forms for Slabs: Set edge forms, bulkheads, and intermediate screed strips for slabs to achieve required elevations and contours in finished surfaces. Provide and secure units to support screed strips using strike-off templates or compacting-type screeds.

3.6 PREPARING FORM SURFACES

A. Coat contact surfaces of forms with an approved, nonresidual, low-VOC form-coating compound before placing reinforcement.

3.7 CONCRETE PLACING

A. Equipment, methods of mixing and placing, and precautions to be observed as to weather, and condition of base shall meet the requirements of ACI 316R.

B. The Engineer shall be notified of scheduled concrete placement sufficiently in advance of start of operation to allow preliminary inspection of the work, including subgrade, forms, and reinforcing steel.

C. Work shall not be performed during rainy weather or when temperature is less than 40°F. (4.4°C.).

D. Adjacent work shall be protected from stain and damage. Damaged and stained areas shall be replaced or repaired to equal their original conditions.

E. Existing concrete, earth, and other water-permeable material against which new concrete is to be placed shall be thoroughly damp when concrete is placed. There shall be no free water on surface.

F. Concrete which has set or partially set, before placing shall not be used. Retempering of concrete will not be permitted.

G. Concrete shall be thoroughly vibrated, or otherwise consolidated to secure a solid and homogeneous mass, thoroughly worked around reinforcement and into corners of forms.

H. When joining fresh concrete to concrete which has attained full set, latter shall be cleaned of foreign matter, and mortar laitance shall be removed by chipping and washing. Clean, roughened base surface shall be saturated with water, but shall have no free water on surface. A coat of 1:1 cement-sand grout, approximately 1/8 inch thick, shall be well scrubbed into the thoroughly dampened concrete base. New concrete shall be placed immediately, before grout has dried or set.

3.8 FINISHING

A. Concrete surfaces shall be screeded and finished true to line and grade, and free of hollows and bumps. Surface shall be dense and smooth.

1. Finished concrete surface for concrete subbases shall be wood floated to a slightly rough surface. Surface shall not deviate more than 1/4 inch in 10 feet.

2. Finished concrete surfaces shall be wood floated and steel troweled, or broom finished, to a uniform surface. Surface shall not deviate more than 1/8 inch in 10 feet.

B. Horizontal surfaces of concrete surfaces which will be exposed shall be given a light broomed finish, with direction of grooves in concrete surface perpendicular to length of concrete band, slab, or pad. After concrete has set sufficiently to prevent coarse aggregate from being torn from surface, but before it has completely set, brooms shall be drawn across the surface to produce a pattern of small parallel grooves. Broomed surface shall be uniform, with no smooth, unduly rough or porous spots, or other irregularities. Coarse aggregate shall not be dislodged by brooming operation.

C. Vertical surfaces of concrete which will be exposed; refer to architectural concrete spec 033300 requirements

D. Immediately following finishing operations, arises at edges and both sides of expansion joints shall be rounded to a 1/4- inch radius. Control joints to be tooled shall be scored into slab surface with scoring tool. Adjacent edges of control joint shall at same time be finished to a 1/4-inch radius.

E. Where finishing is performed before end of curing period, concrete shall not be permitted to dry out, and shall be kept continuously moist from time of placing until end of curing period, or until curing membrane is applied.

F. Sidewalks, walkways, accessible routes, and ramps shall be constructed and finished in accordance with the Americans with Disabilities Act (ADA) and state and local requirements. Provide protective coating in accordance with manufacturer’s recommendations.

3.9 CURING

A. Concrete shall be kept continuously damp from time of placement until end of specified curing period or cured by other methods. Water shall not be added to surface during floating and troweling operations, and not earlier than 24 hours after concrete placement. Between finishing operations, surface shall be protected from rapid drying by a covering of waterproofing paper. Surface shall be damp when the covering is placed over it, and shall be kept damp by means of a fog spray of water, applied as often as necessary to prevent drying, but not sooner than 24 hours after placing concrete. None of the water so applied shall be troweled or floated into surface.

B. Concrete surfaces shall be cured by completely covering with curing paper or application of a curing compound.

1. Concrete cured using waterproof paper shall be completely covered with paper with seams lapped and sealed with tape. Concrete surface shall not be allowed to become moistened between 24 and 36 hours after placing concrete. During curing period, concrete surface shall be checked frequently, and sprayed with water as often as necessary to prevent drying, but not earlier than 24 hours after placing concrete.

2. Concrete cured with a curing compound shall have the compound applied at a rate of 200 square feet per gallon, in two applications perpendicular to each other.

3. Curing period shall be seven (7) days minimum.

C. Only if additional protection is absolutely required, the surface should remain uncovered after the seven (7) day period for at least four (4) days, after which time new and unwrinkled non-staining reinforced waterproof Kraft curing paper may be used.

3.10 EXPANSION JOINTS

A. Expansion joints shall be 1/2 inch wide and located to provide a maximum spacing of 50 feet between joints or where shown on the Drawings. Expansion joints shall be troweled in the concrete to required width with preformed joint filler in place. Joint filler shall extend the full depth of the slab and full length of the expansion joint.

1. For concrete walks, pavements, and pads, depth of joint filler shall be placed to form a 1-1/4 inch deep recess for sealant and backer rod below finished concrete surface.

2. Use of multiple pieces to make up required depth and width of joint will not be permitted.

3.11 CONSTRUCTION JOINTS

A. Construction joints shall be placed whenever placing of concrete is suspended for more than 30 minutes.

1. Butt joint with dowels or use a thickened edge joint if construction joints occur at control joint locations.

2. Keyed joints with tie-bars shall be used if the joint occurs at any other location.

3.12 CONTROL JOINTS

A. Control joints shall be tooled into the concrete slab, with 3-inch wide border and troweled edges, in pattern as shown on the Drawings. If no pattern is shown, then pattern shall result in square shape with a maximum area of 36 square feet. Joints shall be made after concrete is finished and when the surface is stiff enough to support the weight of workmen without damage to the slab, but before slab has achieved its final set.

B. Scoring shall cut into slab surface at least 1 inch, but in no case not less than 25 percent of slab depth.

3.13 COLD WEATHER CONCRETING

A. Materials for concrete shall be heated when concrete is mixed, placed, or cured when the mean daily temperature is below 40°F. or is expected to fall to below 40°F. within 72 hours. The concrete, after placing, shall be protected by covering, heat, or both.

B. Details of handling and protecting of concrete during freezing weather shall be subject to the approval and direction of the Engineer. Procedures shall be in accordance with provisions of ACI 306R.

3.14 HOT WEATHER CONCRETING

A. Concrete just placed shall be protected from the direct rays of the sun and the forms and reinforcement just prior to placing shall be sprinkled with cold water. Every effort shall be made to minimize delays which will result in excessive mixing of the concrete after its arrival on-site.

B. During periods of excessively hot weather (95°F., or above), ingredients in the concrete shall be cooled with cold mixing water to maintain the temperature of the concrete at permissible levels in accordance with the provisions of ACI 305R. Any concrete with a temperature above 95°F., when ready for placement, will be rejected.

C. Temperature records shall be maintained throughout the period of hot weather giving air temperature, general weather conditions (calm, windy, clear, cloudy, etc.) and relative humidity. Records shall include checks on temperature of concrete when delivered to Project site and after placing in forms. Data should be correlated with the progress of the work so that conditions surrounding the construction of any part of the structure can be ascertained.

3.15 PROTECTION OF CONCRETE SURFACES

A. Concrete surfaces shall be protected from traffic or damage until surfaces have hardened sufficiently.

END OF SECTION

SECTION 079200 - JOINT SEALANTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Silicone joint sealants.

1.3 PRECONSTRUCTION TESTING

A. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing, not older than 24 months, of sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted; and written recommendations for primers and substrate preparation needed for adhesion.

1.4 ACTION SUBMITTALS

A. Product Data: For each joint-sealant product indicated.

B. Samples for Initial Selection: Manufacturer's color charts consisting of strips of cured sealants showing the full range of colors available for each product exposed to view.

C. Samples for Verification: For each kind and color of joint sealant required, provide Samples with joint sealants in 1/2-inch- wide joints formed between two 6-inch- long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.

D. Joint-Sealant Schedule: Include the following information:
1. Joint-sealant application, joint location, and designation.
2. Joint-sealant manufacturer and product name.
3. Joint-sealant formulation.
4. Joint-sealant color.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Source Limitations: Obtain each kind of joint sealant from single source from single manufacturer.

C. Provide the following upon request:

1. Qualification Data: For qualified Installer and testing agency.

2. Product Certificates: For each kind of joint sealant and accessory, from manufacturer.
3. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, indicating that sealants comply with requirements.

D. Mockups: Install sealant in mockups of assemblies specified in other Sections that are indicated to receive joint sealants specified in this Section. Use materials and installation methods specified in this Section.

1.6 PROJECT CONDITIONS

A. Do not proceed with installation of joint sealants under the following conditions:
1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F.
2. When joint substrates are wet.
3. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
4. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

PART 2 - PRODUCTS

2.1 MATERIALS, GENERAL

A. Compatibility: Provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer, based on testing and field experience.

B. Liquid-Applied Joint Sealants: Comply with ASTM C 920 and other requirements indicated for each liquid-applied joint sealant specified, including those referencing ASTM C 920 classifications for type, grade, class, and uses related to exposure and joint substrates.
1. Suitability for Immersion in Liquids. Where sealants are indicated for Use I for joints that will be continuously immersed in liquids, provide products that have undergone testing according to ASTM C 1247. Liquid used for testing sealants is deionized water, unless otherwise indicated.

C. Stain-Test-Response Characteristics: Where sealants are specified to be nonstaining to porous substrates, provide products that have undergone testing according to ASTM C 1248 and have not stained porous joint substrates indicated for Project.

D. Suitability for Contact with Food: Where sealants are indicated for joints that will come in repeated contact with food, provide products that comply with 21 CFR 177.2600.

E. Colors of Exposed Joint Sealants: As selected by Architect from manufacturer's full range.

2.2 SILICONE JOINT SEALANTS

A. Sealant JS-S1 - Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant: ASTM C 920, Type S, Grade NS, Class 50, for Use NT.

1. Products: Subject to compliance with requirements, provide products from the following table that has a validation certificate from the Sealant, Waterproofing and Restoration Institute (SWRI).

2.3 JOINT SEALANT BACKING

A. General: Provide sealant backings of material that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.

B. Cylindrical Sealant Backings: ASTM C 1330, Type C (closed-cell material with a surface skin), and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance.

C. Bond-Breaker Tape: Polyethylene tape or other plastic tape recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint. Provide self-adhesive tape where applicable.

2.4 MISCELLANEOUS MATERIALS

A. Primer: Material recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

B. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants to joint substrates.

C. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.

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

3.2 PREPARATION

A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions and the following requirements:
   1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
   2. Remove laitance and form-release agents from concrete.

B. Joint Priming: Prime joint substrates where recommended by joint-sealant manufacturer or as indicated by preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

C. Masking Tape: Use masking tape where required to prevent contact of sealant or primer with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.

3.3 INSTALLATION OF JOINT SEALANTS

A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.

B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.

C. Install sealant backings of kind indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
1. Do not leave gaps between ends of sealant backings.
2. Do not stretch, twist, puncture, or tear sealant backings.
3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.

D. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and backs of joints.

E. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
1. Place sealants so they directly contact and fully wet joint substrates.
2. Completely fill recesses in each joint configuration.
3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.

F. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified in subparagraphs below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
1. Remove excess sealant from surfaces adjacent to joints.
2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces. Water-based tooling agents are unacceptable.
3. Provide concave joint profile per Figure 8A in ASTM C 1193, unless otherwise indicated.
4. Provide flush joint profile where indicated per Figure 8B in ASTM C 1193.
5. Provide recessed joint configuration of recess depth and at locations indicated per Figure 8C in ASTM C 1193.
    a. Use masking tape to protect surfaces adjacent to recessed tooled joints.

G. Installation of Preformed Silicone-Sealant System: Comply with the following requirements:

1. Apply masking tape to each side of joint, outside of area to be covered by sealant system.
2. Apply silicone sealant to each side of joint to produce a bead of size complying with preformed silicone-sealant system manufacturer's written instructions and covering a bonding area of not less than 3/8 inch. Hold edge of sealant bead 1/4 inch inside masking tape.
3. Within 10 minutes of sealant application, press silicone extrusion into sealant to wet extrusion and substrate. Use a roller to apply consistent pressure and ensure uniform contact between sealant and both extrusion and substrate.
4. Complete installation of sealant system in horizontal joints before installing in vertical joints. Lap vertical joints over horizontal joints. At ends of joints, cut silicone extrusion with a razor knife.

3.4 FIELD QUALITY CONTROL

A. Field-Adhesion Inspection: Field inspect joint-sealant adhesion to joint substrates as follows:

1. Inspect joints and report on the following:
   a. Whether sealants filled joint cavities and are free of voids.
   b. Whether sealant dimensions and configurations comply with specified requirements.
   c. Whether sealants in joints connected to pulled-out portion failed to adhere to joint substrates or tore cohesively. Include data on pull distance used to test each kind of product and joint substrate. Compare these results to determine if adhesion passes sealant manufacturer's field-adhesion hand-pull test criteria.

3.5 CLEANING

A. Clean off excess sealant or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

3.6 PROTECTION

A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants 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 sealants immediately so installations with repaired areas are indistinguishable from original work.

3.7 JOINT-SEALANT SCHEDULE

A. Joint-Sealant Application: Exterior joints in horizontal traffic surfaces; Type JS-S1.

1. Joint Locations:

   a. Expansion joints in cast-in-place concrete pavement and sidewalks.

2. Joint-Sealant Color: As selected by Architect from manufacturer's full range of colors.

END OF SECTION

SECTION 129300 - SITE FURNISHINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

PART 2 - PRODUCTS

2.1 PRODUCTS

A. Pickleball Net Posts

Pickleball Central Heavy Duty Pickleball Net Posts, black, Item # HT102-0001, 54” length, 2-7/8” outside diameter post, Crank system with removable crank

Pickleball Central – www.pickleballcentral.com

Or approved equal

B. Pickleball Nets

National Sports Products PN-30 Douglas Premier Pickleball Nets and Center Strap

21’-9” length, shorter height of 31” Netting 1-3/4” square mesh braided 3.0mm polyethylene

Douglas Sports Group - nationalsportsproducts.com

Or approved equal

C. Pickleball Net Sleeves

PVC Sleeves – use with Pickleball Central Heavy Duty Posts 2-7/8” inside diameter, sleeve cap

Pickleball Central – www.pickleballcentral.com

Or approved equal

D. Bench

DuMor 166-60I 6' Backless Cast Bench, IPE Seat, Black

Surface mounted with manufacturer hardware

DuMor – www.dumor.com

Or approved equal

E. Sport Bench

Beacon Athletics Aluminum Player Benches (unpainted), 15' Backless Bench, In-Ground

Beacon Athletics – www.beaconathletics.com

Or approved equal

F. Base Set

Beacon Athletics Pro-Style Base Set, 36 lbs, ground anchors & base plugs included

Beacon Athletics – www.beaconathletics.com

Or approved equal

G. Pitching Rubber

Beacon Athletics Bulldog 4" Adult Pitching Rubber

Beacon Athletics – www.beaconathletics.com

Or approved equal

Dual Stanchion Pitcher's Rubber

H. Home Plate

Beacon Athletics Home Plate with Anchor and Stanchion, anchor & base plug included

Beacon Athletics – www.beaconathletics.com

Or approved equal

I. Backstop Overhang Netting

Sportsfield Specialties BSSN36 #36 Knotted Nylon Netting – 1-3/4" Square Mesh

Sportsfield Specialties – www.sportsfield.com

Or approved equal

J. 3/8" or 1/2" Galvanized Wire Rope with Plain Ends 9,800 lb. Minimum break strength 3,267 lb working load limit

https://www.hoistsdirect.com/shop/1884?srsltid=AfmBOop55Ogw08R0CM914SBdLnUvvRPgL5cys5w7dzkOxREHOEHOBA4I#tab2

3/8" 7x19 Galvanized Aircraft Cable - IPS - 14,400 lbs. BS

Shop a Large Selection of Steel Cable & Wire Rope

Rest of products, See Drawings

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.

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

3.2 INSTALLATION

A. Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

B. Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.

C. Install site furnishings level, plumb, true, and positioned at locations indicated on Drawings.

D. Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

E. Posts Set into Voids in Concrete: Form or core-drill holes for installing posts in concrete to depth recommended in writing by manufacturer of site furnishings and 3/4 inch larger than OD of post. Clean holes of loose material, insert posts, and fill annular space between post and concrete with, mixed and placed to comply with anchoring material manufacturer's written instructions, with top smoothed and shaped to shed water.

END OF SECTION 129300

SECTION 311000 - SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Removing existing vegetation.
2. Clearing and grubbing.
3. Stripping and stockpiling topsoil.
4. Removing above- and below-grade site improvements.
5. Disconnecting, capping or sealing, and abandoning site utilities in place.
6. Temporary erosion and sedimentation control.

1.3 DEFINITIONS

A. Subsoil: Soil beneath the level of subgrade; soil beneath the topsoil layers of a naturally occurring soil profile, typified by less than 1 percent organic matter and few soil organisms.

B. Surface Soil: Soil that is present at the top layer of the existing soil profile. In undisturbed areas, surface soil is typically called "topsoil," but in disturbed areas such as urban environments, the surface soil can be subsoil..

C. Topsoil: Top layer of the soil profile consisting of existing native surface topsoil or existing in-place surface soil; the zone where plant roots grow. Its appearance is generally friable, pervious, and black or a darker shade of brown, gray, or red than underlying subsoil; reasonably free of subsoil, clay lumps, gravel, and other objects larger than 2 inches in diameter; and free of weeds, roots, toxic materials, or other non-soil materials.

D. Plant-Protection Zone: Area surrounding individual trees, groups of trees, shrubs, or other vegetation to be protected during construction and indicated on Drawings.

E. Tree-Protection Zone: Area surrounding individual trees or groups of trees to be protected during construction and indicated according to requirements in Section 015639 "Temporary Tree and Plant Protection."

F. Vegetation: Trees, shrubs, groundcovers, grass, and other plants.

1.4 MATERIAL OWNERSHIP

A. Except for materials indicated to be stockpiled or otherwise remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

1.5 INFORMATIONAL SUBMITTALS

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

1.6 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed trafficways if required by Owner or authorities having jurisdiction.
3. See site preparation drawings; coordinate with Owner for salvageable items.

B. Utility Locator Service: Notify Miss Dig for area where Project is located before site clearing.

C. Do not commence site clearing operations until temporary erosion- and sedimentation-control and plant-protection measures are in place.

D. Soil Stripping, Handling, and Stockpiling: Perform only when the soil is dry or slightly moist.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Satisfactory Soil Material: Requirements for satisfactory soil material are specified in Section 312000 "Earth Moving."

1. Obtain approved borrow soil material off-site when satisfactory soil material is not available on-site.

PART 3 - EXECUTION

3.1 PREPARATION

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

B. Protect existing site improvements to remain from damage during construction.

1. Restore damaged improvements to their original condition, as acceptable to Owner.

3.2 TEMPORARY EROSION AND SEDIMENTATION CONTROL

A. Provide temporary erosion- and sedimentation-control measures to prevent soil erosion and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways, according to erosion- and sedimentation-control Drawings and requirements of authorities having jurisdiction.

B. Verify that flows of water redirected from construction areas or generated by construction activity do not enter or cross protection zones.

C. Inspect, maintain, and repair erosion- and sedimentation-control measures during construction until permanent vegetation has been established.

D. Remove erosion and sedimentation controls, and restore and stabilize areas disturbed during removal.

3.3 EXISTING UTILITIES

A. Locate, identify, and disconnect utilities indicated to be abandoned in place.

B. Interrupting 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 not less than two days in advance of proposed utility interruptions.
2. Do not proceed with utility interruptions without Owner's written permission.

3.4 CLEARING AND GRUBBING

A. Remove obstructions, trees, shrubs, and other vegetation to permit installation of new construction.

1. Do not remove trees, shrubs, and other vegetation indicated to remain or to be relocated.
2. Grind down stumps and remove roots larger than 3 inches in diameter, obstructions, and debris to a depth of 12 inches below exposed subgrade.
3. Chip removed tree branches and dispose of off-site.

B. Fill depressions caused by clearing and grubbing operations with satisfactory soil material unless further excavation or earthwork is indicated.

1. Place fill material in horizontal layers not exceeding a loose depth of 8 inches, and compact each layer to a density equal to adjacent original ground.

3.5 TOPSOIL STRIPPING

A. Remove sod and grass before stripping topsoil.

B. Strip topsoil to depth in a manner to prevent intermingling with underlying subsoil or other waste materials.

1. Remove subsoil and non-soil materials from topsoil, including clay lumps, gravel, and other objects larger than 2 inches in diameter; trash, debris, weeds, roots, and other waste materials.

C. Stockpile topsoil away from edge of excavations without intermixing with subsoil or other materials. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust and erosion by water.

1. Limit height of topsoil stockpiles to 72 inches.
2. Do not stockpile topsoil within protection zones.
3. Stockpile surplus topsoil to allow for respreading deeper topsoil.

3.6 SITE IMPROVEMENTS

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

B. Remove slabs, paving, curbs, gutters, and aggregate base as indicated.

1. Unless existing full-depth joints coincide with line of demolition, neatly saw-cut along line of existing pavement to remain before removing adjacent existing pavement. Saw-cut faces vertically.
2. Paint cut ends of steel reinforcement in concrete to remain with two coats of antirust coating, following coating manufacturer's written instructions. Keep paint off surfaces that will remain exposed.

3.7 DISPOSAL OF SURPLUS AND WASTE MATERIALS

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

B. Separate recyclable materials produced during site clearing from other nonrecyclable materials. Store or stockpile without intermixing with other materials, and transport them to recycling facilities. Do not interfere with other Project work.

END OF SECTION

SECTION 312000 - EARTH MOVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. City of Highland Park will hire a Testing Agency (Owner's Testing Agency) directly to act on behalf of the City regarding direction for earthwork, asphalt and concrete testing.

B. Section Includes:

1. Excavating and filling for rough grading the Site.
2. Preparing subgrades for walks pavements turf and grasses and plants.
3. Base course for concrete walks.
4. Base course for asphalt paving.
5. Excavating and backfilling trenches for utilities and pits for buried utility structures.

C. Related Requirements:

1. Section 311000 "Site Clearing" for site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
2. Section 329200 "Lawns" for finish grading in turf and grass areas, including preparing and placing planting soil for turf areas.
3. Section 329300 "Exterior Plantings" for finish grading in planting areas and tree and shrub pit excavation and planting.

1.3 DEFINITIONS

Retain definitions remaining after this Section has been edited. Revise to suit office or local earth-moving practices.

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

1. Initial Backfill: Backfill placed beside and over pipe in a trench, including haunches to support sides of pipe.
2. Final Backfill: Backfill placed over initial backfill to fill a trench.

B. Base Course: Aggregate layer placed between the subgrade, and the concrete walks and hot-mix asphalt paving.

C. Bedding Course: Aggregate layer placed over the excavated subgrade in a trench before laying pipe.

D. Borrow Soil: Satisfactory soil imported from off-site for use as fill or backfill.

E. Drainage Aggregate: Free draining aggregate used to help infiltrate storm water into the ground water.

F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.

1. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner's Testing Agency. Unauthorized excavation, as well as remedial work directed by Owner's Testing Agency, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material that exceed 1 cu. yd. for bulk excavation or 3/4 cu. yd. for trench, and pit excavation that cannot be removed by rock-excavating equipment equivalent to the following in size and performance ratings, without systematic drilling, ram hammering, ripping, or blasting, when permitted:

1. Equipment for Trench, and Pit Excavation: Late-model, track-mounted hydraulic excavator; equipped with a 42-inch- maximum-width, short-tip-radius rock bucket; rated at not less than 138-hp flywheel power with bucket-curling force of not less than 28,700 lbf and stick-crowd force of not less than 18,400 lbf with extra-long reach boom.

I. Rock: Rock material in beds, ledges, unstratified masses, conglomerate deposits, and boulders of rock material 3/4 cu. yd. or more in volume that exceed a standard penetration resistance of 100 blows/2 inches when tested by a geotechnical testing agency, according to ASTM D 1586.

J. Structures: Buildings, footings, foundations, retaining walls, slabs, tanks, curbs, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface.

K. Subgrade: Uppermost surface of an excavation or the top surface of a fill or backfill immediately below subbase, drainage fill, drainage aggregate, or topsoil materials.

L. Utilities: On-site underground pipes, conduits, ducts, and cables as well as underground services within buildings.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of the following manufactured products required:

1. Geotextiles.
2. Warning tapes.

1.5 INFORMATIONAL SUBMITTALS

A. Material Test Reports: For each on-site and borrow soil material proposed for fill and backfill as follows:

1. Classification according to ASTM D 2487.
2. Laboratory compaction curve according to ASTM D 1557.
3. Gradation report.

1.6 FIELD CONDITIONS

A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during earth-moving operations.

1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
2. Provide alternate routes around closed or obstructed traffic ways if required by Owner or authorities having jurisdiction.

B. Utility Locator Service: Notify "Miss Dig" for area where Project is located before beginning earth-moving operations. Or hire Private Utility Locate Service

C. Do not commence earth-moving operations until temporary site fencing and erosion- and sedimentation-control measures specified in Section 015000 "Temporary Facilities and Controls" and Section 311000 "Site Clearing" are in place.

D. Do not commence earth-moving operations until plant-protection measures specified in Section 015639 "Temporary Tree and Plant Protection" are in place.

E. The following practices are prohibited within protection zones:

1. Storage of construction materials, debris, or excavated material.
2. Parking vehicles or equipment.
3. Foot traffic.
4. Erection of sheds or structures.
5. Impoundment of water.
6. Excavation or other digging unless otherwise indicated.
7. Attachment of signs to or wrapping materials around trees or plants unless otherwise indicated.

F. Do not direct vehicle or equipment exhaust towards protection zones.

G. Prohibit heat sources, flames, ignition sources, and smoking within or near protection zones.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: Soil Classification Groups GW, GP, GM, SW, SP, and SM according to ASTM D 2487, Groups A-1, A-2-4, A-2-5, and A-3 according to AASHTO M 145, or a combination of these groups; free of rock or gravel larger than 3 inches in any dimension, debris, waste, frozen materials, vegetation, and other deleterious matter.

1. To be placed under unpaved areas.

C. Unsatisfactory Soils: Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, Groups A-2-6, A-2-7, A-4, A-5, A-6, and A-7 according to AASHTO M 145, or a combination of these groups.

1. Unsatisfactory soils also include satisfactory soils not maintained within 2 percent of optimum moisture content at time of compaction.

D. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, meeting MDOT 21AA gradation.

E. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand, meeting MDOT Class II gradation except at least 90 percent passing a 1-1/2-inch sieve.

1. To be placed under paved areas.

F. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940/D 2940M; except with 100 percent passing a 1-inch sieve and not more than 8 percent passing a No. 200 sieve.

G. Drainage Aggregate: Narrowly graded mixture of washed crushed stone, or crushed or uncrushed gravel meeting MDOT 6AA gradation.

H. Asphalt and Aggregate Mix: On-site ground asphalt and asphalt base material (aggregate) used for new base material for HMA paving. All excavation to accommodate the placement of Asphalt and Aggregate Mix provided by earthwork contractor.

I. Filter Material: Narrowly graded mixture of natural or crushed gravel, or crushed stone and natural sand; ASTM D 448; coarse-aggregate grading Size 67; with 100 percent passing a 1-inch sieve and zero to 5 percent passing a No. 4 sieve.

J. Sand: ASTM C 33/C 33M; fine aggregate.

K. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

L. Infield Mix: Diamond Dust (Grey) Stone Quest Landscape Stone & Supply, 6245 State Street Saginaw, MI 48603 (989) 799.2281 OR APPROVED EQUAL

2.2 GEOTEXTILES

A. Subsurface Drainage Geotextile: woven needle-punched geotextile, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
1. Mirafi RS380i (or approved equal)

2.3 ACCESSORIES

A. Detectable Warning Tape: Acid- and alkali-resistant, polyethylene film warning tape manufactured for marking and identifying underground utilities, a minimum of 6 inches wide and 4 mils thick, continuously inscribed with a description of the utility, with metallic core encased in a protective jacket for corrosion protection, detectable by metal detector when tape is buried up to 30 inches deep; colored as follows:

1. Red: Electric.
2. Yellow: Gas, oil, steam, and dangerous materials.
3. Orange: Telephone and other communications.
4. Blue: Water systems.
5. Green: Sewer systems.

PART 3 - EXECUTION

3.1 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earth-moving operations.

B. Protect and maintain erosion and sedimentation controls during earth-moving operations.

C. Protect subgrades and foundation soils from freezing temperatures and frost. Remove temporary protection before placing subsequent materials.

3.2 DEWATERING

A. Prevent surface water and ground water from entering excavations, from ponding on prepared subgrades, and from flooding Project site and surrounding area.

B. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.

1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.

3.3 EXCAVATION, GENERAL

A. Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Owner's Testing Agency. The Contract Sum will be adjusted for rock excavation.

1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; and soil, boulders, and other materials not classified as rock or unauthorized excavation.

3.4 EXCAVATION FOR STRUCTURES

A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1 inch. If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

B. Excavations at Edges of Tree- and Plant-Protection Zones:

1. Excavate by hand or with an air spade to indicated lines, cross sections, elevations, and subgrades. If excavating by hand, use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.5 EXCAVATION FOR WALKS AND PAVEMENTS

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

3.6 EXCAVATION FOR UTILITY AND INFILTRATION POD TRENCHES

A. Excavate trenches to indicated gradients, lines, depths, and elevations.

1. Beyond perimeter, excavate trenches to allow installation of top of pipe below frost line.

B. Excavate utility trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

C. Utility 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, 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 or conduit circumference. Fill depressions with tamped sand backfill.
3. For infiltration pods, hand-excavate trench bottoms and support pipes and drainage aggregate on an undisturbed subgrade.

D. Utility Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

E. Trenches in Tree- and Plant-Protection Zones:

1. Hand-excavate to indicated lines, cross sections, elevations, and subgrades. Use narrow-tine spading forks to comb soil and expose roots. Do not break, tear, or chop exposed roots. Do not use mechanical equipment that rips, tears, or pulls roots.
2. Do not cut main lateral roots or taproots; cut only smaller roots that interfere with installation of utilities.
3. Cut and protect roots according to requirements in Section 015639 "Temporary Tree and Plant Protection."

3.7 SUBGRADE INSPECTION

A. Notify Owner’s Testing Agency~~.~~ when excavations have reached required subgrade.

B. If Owner’s Testing Agency~~.~~ determines that unsatisfactory soil is present, continue excavation and replace with compacted backfill or fill material as directed.

C. Proof-roll subgrade below pavements with a pneumatic-tired **filled front-end loader** to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.

1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction if possible. Limit vehicle speed to 3 mph.
2. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

D. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

3.8 UNAUTHORIZED EXCAVATION

A. Fill unauthorized excavation under trenches, pavement, infiltration pods, and utility structures as directed by Owner's Testing Agency.

3.9 STORAGE OF SOIL MATERIALS

A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

3.10 BACKFILL

A. Place and compact backfill in excavations promptly, but not before completing the following:

1. Construction below finish grade.
2. Surveying locations of underground utilities for Record Documents.
3. Testing and inspecting underground utilities.
4. Removing concrete formwork.
5. Removing trash and debris.
6. Removing temporary shoring, bracing, and sheeting.

B. Place backfill on subgrades free of mud, frost, snow, or ice.

3.11 UTILITY TRENCH BACKFILL

A. Place backfill on subgrades free of mud, frost, snow, or ice.

B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.

C. Backfill voids with satisfactory soil while removing shoring and bracing.

D. Initial Backfill:

1. Soil Backfill: Place and compact initial backfill of [subbase material] [satisfactory soil], free of particles larger than [1 inch] <Insert dimension> in any dimension, to a height of 12 inches over the pipe or conduit.

a. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

E. Final Backfill:

1. Soil Backfill: Place and compact final backfill of satisfactory soil to final subgrade elevation under unpaved areas.
2.
3. Soil Backfill:Place and compact final backfill of granular backfill up to subgrade of paved areas.

4. Retain "Controlled Low-Strength Material" Subparagraph below if controlled low-strength material is permitted or required as final backfill.

F. Detectable Warning Tape: Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

3.12 SOIL FILL

A. Plow, scarify, bench, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing material.

B. Place and compact fill material in layers to required elevations as follows:

1. Under grass and planted areas, use satisfactory soil material.
2. Under walks and pavements, use satisfactory soil material.
3. Under steps and ramps, use engineered fill.

C. Place soil fill on subgrades free of mud, frost, snow, or ice.

3.13 SOIL MOISTURE CONTROL

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

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

3.14 COMPACTION OF SOIL BACKFILLS AND FILLS

A. Place backfill and fill soil materials in layers not more than [8 inches] <Insert dimension> 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 soil materials evenly on all sides of structures to required elevations and uniformly along the full length of each structure.

C. Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 1557:

1. Under pavements, and walkways, scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent.
2. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.
3. For utility trenches, compact each layer of initial and final backfill soil material in accordance with 1. and 2. above.

3.15 GRADING

A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.

1. Provide a smooth transition between adjacent existing grades and new grades.
2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to elevations required to achieve indicated finish elevations, within the following subgrade tolerances:

1. Turf or Unpaved Areas: Plus or minus 1 inch.
2. Walks: Plus or minus 1 inch.
3. Pavements: Plus or minus 1/2 inch.

3.16 SUBSURFACE DRAINAGE

A. Specified in Section 334600 "Subdrainage."

3.17 SUBBASE AND BASE COURSES UNDER PAVEMENTS AND WALKS

A. Place base course on subgrades free of mud, frost, snow, or ice.

B. On prepared subgrade, place base course under pavements and walks as follows:

1. Shape base course to required crown elevations and cross-slope grades.
2. Place base course 6 inches or less in compacted thickness in a single layer.
3. Place base course that exceeds 6 inches in compacted thickness in layers of equal thickness, with no compacted layer more than 6 inches thick or less than 3 inches thick.
4. Compact base course at optimum moisture content to required grades, lines, cross sections, and thickness to not less than 95 percent of maximum dry unit weight according to ASTM D 1557.

3.18 FIELD QUALITY CONTROL

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

B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earth moving only after test results for previously completed work comply with requirements.

C. Testing agency will test compaction of soils in place according to ASTM D 1556, ASTM D 2167, ASTM D 2937, and ASTM D 6938, as applicable. Tests will be performed at the following locations and frequencies:

1. Paved Areas: At subgrade and at each compacted fill and backfill layer, at least one test for every 4000 sq. ft. (372 sq. m) or less of paved area but in no case fewer than three tests.
2. Trench Backfill: At each compacted initial and final backfill layer, at least one test for every 150 feet or less of trench length but no fewer than two tests.

D. When testing agency reports that subgrades, fills, or backfills have not achieved degree of compaction specified, scarify and moisten or aerate, or remove and replace soil materials to depth required; recompact and retest until specified compaction is obtained.

3.19 PROTECTION

A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.

B. Repair and reestablish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or where they lose compaction due to subsequent construction operations or weather conditions.

1. Scarify or remove and replace soil material to depth as directed by Owner’s Testing Agency ; reshape and recompact.

C. Where settling occurs before Project correction period elapses, remove finished surfacing, backfill with additional soil material, compact, and reconstruct surfacing.

1. Restore appearance, quality, and condition of finished surfacing to match adjacent work, and eliminate evidence of restoration to greatest extent possible.

3.20 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove unsatisfactory soil and waste materials, including trash, and debris, and legally dispose of them off Owner's property.

B. Transport surplus satisfactory soil to designated storage areas on Owner's property. Stockpile or spread soil as directed by Owner’s Testing Agency.

1. Remove waste materials, including unsatisfactory soil, trash, and debris, and legally dispose of them off Owner's property.

END OF SECTION

END OF SECTION

SECTION 321216 - ASPHALT PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:
1. Cold milling of existing asphalt pavement.
2. Hot-mix asphalt patching.
3. Hot-mix asphalt paving.
4. Hot-mix asphalt overlay.
5. Asphalt surface treatments.

B. Related Requirements:
1. 311000 Site Clearing for demolition and removal of existing asphalt pavement.
2. Section 312000 "Earth Moving" for subgrade preparation, fill material, unbound-aggregate subbase and base courses, and aggregate pavement shoulders.
3. Section 321373 "Concrete Paving Joint Sealants" for joint sealants and fillers at pavement terminations.

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.
1. Review methods and procedures related to hot-mix asphalt paving including, but not limited to, the following:
a. Review proposed sources of paving materials, including capabilities and location of plant that will manufacture hot-mix asphalt.
b. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include technical data and tested physical and performance properties.
2. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For testing agency.

B. Material Certificates: For each paving material.

C. Material Test Reports: For each paving material, by a qualified testing agency.

D. Field quality-control reports.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: **MDOT manufacture registered**

B. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.

C. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of MDOT for asphalt paving work.
1. Measurement and payment provisions and safety program submittals included in standard specifications do not apply to this Section.

1.7 FIELD CONDITIONS

A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
1. Prime Coat: Minimum surface temperature of 60 deg F (15.6 deg C).
2. Tack Coat: Minimum surface temperature of 60 deg F (15.6 deg C).

3. Asphalt Base Course: Minimum surface temperature of 40 deg F (4.4 deg C) and rising at time of placement.
4. Asphalt Surface Course: Minimum surface temperature of 60 deg F (15.6 deg C) at time of placement.

1.8 CONTRACTOR EXPERIENCE

A. Asphalt Contractor: Documented experience in asphalt paving systems of complexity similar to project, minimum of **5** projects in the last **5** years, with references from each. Paving contractor team to have worked on the same court paving projects that are listed by the asphalt contractor.

B. Contractor to demonstrate and discuss paving procedures including how paving will occur if base course asphalt is not at the 1% directional slope for the design. Asphalt contractor to also discuss how the surface asphalt course will be places to ensure that the 1% directional slope will be met. This discussion can occur on-site or over virtual meeting. Contractor to provide responses to questions from this meeting via email to the general contractor.

C. Owner, Landscape Architect, General Contractor, Asphalt Contractor and Surface Coating contractor to walk the asphalt wearing course immediately following the court water flooding test. Team to delineate ponding issues and which trade, asphalt or surfacing contractor to fix any ponding issues not within ponding tolerances.

PART 2 - PRODUCTS

2.1 AGGREGATES

A. General: Use materials and gradations that have performed satisfactorily in previous installations.

B. Coarse Aggregate: ASTM D 692/D 692M, sound; angular crushed natural limestone.

C. Fine Aggregate: ASTM D 1073 sharp-edged natural sand or sand prepared from stone, gravel, cured blast-furnace slag, or combinations thereof.
1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.

D. Mineral Filler: ASTM D 242/D 242M rock or slag dust, hydraulic cement, or other inert material.

2.2 ASPHALT MATERIALS

A. Asphalt Binder: AASHTO M 320, PG 58-28

B. Cutback Prime Coat: ASTM D 2027, medium-curing cutback asphalt, MC-30 or MC-70

C. Emulsified Asphalt Prime Coat: ASTM D 977

D. Tack Coat: **ASTM D 977** emulsified asphalt, MDOT SS-1h.

E. Water: Potable.

2.3 AUXILIARY MATERIALS

A. Sand: ASTM D 1073, Grade No. 2 or No. 3.

B. Paving Geotextile: AASHTO M 288 paving fabric; nonwoven polypropylene; resistant to chemical attack, rot, and mildew; and specifically designed for paving applications.

C. Joint Sealant: ASTM D 6690 Type II hot-applied, single-component, polymer-modified bituminous sealant.

2.4 MIXES

1. Base Course Limit: Recycled content (RAP) no more than **10** percent by weight.
2. Surface Course Limit: Recycled content (RAP) is not allowed.

B. Hot-Mix Asphalt: Dense-graded, hot-laid, hot-mix asphalt plant mixes approved by authorities having jurisdiction and complying with the following requirements:
1. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
2. Base Course: MDOT 13A

3. Surface Course: MDOT 36A

C. Emulsified-Asphalt Slurry: ASTM D 3910, Type 3.

2.5 SAWCUTTING

A. Contractor to provide sawcuts in asphalt in locations on the plans.

B. Sawcut to be entire depth of asphalt (4").

C. Contractor to make straight continuous sawcuts, no angles or intersection of sawcut lines will be accepted.

D. Contractor to coordinate with concrete foundation contractor for sawcuts between to the concrete foundations under the chain link fence and under the tennis net.

E. Contractor to sawcut prior to court coloring system. Backer rod and sealant to be placed prior to the court coloring system.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that subgrade is dry and in suitable condition to begin paving.

B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
1. Completely proof-roll subgrade in one direction[, Limit vehicle speed to 3 mph (5 km/h).
2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons (13.6 tonnes).
3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

C. Proceed with paving only after unsatisfactory conditions have been corrected.

3.2 COLD MILLING

A. Clean existing pavement surface of loose and deleterious material immediately before cold milling. Remove existing asphalt pavement by cold milling to grades and cross sections indicated.
1. Mill to a depth of [**1-1/2 inches (38 mm)**
2. Mill to a uniform finished surface free of excessive gouges, grooves, and ridges.
3. Control rate of milling to prevent tearing of existing asphalt course.
4. Repair or replace curbs, manholes, and other construction damaged during cold milling.
5. Excavate and trim unbound-aggregate base course, if encountered, and keep material separate from milled hot-mix asphalt.
6. Patch surface depressions deeper than 1 inch (25 mm) after milling, before wearing course is laid.
7. Keep milled pavement surface free of loose material and dust.
8. Do not allow milled materials to accumulate on-site.

3.3 PATCHING

A. Asphalt Pavement: Saw cut perimeter of patch and excavate existing pavement section to sound base. Excavate rectangular or trapezoidal patches, extending 12 inches (300 mm) into perimeter of adjacent sound pavement, unless otherwise indicated. Cut excavation faces vertically. Remove excavated material. Recompact existing unbound-aggregate base course to form new subgrade.

B. Placing Patch Material: Partially fill excavated pavements with hot-mix asphalt base mix and, while still hot, compact. Cover asphalt base course with compacted, hot-mix surface layer finished flush with adjacent surfaces.

3.4 REPAIRS

A. Leveling Course: Install and compact leveling course consisting of hot-mix asphalt surface course to level sags and fill depressions deeper than 1 inch (25 mm) in existing pavements.
1. Install leveling wedges in compacted lifts not exceeding 3 inches (75 mm) thick.

B. Crack and Joint Filling: Remove existing joint filler material from cracks or joints to a depth of [**1/4 inch (6**

mm)]

1. Clean cracks and joints in existing hot-mix asphalt pavement.
2. Use emulsified-asphalt slurry to seal cracks and joints less than 1/4 inch (6 mm) wide. Fill flush with surface of existing pavement and remove excess.
3. Use hot-applied joint sealant to seal cracks and joints more than 1/4 inch (6 mm) wide. Fill flush with surface of existing pavement and remove excess.

3.5 SURFACE PREPARATION

A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.

B. Emulsified Asphalt Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.10 to 0.30 gal./sq. yd. per inch depth (0.5 to 1.40 L/sq. m per 25 mm depth). Apply enough material to penetrate and seal, but not flood, surface. Allow prime coat to cure.

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

3.6 PLACING HOT-MIX ASPHALT

A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand in 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 surface course in single lift.
2. Spread mix at a minimum temperature of 250 deg F (121 deg C).
3. Begin applying mix along centerline of crown for crowned sections and on high side of one-way slopes unless otherwise indicated.
4. Regulate paver machine speed to obtain smooth, continuous surface free of pulls and tears in asphalt-paving mat.

B. Place paving in consecutive strips not less than 10 feet (3 m) wide unless infill edge strips of a lesser width are required.

1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Overlap mix placement about 1 to 1-1/2 inches (25 to 38 mm) from strip to strip to ensure proper compaction of mix along longitudinal joints.
2. Complete a section of asphalt base course before placing asphalt surface course.

C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

3.7 JOINTS

A. Construct joints to ensure a continuous bond between adjoining paving sections. Construct joints free of depressions, with same texture and smoothness as other sections of hot-mix asphalt course.

1. Clean contact surfaces and apply tack coat to joints.
2. Offset longitudinal joints, in successive courses, a minimum of 6 inches (150 mm).
3. Offset transverse joints, in successive courses, a minimum of 24 inches (600 mm).
4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints [**using either "bulkhead" or "papered" method according to AI MS-22, for both "Ending a Lane" and "Resumption of Paving Operations."**]
5. Compact joints as soon as hot-mix asphalt will bear roller weight without excessive displacement.
6. Compact asphalt at joints to a density within 2 percent of specified course density.

3.8 COMPACTION

A. General: Begin compaction as soon as placed hot-mix paving will bear roller weight without excessive displacement. Compact hot-mix paving with hot, hand tampers or with vibratory-plate compactors in areas inaccessible to rollers.

1. Complete compaction before mix temperature cools to 185 deg F (85 deg C).
2. Asphalt compaction to be 94% to 97% of TMD.

B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness.

Correct laydown and rolling operations to comply with requirements.

C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
   1. Average Density: 96 percent of reference laboratory density according to **ASTM D 6927** but not less than 94 percent or greater than 100 percent.
   2. Average Density: 92 percent of reference maximum theoretical density according to ASTM D 2041, but not less than 90 percent or 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 asphalt is still hot; compact thoroughly.

F. Repairs: Remove paved areas that are defective or contaminated with foreign materials and replace with fresh, hot-mix asphalt. Compact by rolling to specified density and surface smoothness.

G. Protection: After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened.

H. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.9 INSTALLATION TOLERANCES

A. Pavement Thickness: Compact each course to produce the thickness indicated within the following tolerances:
   1. Base Course: Plus or minus 1/4 inch
   2. Surface Course: Plus 1/4 inch (6 mm), no minus.

B. Pavement Surface Smoothness: Compact each course to produce a surface smoothness within the following tolerances as determined by using a 10-foot (3-m) straightedge applied transversely or longitudinally to paved areas: (See tolerances in Court Spec)
   1. Base Course: [**1/4 inch**
   2. Surface Course: [**1/8 inch** Retain "Crowned Surfaces" Subparagraph below if required.

3.10 FIELD QUALITY CONTROL

A. Testing Agency: a qualified testing agency to perform tests and inspections.

B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.

C. Surface Smoothness: Finished surface of each hot-mix asphalt course will be tested for compliance with smoothness tolerances.

D. In-Place Density: Testing agency will take samples of uncompacted paving mixtures and compacted pavement according to **ASTM D 979**
   1. Reference maximum theoretical density will be determined by averaging results from four samples of hot-mix asphalt-paving mixture delivered daily to site, prepared according to ASTM D 2041, and compacted according to job-mix specifications.
   2. In-place density of compacted pavement will be determined by testing core samples according to ASTM D 1188 or ASTM D 2726.
      a. One core sample will be taken for every 1000 sq. yd. (836 sq. m) or less of installed pavement, with no fewer than three cores taken.
      b. Field density of in-place compacted pavement may also be determined by nuclear method according to ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.

E. Replace and compact hot-mix asphalt where core tests were taken.

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

SECTION 321217.16 – PICKLEBALL COURT COATINGS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes:
   1. Furnishing and installing color surface coating system

B. Related Requirements:
   1. Section 033000 “Cast-in-Place Concrete" for post-tension concrete slab court paving.
   2. Section 323300 “Site Furnishings” for net posts
   3. Section 321216 “Asphalt Paving" for HMA tennis court paving.

1.2 SUBMITTALS

A. Product Data: Manufacturer's specifications, technical data and installation instructions for all products.

B. Shop Drawings: Indicate layout and placement of color systems, lines net systems fences and gates of proposed work.

C. Samples: Provide 2-foot square sample illustrating materials and finish for each floor of surface coating system specified, including striping.

D. Quantities (in gallons) for sand filled emulsion and color coat applied on a daily basis.

E. Manufacturer’s specifications for all products, including color chart and installation instructions.
   1. For product substitutions, provide manufacturer’s recommended application rates for each material listed. Application rates shall meet the performance requirements for level of play equivalent to the specified products. Product substitutions shall be submitted in conformance with Section 012500 “Substitution Procedures”.

1.3 QUALITY ASSURANCE

A. Installing Firm: Documented experience in surfacing coating systems of complexity similar to project, minimum of **5** projects in the last **3** years, with references from each. Installer shall be a member of the American Sports Builders Association (ASBA).

B. Surfacing shall conform to the guidelines of ASBA.

C. Before any materials are incorporated into the job, the contractor shall verify the materials meet the specifications of the American Sports Builder’s Association (ASBA) Construction and Maintenance Manual for Surfacing Systems and will furnish necessary certification the materials meet the specifications.

   1. Pickleball Courts: A Construction & Maintenance Manual 2017.

D. Materials and application shall be in accordance with the recommendation by the manufacturer of the color coating system.

E. Owner, Landscape Architect, General Contractor, Asphalt Contractor and Surface Coating contractor to walk the asphalt wearing course immediately following the court water flooding test. Team to delineate ponding issues and which trade, asphalt or surfacing contractor to fix any ponding issues not within ponding tolerances.

1.4 DELIVERY, STORAGE & HANDLING

A. Arrange for and accept delivery of all products in sufficient quantities and time to maintain approved construction schedule.

B. Store all products off ground, in safe, dry location, out of the way of construction operations.

C. Handle all products in manner to prevent damage to products and other work. Follow manufacturer's recommendations.

1.5 WARRANTY

A. Contractor shall be responsible for any defects in materials and workmanship and make any and all

repairs for a period of **5** years from the date of Substantial Completion, at no cost to the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Source Limitations: Obtain each of the following products specified in this Section from a single manufacturer:
   1. Adhesion primer.
   2. Sand-Filled Emulsion
   3. Color Coat.
   4. Line Marking Paint.

B. Manufacturers: Subject to compliance with requirements,
   1. Elite Sport Coating System as manufactured by: U.S. Tennis Court Construction Co., www.ustenniscourt.com.
      a. System Products:
         1) Adhesion Primer for concrete surfaces receiving color coat:
            a) Elite Patch Binder
      b. Sand-filled Emulsion
         1) Elite Acrylic Resurfacer
         2) Sand shall be rounded, washed silica, 60 – 80 mesh; [**550**] [**800**] <**insert number**> pounds per 55 gallons of Resurfacer.
         3) Color: Neutral
         4) Water shall be clean and Potable; 28 to 33 gallons per 55 gallons of Resurfacer.
      c. Color Coat:
         1) Elite Color Concentrate.
         2) Water shall be clean and Potable; mix rate as specified by manufacturer.
         3) Colors: As indicated on Drawings.
      d. Line marking primer and paint system shall be textured white line paint as manufactured by: U.S. Tennis Court Construction Co., www.ustenniscc.com, or approved equal.
   2. Plexipave Color System as manufactured by California Sports Surfaces, www.californiasportssurfaces.com.
      a. Adhesion Primer for concrete surfaces and leveling low spots and depressions receiving color coat.
         1) California Ti-Coat epoxy primer
      b. Sand-filled emulsion.
         1) California Acrylic Resurfacer.
            a) Sand shall be rounded, washed silica, 60 – 80 mesh; [**600**] [**900**] <**insert number**> pounds per 55 gallons of Resurfacer.
            b) Sand Color: neutral.
            c) Water shall be clean and Potable; 20 to 40 gallons per 55 gallons of Resurfacer.
      c. Color Coat:
         1) Fortified Plexipave
         2) Water shall be clean and Potable; mix rate as specified by manufacturer.
         3) Colors: As indicated on Drawings
      d. Line marking paint system shall be "Plexicolor" white line paint as manufactured by: California Products Corporation, (319) 326-1857, or approved equal.
   3. **Standard Color System as manufactured by SportMaster Sport Surfaces**, www.sportmaster.net, or approved equal.
      a. Adhesion Primer for concrete surfaces and leveling low spots and depressions receiving color coat.
         1) Acrylic Patch Binder
      b. Sand-filled emulsion.
         1) Acrylic Resurfacer with Sand.
            a) Water shall be clean and Potable; 22 gallons per 55 gallons of Resurfacer.
      c. Color Coat:
         1) Color Concentrate with Sand.
         2) Water shall be clean and Potable; mix rate as specified by manufacturer.
         3) Colors: As indicated on Drawings.

d. Line marking primer and paint system shall be "T/C Textured White Line Paint" white line paint as manufactured by: SportMaster Sport Surfaces, www.sportmaster.net, or approved equal.

C. All coatings shall be pure acrylic containing no asphaltic or tar emulsions nor vinyl or non-acrylic resins.

D. Mix design for each component shall be per manufacturer's specifications for each coating layer.

E. All materials shall be delivered to the job site in sealed containers with the manufacturer's label affixed.

F. All materials used in the color application must be thoroughly mixed in agitator tank trucks having a minimum capacity of 500 gallons, to insure a uniform application of the material over the entire area. Small batch mixing in drums, mortar mixers, or any containers without mechanical agitation will not be accepted.

PART 3 - EXECUTION

3.1 PREPARATION

A. The bituminous surface shall be thoroughly cleaned and shall meet the manufacturer's requirements for the installation of the color coat system.

B. New asphalt paving shall cure for minimum 28 days, contract to be determined due to timing. Minimum 45 days preferred prior to application of any surfacing materials.

C. New concrete shall cure for 30 days prior to application of any surfacing materials.

D. Concrete surfaces receiving color coat system shall be acid etched with a commercial grade of 85% phosphoric acid. Clean concrete surface thoroughly with a pressure washer.

E. Court surface shall be flooded with water and shall be allowed to drain for 45-60 minutes. Any ponding remaining after 1 hour at 70 degrees F in sunlight which covers a five cent piece (American coin) shall be patched and leveled.

F. The surface to be coated shall be inspected and made sure to be free of grease, oil, dust, dirt and other foreign matter before starting work.

3.2 PATCHING

A. Repair depressions within the court surface prior to installation of color coat system with Manufacturer's standard adhesion primer products in accordance with the Manufacturer's specifications. Feather edges to create smooth transition from concrete to adjacent surface . Strike off patching compound to level. Surface shall not vary more than 1/8-inch in ten feet measured in any direction. Sand as necessary to ensure repairs are not visible following Resurfacer and Color Coat applications.

3.3 APPLICATION

A. General:
1. Application shall proceed only if the application surface is dry and clean and the temperature is at least **50** degrees F. and rising and the surface temperature is not in excess of **100** degrees F.
   a. Each coat shall be applied 90 degrees to the previous coat.
   b. After each coat is allowed to dry, inspect the entire surface. Any defects shall be repaired. Scrape surface to remove any lumps and broom or blow off all loose matter.
   c. The finish surface shall be uniform and devoid of ridges.

B. Adhesion Primer Application:
1. Apply manufacturer's standard adhesion primer to all uncoated concrete and patched surfaces receiving color coat system prior to application of Resurfacer Coat playing surface.
2. Application rate: [**0.25 – 0.3**] gallons per square yard.
3. Apply with a 50 durometer rubber squeegee or trowel.
   a. Feather edges to create smooth transition from concrete to adjacent surface.
4. Allow primer to dry thoroughly.
5. Sand as necessary to ensure repairs are not visible following Resurfacer and Color Coat applications.

C. Resurfacer Coat Application:
1. **Elite Acrylic Resurfacer Coat:** When the preceding work has cured, two (2) applications of

sand-filled emulsion shall be applied to the entire surface to produce a uniform surface texture:
a. Application Rates:
1) Base Coat for Asphalt: [**0.07-0.1**] <**insert number**> gallons per square yard.
2) Base Coat for Concrete: [**0.05-0.07**] <**insert number**> gallons per square yard.
3) Second Coat: [**0.04 – 0.06**] <**insert number>** gallons per square yard.
b. Apply with a 50 durometer rubber squeegee.
c. Allow emulsion to dry thoroughly in accordance with the Manufacturer's specifications.

2. **PlexiPave Resurfacer Coat:**]When preceding work has cured, two applications of sand-filled emulsion shall be applied to the entire surface to produce a uniform surface texture, at the approximate rate of 0.05 - 0.07 gallons of material per square yard per coat in accordance with the Manufacturer's specifications.

3. **SportsMaster Resurfacer Coat:**]When preceding work has cured, 2 applications of sand-filled emulsion shall be applied to the entire surface to produce a uniform surface texture, at the approximate rate of 0.11-.13 gallons of material per square yard per coat in accordance with the Manufacturer's specifications.

4. **Laykold Acrylic Resurfacer Coat:**]When the preceding work has cured, 2 applications of sand-filled emulsion shall be applied to the entire surface to produce a uniform surface texture, at the approximate rate of 0.05-.07 gallons of material per square yard per coat in accordance with the Manufacturer's specifications
a. Apply with a 50 durometer rubber squeegee.
b. Allow emulsion to dry thoroughly in accordance with the Manufacturer's specifications.

D. Color Coat Application:
1. **Elite Color Concentrate:** When the preceding work has cured, 2 applications of sand-filled emulsion shall be applied to the entire surface to produce a uniform surface texture:
a. Application Rates:
1) Base Coat: **0.5** gallons per square yard.
2) Second Coat: **0.5** gallons per square yard.
b. Apply with a 50 durometer rubber squeegee.
c. Allow emulsion to dry thoroughly.
2. **PlexiPave Color Coat:**] [**2**] [**3**] color applications of fortified Plexi-Pave shall be applied to the prepared surface at a rate of 0.07 gallons per square yard per coat. Each application shall be allowed to cure thoroughly before proceeding with the next application. Application procedures, weather limitations, etc., shall follow manufacturer's specification.
a. Apply with a 50 Durometer rubber squeegee.
3. **SportsMaster Color Coat:**] 2 color applications shall be applied to the prepared surface at a rate of 0.07 – 0.09 gallons per square yard per coat. Each application shall be allowed to cure thoroughly before proceeding with the next application. Application procedures, weather limitations, etc., shall follow manufacturer's specification.
a. Apply with a 50 Durometer rubber squeegee.
4. **Advantage Laykold Color Coat:**] 2 color applications shall be applied to the prepared surface at a rate of 0.06 – 0.07 gallons per square yard per coat. Each application shall be allowed to cure thoroughly before proceeding with the next application. Application procedures, weather limitations, etc., shall follow manufacturer's specification:
a. Apply with a 50 Durometer rubber squeegee.

E. Color Coat Misc.
1. All hairline cracks discovered on the courts within the 1 year warranty period to be evaluated and monitored. Any crack with a length (width of crack) that is larger than 1 mm to be filled and area to be recolored (with same solid color).

F. Playing Line Application:
1. All lines are to be applied by painting between masking tape with a paint brush or roller according to manufacturer's specifications. Spray application is not acceptable.
2. Prime masked lines and allow to dry.
3. Paint lines with texture line paint. No spray applications permitted.

4. Remove masking type immediately after lines are dry.

G. Protect adjacent areas and structures (fences, posts, sidewalks, buildings, etc.) which are not to be coated. In the event the coatings are applied to the above, remove immediately before drying is complete.

H. Any cracking or peeling of the adjacent color surface to the white lines to repaired, recolored and repainted within the one year warranty period at no additional cost to the owner.

3.4 CLEAN-UP

A. Excess waste material shall be removed.

B. Contractor shall remove all containers, surplus materials and debris.

C. Leave site in a clean and orderly condition.

END OF SECTION

SECTION 329100 - SOIL PREPARATION (TOPSOIL)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This section specifies all soil materials designated as "Topsoil" on the drawings or in the specifications. Supply topsoil for landscape work seeding, sod, transplant areas, heritage rose area and planting) from both on-site and off-site sources.

1.3 REFERENCES

A. ASTM International, as referenced herein as ASTM.

B. US Department of Agriculture (USDA) Handbook No. 60 – Diagnosis and Improvement of Saline and Alkali Soils.

PART 2 - PRODUCTS

2.1 TOPSOIL

A. Topsoil shall be a well-graded soil of good uniform quality. It shall be a natural, friable soil representative of productive soils in the vicinity. Topsoil shall be free of admixture of subsoil, foreign matter, objects larger than 25 mm (one inch) in any dimension, toxic substances, weeds and any material or substances that may be harmful to plant growth and shall have a pH value of not less than 6.0 nor more than 7.0, and should be best suited to the region, climate and plant material specific to the project.

B. Obtain material from stockpiles established under Section 31 20 00, EARTH MOVING, subparagraph, Stripping Topsoil that meet the general requirements as stated above. Amend topsoil not meeting the pH range specified by the addition of pH Adjusters.

C. If sufficient topsoil is not available on the site to meet the depth as specified herein, the Contractor shall furnish additional topsoil. At least 10 days prior to topsoil delivery, notify the Owner’s Representative of the source(s) from which topsoil is to be furnished. Obtain topsoil from well drained areas. Additional topsoil shall meet the general requirements as stated above and comply with the requirements specified in Section 01 45 29, TESTING LABORATORY SERVICES and Part 1.4.E of this Section. Amend

D. See Planting Specification for planting mixtures.

E. Topsoil Sieve Chart

Sieve Designation	Percent Passing
1 inch screen	100
1/4 inch screen	97 - 100

No. 10 U.S.S. mesh sieve	95 - 100
No. 140 U.S.S.	15 – 35

PART 3 - EXECUTION

3.1 FIELD QUALITY CONTROL

A. Sampling: Each soil test unit shall be a composite of five to seven subsamples taken the full depth of proposed source for each acre of surface area. For on-site stockpiles, discard upper 6 inches of soil before sampling. For large stockpiles, partial excavation will be required for collection of representative samples. Include site plan verifying the locations of all topsoil sampling. Topsoil test reports shall be accompanied with each sample unit for review and approval by the Landscape Architect.

B. Testing methods and written recommendations when not references elsewhere, shall comply with USDA's Handbook No. 60. Nutrient data to be given in parts per million (ppm) dry soil.

C. Topsoil shall be as defined in ASTM D5268.

D. Soil pH shall be tested in accordance with ASTM D4972.

E. Test for organic material by using ASTM D2974.

3.2 FINE GRADING

A. Contractor shall obtain Owner Representative's written approval of previously completed rough grading work prior to commencing organic soil amendment incorporation work.

B. Immediately prior to dumping and spreading the approved organic soil amendment, the subgrade shall be cleaned of all stones greater than one inches (1") and all debris or rubbish. Such material shall be removed from the site. Prior to spreading of the organic soil amendment, subgrades which are too compact to drain water and too compact based upon compaction tests shall be ripped with a claw one foot (1') deep, pulled by a bulldozer two feet (2') on center, both directions. Contractor shall then regrade surface.

C. Organic soil amendment material shall be placed and uniformly spread over approved finish sub-grades to a depth sufficiently greater than the specified depth so that after natural settlement and light rolling, the specified minimum compacted depth will have been provided and the completed work will conform to the lines, grades and elevations indicated with allowance for additional topsoil spreading for turfgrass areas in determining final elevations. Incorporate organic soil amendment by disc harrowing, rototilling or other means in a uniform manner. The depth of incorporation shall be based upon the organic content of the tested and approved organic soil amendment, so as to produce a finished soil with an organic matter content of between four (4) and six percent (6%). Supply additional organic soil amendment material, after in-place testing and approval, as may be needed to give the required organic matter content and finished grades under the Contract without additional cost to the Government.

D. Disturbed areas outside the limit of work shall be spread with four inch (4") minimum depth of organic soil amendment material to the finished grade.

E. No subsoil or organic soil amendment material shall be handled in any way if it is in a wet or frozen condition.

F. Sufficient grade stakes shall be set for checking the finished grades. Stakes must be set in the bottom of swales and at the top of slopes. Connect contours and spot elevations with an even slope.

G. After organic soil amendment material has been incorporated into the subsoil, it shall be carefully prepared by scarifying or harrowing and hand raking. Remove all large stiff clods, lumps, brush, roots, stumps, litter and other foreign matter. Remove all stones over one and one half inch (1-1/2") diameter from the amended soil bed. The amended soil shall also be free of smaller stones in excessive quantities as determined by the Resident Engineer.

H. The whole surface shall then be compacted with a roller or other suitable means to achieve a maximum dry density of 88 to 90 percent in accordance with compaction standards of ASTM D1557 Method D. During the compaction process, all depressions caused by settlement or rolling shall be filled with additional organic soil amendment and the surface shall be regraded and rolled until presenting a smooth and even finish corresponding to the required grades.

END OF SECTION

SECTION 3292000 - LAWNS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. Section Includes:

1. Seeding
2. Hydroseeding
3. Sodding
4. Sprigging
5. Mulching
6. Erosion control blanket – slope stabilization
7. Turf renovation
8. Maintenance
9. Warranty

B. Related Requirements:

1. Section 311000 "Site Clearing" for stripping and using on-site topsoil.
2. Section 312000 "Earth Moving" for mass grading of the site.
3. Section 329100 “Soil Preparation (Topsoil)” for lawns and plant mixture amendment.
4. Section 334600 "Subdrainage" for below-grade drainage of landscaped areas.

1.3 REFERENCES AND REGULATORY REQUIREMENTS

A. United States Department of Agriculture (USDA), Federal Seed Act - labeling and purity standards and miscellaneous requirements.

B. State Seed Laws – where applicable.

C. Association of Official Seed Analysts (AOSA): “Rules for Testing Seed”.

D. Turfgrass Producers International (TPI): Guidelines for Turfgrass Sod.

1.4 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant.

C. Pests: Living organisms that occur where they are not desired or that cause damage to grasses, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

D. Pure Live Seed (PLS): (percent germination x percent purity)/100 = Percent PLS

E. Topsoil: Existing, on-site soil that has been modified with soil amendments and fertilizers to produce a soil mixture best for lawn growth. See Section 329110 "Soil Preparation-Topsoil" and drawing designations for topsoil.

F. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before topsoil is placed.

1.5 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.6 ACTION SUBMITTALS

A. Product Data:

1. Erosion control blanket and anchors.
2. Fertilizers - from manufacturer.
3. Mycorrhizal inoculum.
4. Pesticides and herbicides: Product label, manufacturer's product data sheet, application instructions and application equipment.
5. Seeding and mulching equipment.
6. Straw Mulch tackifier – materials and equipment.
7. Lawn maintenance equipment.
8. Hydroseeding/hydromulching products – equipment and materials.
9. Maintenance edge aggregate gradation analysis.
10. Maintenance edge aggregate separation fabric.

B. Source Quality Control:

1. Samples:

a. Sod: 3 foot long (On-Site).
b. Straw Mulch: 1 cubic foot (On-Site).

2. Test Report:

a. Topsoil: Test reports including soil amendments and fertilization rates for each seed mix. Refer to Section 329100 Soil Preparation (Topsoil).

3. Certifications/Licenses:

a. Certification of Grass Seed for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity (PLS), germination, weed seed, year of production, and date of packaging. Include identification of source, name and telephone number of supplier.
b. Certification of sod from proposed sod supplier that identifies quality standard, turf species stating the botanical and common names, proportions of each species in the sod, composition of the root zone soil in which the sod has been grown, and date the sod was planted. Include identification of source, name and telephone number of supplier.

C. Field Quality Control:

1. Project Work Schedule: Within 4 weeks following the issuance of the Notice to Proceed, submit a project work schedule to the Landscape Architect indicating dates for delivery, installation, and Substantial Completion for all landscape work. The Schedule shall be comprehensive and address procurement, delivery, and installations of irrigation, lawn areas of the site. For a large site, the schedule shall reflect a phased installation and shall include support graphics required to identify this phased approach. Refer to 1.10 below for a complete list of schedule requirements.
2. Maintenance Schedule: Within 4 weeks following the issuance of the Notice to Proceed, submit a detailed typewritten approach and schedule for the warranty maintenance of all landscape activities outlined under 3.13 of this section. Coordinate landscape maintenance with other applicable Sections Section 329300 Exterior Plantings and combine all maintenance activities into one plan of action. The schedule shall be comprehensive and shall be the basis for monthly payment during the maintenance period.
3. Irrigation Plan: Prior to the issuance of Substantial Completion, submit a detailed typewritten approach and schedule that outlines watering requirements for maintaining the landscape as described herein. The Irrigation Plan shall be submitted in conjunction with the Maintenance Schedule. The plan shall address how the irrigation system will be operated during the warranty period, frequencies and durations that will be established to provide the correct watering rates for plants and lawns, inspection protocols and winterization procedures. If the automatic irrigation system is inoperative or not present, provide an approved temporary irrigation system or hand water from a source approved by the Landscape Architect and Owner's Representative. The system shall have the ability to be operated without moving hoses or sprinklers around the site between seeded/planted areas (i.e. system can be set to water one area for the required maintenance period), and may be automated with a timer. Supply all water and equipment at the Contractor’s expense from a source approved by the Owner's Representative. Reliance on natural precipitation will only be allowed with provision of recorded data from a rain gauge located within a 2-mile radius of the project site. The schedule shall be comprehensive and shall be the basis for monthly payment during the maintenance period.
4. Maintenance Report Forms: Using the approved Maintenance Schedule and Irrigation Plan as the framework for all maintenance activities (plant maintenance, and seed bed maintenance and irrigation operations). The Contractor shall provide detailed maintenance report forms for each site visit. The reports shall be completed by the on-site maintenance superintendent performing the work prior to leaving the site and shall be submitted monthly as back-up to each invoice. Office prepared reports will not be permitted and payment for this work will only be made by the Owner when proof of completed specified maintenance has been provided. Each report shall include the following:

    a. Date of activity.
    b. Length of time on site (start time and finish time).
    c. Name and signature of the maintenance superintendent.
    d. Number of personnel performing the work.
    e. Site climatic conditions (rain, wind, temperature, etc.)
    f. Detailed description of maintenance activities performed by area.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data:

1. Include list of at least three similar projects completed in the last 5 years by Installer demonstrating Installer's capabilities and experience. Include project names, addresses, and year completed, and include names and addresses of owners' contact persons.
2. Provide resumes of field technician (foreman) responsible for managing the purchase and installation of all materials. Separate resumes shall be provided for the seeding, planting, irrigation and maintenance technicians.
3. License certificates for pesticide applicator.

1.8 QUALITY ASSURANCE

A. Qualifications:

1. The Contractor shall be a company specializing in seeding, sodding, exterior landscape, installations and maintenance, having a minimum 5 years' experience in projects of the scope and scale being specified.
2. Installer's field technician: The installer shall provide a full-time supervisor on site when work is in progress.
3. Maintenance field technician: The maintenance activities for all turf areas shall be performed by skilled employees of the landscape installer. Subcontractors specializing in landscape and turf maintenance will not be permitted unless approved in writing by the Owner's Representative.
4. Pesticide applicator: State licensed, commercial.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Seed and Other Packaged Materials: Deliver packaged materials in original, unopened containers showing weight, certified analysis, name and address of manufacturer, and indication of compliance with state and Federal laws, as applicable. During shipment and storage on site, protect materials from breakage, moisture, heat or other damage.

B. Sod: Harvest, deliver, store, and handle sod according to requirements in "Specifications for Turfgrass Sod Materials" and "Specifications for Turfgrass Sod Transplanting and Installation" sections in TPI's "Guideline Specifications to Turfgrass Sodding". Deliver sod within 24 hours of harvesting and in time for planting promptly. Protect sod from breakage and drying.

C. Straw Mulch: Straw mulch shall be stored off the ground under a cover that provides protection from moisture and humidity.

D. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

1.10 SCHEDULING

A. Work Schedule:

1. Upon authorization to proceed with the work, submit a project work schedule indicating the dates of each of the following items:

a. Submittal schedule.
b. Delivery of materials to the site.
c. Layout of seed bed locations on the site.
d. Installation including; topsoil placement, fine grading, seeding and sodding .
e. Substantial Completion of the work.

2. Update schedule monthly to reflect progress of the work.

B. Seasonal Limitations:

1. Seed mixes shall be installed during planting seasons normally recognized in the job locality.
2. Cool Season Grasses: Install during the spring and fall only when soil temperatures are between 50 and 65 degrees Fahrenheit and air temperatures is 60 to 75 degrees Fahrenheit.

    a. Approximate spring installation: Between April 1 and May 15.
    b. Approximate fall installation: Between August 15 and September 30 but no later than 60 days before the first average annual frost date.

3. Dormant seeding: Due to construction operations and schedules, if contractor cannot install seed/sod between April 1 and May 15, Contractor to seed/sod and provide irrigation to the area with Owner Representative's Approval.

4. If special circumstances warrant installation outside the normal installation season, submit a written request to the Owner's Representative describing conditions and stating the proposed variance. Seeding/Sodding outside the specified seasons may extend warranty obligations and will be dependent upon the extent of the variance.
5. Weather limitations: Proceed with seeding and sodding only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.
6. Coordination with Plantings: Plant trees, shrubs, and other plants after finish grades but prior to lawn installation unless otherwise indicated. When planting trees, shrubs, and other plants after lawn installation, protect completed areas, and promptly repair damage caused by planting operations.

1.11 WARRANTY, MAINTENANCE AND ACCEPTANCE

A. Substantial Completion:

1. The Substantial Completion inspection shall occur for the Phase 1 site work and landscape prior to the County Fair in 2019. Two Notice of Substantial Completion will be issued for Phase 1 (Building) and Phase 2 (Keeley Park). Following the inspection, the Landscape Architect will issue a punch list identifying all work requiring completion or correction.
2. The Substantial Completion inspection for the landscape shall occur in phases based upon the phasing plan approved at the beginning of the work by the Owner's Representative Following the inspection, the Landscape Architect will issue a punch list identifying all work requiring completion, replacement or correction.
3. The Contractor shall complete all punch list items within 2 weeks of its issuance. All repairs shall occur at no additional cost to the Owner.
4. Substantial Completion will be provided for all lawn areas complying with the following:

    a. Landscape Architect approval of all specified submittals.
    b. The work shall be 100% complete (including all site preparation, earthwork, topsoil, seeding, sodding, mulching, erosion control blanket, planting, irrigation and clean-up), and ready for inspection.

5. After receiving a Notice of Substantial Completion, warrant and maintain all lawn areas in a vigorous, well-kept condition until Final Acceptance.

B. Final Acceptance:

1. Approximately two weeks prior to the expiration of the warranty and maintenance period (or sooner if plantings are included in the inspection), the Owner's Representative will conduct an inspection of all lawn areas, plantings, irrigation system and review all previously submitted maintenance report forms to verify all completed maintenance activities. There shall be thorough documentation previously submitted by the contractor and field observations made by the Owner or Landscape Architect that the specified maintenance has occurred. Following the inspection, the Landscape Architect will issue a punch list identifying all work requiring completion, replacement or correction.
2. The Contractor shall complete all punch list items within 2 weeks of its issuance. All repairs shall occur at no additional cost to the Owner.
3. Final Acceptance will be based upon Owner approval and the work having:

    a. Uniform finished grades conforming to the drawings and free of erosion.
    b. All maintenance items completed and documented by Contractor through maintenance report forms.
    c. Satisfactory Seeded Lawn: At end of warranty and maintenance period, a healthy, uniform well-rooted, even-colored, close stand of grass has been established, free of weeds, disease and insect problems, and surface irregularities, with 100% coverage of the specified species.
    d. Satisfactory Sodded Lawn: At end of warranty and maintenance period, a healthy, well-rooted, even-colored, viable lawn, free of weeds, disease and insect problems, open joints, bare or dead areas, and surface irregularities.

4. Areas which do not meet the contract requirements shall be regraded as needed and seeded, mulched, sodded. Use specified materials and procedures to reestablish lawn that does not comply with requirements and continue maintenance at no cost to the Owner until lawn is satisfactory.
5. Final Acceptance and the end of the warranty period for the lawns will occur only after all punch list items have been satisfactorily completed and the site is left in the condition specified under Cleanup and Protection.

C. Warranty and Maintenance Period:

1. The end of the warranty and maintenance period shall be:

    a. July – one year following fall Substantial Completion (Phase 2).

    b. October 31 – one year following fall Substantial Completion (Phase 1).

        1) When the initial warranty and maintenance period has not elapsed before end of growing season (October 31), or if lawns are not fully established, continue maintenance during next growing season until all maintenance and warranty obligations have been met.

2. The Contractor will not be held responsible for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents beyond landscape installer's control which result from floods, hail storms, winds over 100 miles per hour, fires or vandalism, unless Contractor has not completed specified installation in a manner that could have protected the landscaping from these phenomena.
3. If, in the opinion of the Owner's Representative it is advisable to extend the warranty and maintenance period for an additional growing season, the contractor will be notified of such requirement by the Owner. Improper execution of the installation and/or failure to perform and document the specified maintenance in accordance with contract requirement shall be the basis for extending the period of establishment for a second growing season. All specified maintenance and warranty requirements will be required during this extended period and all costs shall be the responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

B. Other varieties that those specified may be submitted for approval to Landscape Architect, but they must be newer, more improved cultivars than what is listed.

C. Dormant seeding shall only be permitted if approved by Landscape Architect in writing. Apply seed at a rate that is 25 percent higher than the rates specified below.

D. Seed Species:

1. Quality: Seed of grass species as listed below for solar exposure, with not less than 90 percent germination, not less than 98 percent pure seed, and not more than 0.3 percent weed seed:

2. Full Sun: Kentucky bluegrass (Poa pratensis), a minimum of three improved turf type varieties.

a. Install at a rate of 4 pounds Pure Live Seed (PLS) per 1000 square feet of bed.

3. Sun and Partial Shade Blend: Proportioned by weight as follows:

a. 60 percent Kentucky bluegrass (Poa pratensis), a minimum of three improved turf type varieties.
b. 30 percent fine fescue (Festuca), a minimum two varieties; chewing and creeping red.
c. 10 percent perennial ryegrass (Lolium perenne).
d. Install at a rate of 4 pounds Pure Live Seed (PLS) per 1000 square feet of bed.

4. Shade Blend: Proportioned by weight as follows:

a. 65 percent fine fescues (Festuca), a minimum of three varieties consisting of chewing, creeping red and hard.
b. 25 percent Kentucky bluegrass (Poa pratensis), a minimum two turf type varieties.
c. 10 percent perennial ryegrass (Lolium perenne), use shade tolerant variety.
d. Install at a rate of 6 pounds Pure Live Seed (PLS) per 1000 square feet of bed.

5. Shade and Sun Fescue Blend: Proportioned by weight as follows:

a. 100% turf type tall fescue (Festuca) consisting of a minimum 3 improved varieties.
b. All varieties shall be labeled endophyte free or contain beneficial endophytes.
c. Install at a rate of 8 pounds Pure Live Seed (PLS) per 1000 square feet of bed.

2.2 TURFGRASS SOD

A. Provide an approved nursery grown, Number 1 Quality/Premium sod, complying with “Specifications for Turfgrass Sod Materials” in TPI’s “Guideline Specifications to Turfgrass Sodding”. Furnish sod comprised of the specified species and of uniform density, color, and texture, strongly rooted, weed free and capable of vigorous growth and development once installed. Sod shall be 2 years old and shall have been grown at a sod nursery in a mineral-based root zone. Sod grown on peat (organic soil) will not be approved. Sod shall be free of objectionable grassy and broad leaf weeds.

B. Thickness and width of sod shall be kept to strict dimensions, with width being 24” and containing 90-degree angle cut edges. Netting associated with harvest must be removed before installation.

C. Turfgrass Sod Species: Sod of grass species as follows, with not more than 0.5 percent weed seed:

1. Full Sun: Kentucky bluegrass (Poa pratensis), a minimum of three improved turf type varieties.
2. Sun and Partial Shade: Proportioned by weight as follows:

   a. 60 percent Kentucky bluegrass (Poa pratensis), a minimum of two improved turf type varieties.
   b. 40 percent chewing red fescue (Festuca rubra variety) a minimum of two varieties.

3. Shade: Proportioned by weight as follows:

   a. 60 percent fine fescues (Festuca), a minimum of two varieties; chewing, creeping red and hard.
   b. 40 percent Kentucky bluegrass (Poa pratensis), a minimum of two turf type varieties.

D. Turfgrass-Sod Species: Proprietary blend as follows: <insert sod product name and supplier>.

E. Sod Stakes: Sod Stakes shall be natural based plastic that is 100% biodegradable from microbial activity in accordance with ASTM D5338 or D6400, formed in a T-shaped with barbed heads and shoulders, minimum six inches long, color green and installed per manufacturer spacing and installation instructions.

2.3 STRAW MULCH

A. Straw Mulch: Provide stalks from oats, wheat, rye, barley or rice that are free of weeds, air-dry, clean, mildew- and seed-free, threshed straw of wheat, rye, oats, or barley.

1. Straw shall be in an air dry condition and suitable for placing with commercial mulch blowing equipment.

B. Tackifier

1. Hydraulically applied tackifier shall be an organic based or polymeric emulsion blend designed for use over long-fibered mulch (straw). Tackifier shall:

   a. Be powder or liquid based
   b. Achieve a drying time between 12 and 18 hours
   c. Minimum 4 month longevity after application

2. Asphalt Emulsion tackifier is not permitted.

2.4 HYDRAULIC MULCH

A. Hydraulic mulch is not permitted.

B. Hydraulic Mulch: Provide biodegradable, cellulose fiber mulch made from 100% post-consumer recycled paper, or a combination of 70% recycled wood fiber and 30% post-consumer recycled paper cellulose fiber. Mulch should be processed to contain no growth or germination-inhibiting factors, nontoxic and dyed an appropriate color to facilitate visual metering of the application of materials. On an air-dry weight basis, provide hydroseeding mulch containing not more than 12 percent moisture, plus or minus three percent at the time of manufacture, with a pH range from 3.5 to 5.0 for wood/cellulose fiber blends and from 5.0 to 9.0 for 100% cellulose fiber mulch. Provide hydraulic mulch manufactured so that:

1. After addition and agitation in slurry tanks with the fibers, tackifier and water, the material will become uniformly suspended to form an homogeneous slurry. Mixing the lawn seed, fertilizers and soil amendments is prohibited.

2. When hydraulically sprayed on the ground, the material will form a blotter-like cover.
3. The cover will allow the absorption of moisture and allow rainfall or applied water to percolate to the underlying soil.

C. Hydraulic Mulch Tackifier

1. Binding agent shall clear and non-staining and result in a stabilized fiber matrix consisting of wood and/or paper fibers and a stabilizing emulsion that includes a hydro-colloidal tackifier and polycarbonate flocculant specific to hydraulic mulch applications.
2. Use products as recommended by fiber-mulch manufacturer for slurry application.
3. Asphalt Emulsion tackifier is not permitted.

2.5 EROSION CONTROL BLANKET

A. Erosion Control Blanket - [Type 1]: Intended for use on flat surfaces or slopes 4:1 (H:V) or greater where only sheet flow will be encountered.

1. Straw/jute blanket shall be constructed with a 100% agricultural straw matrix (0.5 lbs per square yard), with jute or cotton netting on top and bottom, sewn together with biodegradable cloth thread. The blanket shall be 100% biodegradable, and have a typical functional longevity of 12 months after installation. Plastic netting will not be permitted.

B. Erosion Control Blanket - [Type 2]: Intended for use on slopes 4:1 (H:V) or greater or in drainage swales with velocities up to 8 feet per second (fps).

1. Straw/coconut fiber blanket shall be constructed with 70% agricultural straw (0.35 lbs per square yard), and 30% coconut (coir) fiber matrix (0.15 lbs per square yard), with 100% woven jute netting on the top and bottom, sewn together with biodegradable cloth thread. The Blanket shall be 100% biodegradable, and have a typical functional longevity of 18 months after installation. Plastic netting will not be permitted.

C. Erosion Control Blanket - Type 3: Intended for use on slopes 4:1 (H:V) or greater or in drainage swales with velocities up to 10 feet per second (fps).

1. Coconut fiber blanket shall be constructed with 100% coconut (coir) fiber matrix (0.50 lbs per square yard), with 100 % woven coir fiber netting on top and 100% woven jute netting on the bottom, sewn together with biodegradable cloth thread. The Blanket shall be 100% biodegradable, and have a typical functional longevity of 24 months after installation. Plastic netting will not be permitted.

D. Fasteners: Fasteners shall be natural based plastic that is 100% biodegradable from microbial activity in accordance with ASTM D5338 or D6400, formed in a T-shaped with barbed heads and shoulders, minimum six inches long, color green and installed per manufacturer’s spacing and installation instructions.

2.6 EQUIPMENT

A. Tiller:

1. Equipment used for subsoiling or ripping compacted subsoils on slopes up to 2:1 (H:V): A minimum D-7 size tractor with a mounted ripper consisting of 3 to 5 tines spaced a maximum 24 inches apart. Tines shall be equipped with 12 inch wide winged ripper points and shall be capable of penetrating subsoils up to 24 inches deep in one pass.
2. Equipment used for subsoiling or ripping compacted subsoils on slopes up to 4:1 (H:V): A tractor mounted disk harrow consisting of 6 – 12 offset disks weighing a minimum 1,800 pounds each.

The harrow shall be capable of penetrating subsoils up to 18 inches deep in one pass.

B. Fine Grading: Hand rake, tractor mounted york rake or other similar equipment.

C. Hydroseeder: Hydroseeding will not be permitted.

D. Hydroseeder: A truck-mounted, hydraulically driven variable speed agitation seeder that effectively shoots an aqueous mixture of seed, fertilizer, and mulch over broad areas through a discharge boom and hydraulic hose. Minimum tank capacity shall be 1,000 gallons.

E. Drop Spreader with Cultipacker, as manufactured by Brillion or John Deere or equivalent.

F. Broadcast Seeding: A spinning-disc type broadcaster with a calibration gauge (hand held and tractor mounted) shall be used to broadcast the seed over the designated areas.

G. Seed Imprinting Equipment: Used with spinning-disc type broadcaster to lightly cover or press seed into the soil. A tractor or all-terrain vehicle mounted dragging devise consisting of anchor chains, disk chains, cables, chain harrow or other similar equipment.

H. Straw Mulcher: A power mulcher that thrashes and separates, then evenly distributes the straw at a capacity between 2 and 20 tons per hour, with a discharge distance between 35 and 100 feet in still air.

I. Crimping Device: A mulch disc or other mechanical anchoring/crimping device for use in anchoring straw mulch into place, such as a Reinco Model MD-96 or equivalent, having flat discs with notched edges spaced 8” apart to impress mulch 1-3” down into soil.

2.7 WATER

A. Water for lawns shall be available from on-site sources.

B. Water shall be free of wastewater effluent or other hazardous chemicals

2.8 TOPSOIL

A. Refer to Section 329100

2.9 SOIL AMENDMENTS

A. Peat shall be a product having at least 95% organic content consisting of sphagnum peat moss with a pH range of 3.0 – 4.0 and Von Post decomposition value of H1 – H3, or low-lime reed-sedge peat with a pH range of 4.0 to 5.0 and Von Post decomposition value of H4 – H6. Product shall be free of sticks, wood or other debris.

B. Compost shall be a heavily decomposed mature/stabilized, humus-like material derived from the aerobic decomposition of yard clippings or other compostable materials. Manure is not suitable for use. The compost shall have a dark brown or black color, be capable of supporting plant growth without ongoing addition of fertilizers or other soil amendments and shall not have an objectionable odor. The compost shall be free of plastic, glass, metal and other physical contaminants, as well as viable weed seeds and other plant parts capable of reproducing (except airborne weed species). Composting facility shall be tested in accordance with the United States Composting Council, Seal of Testing Assurance (STA) following procedures as outlined in the Test Methods for the Examination of Composting and Compost

protocols (TMECC).

1. pH: 5.5 to 8.
2. Moisture content: 35 to 55 percent by weight. No visible free water or dust is produced when handling it.
3. Sieve analysis: 100 percent passing ¾ inch screen.
4. Soluble salt content: Less than 5 percent.
5. Organic matter content: Minimum 60 percent.

C. Sand shall be clean, coarse, ungraded, meeting the requirements of ASTM C33 for fine aggregates.

D. pH Adjusters:

1. Lime shall be finely ground agricultural grade dolomitic limestone containing not less than 85% calcium and magnesium carbonates conforming to ASTM C602, Class T or O.
2. Elemental sulfur shall be granular, biodegradable, horticultural grade material containing at least 90% sulfur, with a minimum of 99% passing through No. 6 sieve and a maximum of 10% passing through No. 40 sieve.

E. Mycorrhizal Inoculum:

1. Mycorrhizal fungi in the inoculant shall be available as propagules, i.e., spores, root fragments and hyphae. The inoculant shall contain highly selected strains of low host specificity endo- and ectomycorrhizal fungi combined with other beneficial fungi (Trichoderma), humic acids, biostimulants, beneficial bacteria, soluble sea kelp, and yucca plant extracts, as manufactured by Horticultural Alliance or approved equal. The selection of inoculants shall be based upon fungal partners that are compatible with the specified turf grasses.

2.10 FERTILIZER

A. Fertilizer shall be a complete fertilizer of neutral character, consisting of fast and slow-release nitrogen and shall be applied at the rates and formulations that release nutrients when new plants can effectively draw them from the soil.

1. The percentages of slow release and fast release nitrogen shall be adjusted based on the time of year fertilizers are being applied.
2. For fall seeding, the percentage of slow-release nitrogen shall be higher that spring seeding since a high percentage of fast-release nitrogen will be mostly lost by runoff or infiltration before plant uptake.

B. Composition: The percentages by weight shall be determined per recommendations of the soil testing reports for lawns.

2.11 PESTICIDES

A. General: Pesticide and herbicides shall be registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for Project conditions and application. Do not use restricted pesticides and herbicides unless authorized in writing by authorities having jurisdiction.

B. Pre-Emergent Herbicide (Selective and Nonselective): Effective for controlling the germination or growth of weeds within seeded areas at the soil level.

C. Post-Emergent Herbicide (Selective and Nonselective): Effective for controlling weed growth that has already germinated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. General:

1. The Contractor shall establish a quantifiable system to be employed in the field for measuring areas, weighing products and calibrating equipment on a daily basis to ensure all products are installed at the specified rates of application.
2. Prior to beginning work, examine and verify the acceptability of the project site and notify the Owner's Representative of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected or resolved.
3. Identify areas of subsoil compaction prior to placement of topsoil.
4. Verify that no foreign or deleterious material has been deposited in soil within a planting area.
5. Where lawn installation occurs in close proximity to other site improvements, provide adequate protection to all features prior to commencing work. Promptly repair any items damaged during installation operations to their original condition.
6. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
7. Suspend spoil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
8. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
9. If lawn areas die or are rejected due to non-conformity to contract requirements, they must be removed from the site immediately and replaced before Substantial Completion.

B. Utilities: Have all underground utilities located by servicing agencies. In the vicinity of utilities, hand-excavate to minimize possibility of damage.

C. Coordination with Other Work:

1. The Contractor shall coordinate work with other contractors or trades to determine the appropriate sequence of landscape installation with respect to other work on the site.
2. Completed work installed out of construction sequence which is subsequently disturbed by the completion of work by other trades shall be repaired by the landscape installer at no cost to the Owner.
3. Maintain grade stakes and layout controls set by others until removal is mutually agreed upon by all parties concerned.

3.2 SUBGRADE PREPARATION

A. Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by lawn installation operations.

B. Install erosion control measures, if necessary, to prevent erosion or displacement of soils and discharge of soil-bearing water run-off or airborne dust to adjacent properties, natural resources and walkways.

C. Vegetation Removal: Strip and dispose of organic debris and root mat.

D. Topsoil stripping, stockpiling: Refer to Section 311000 - Site Clearing.

E. Maintain subgrade in areas to be topsoiled in a uniform condition so as to prevent future depressions. Prior to placing topsoil;

1. Till all subsoils to a minimum depth of 18-inches with approved equipment to remove all compacted subsoils. Tilling shall be complete breaking thoroughly fracturing. Perform tilling in two directions, one perpendicular to the other.

2. Upon completion of tilling, the subsoils will require light compaction and leveling to prevent ponding of water and settlement after topsoil placement. As a final operation, a light-weight tracked dozer shall be employed that will remove surface irregularities and prevent excessive settlement. During this procedure, the surface of the subsoil on slopes greater that 4:1 (H:V) shall be imprinted with tracks from the dozer. Imprinting shall be perpendicular to the slope and shall be approximately one-inch deep.
3. Do not proceed with topsoil placement until subgrade tilling and imprinting is completed to the satisfaction of the Landscape Architect.
4. Repair disturbances to previously graded areas and remove surplus subgrade material associated with any landscape construction.

F. If the prepared subgrade is eroded or compacted by rainfall prior to topsoil placement, rework the surface as specified.

G. In locations where existing topsoil has not been removed, till entire area in accordance with paragraph E above. Do not till within dripline of existing trees.

3.3 PLACING TOPSOIL, SOIL AMENDMENTS AND FERTILIZER

A. Provide, fertilize and amend topsoil in accordance with testing laboratory recommendations specified under Section 329113 "Soil Preparation (Topsoil)".

B. Uniformly distribute topsoil on lawn areas so that after light compaction and finish grading, a uniform depth of 4-inches is achieved. Reduce elevation of planting soil to allow for thickness of sod. Placement shall include spreading, cultivating, lightly compacting, dragging and grading to the conditions specified below.

C. Topsoil, when placed, shall be dry enough so as not to puddle or bond. Do not place topsoil when the subgrade is frozen, excessively wet, extremely dry or in a condition otherwise detrimental to proper grading or lawn operation.

D. Following topsoil placement but prior to finish grading, broadcast all soil amendments and fertilizer and rototill into the topsoil. The coverage areas for soil amendments and fertilizer shall be carefully calculated by the installer and fully blended into the entire topsoil profile. Do not incorporate soil amendments and fertilizer more than 5 days in advance of seeding.

E. Mycorrhizal Inoculum:

1. Rototill two granular pounds per 1,000 square feet of seed bed into the top four to six inches of topsoil or as recommended by supplier.

3.4 PRE-INSTALLATION PREPARATION

A. Finish Grading:

1. Immediately before lawn installation scarify, loosen, float, and drag topsoil as necessary to bring it to the proper condition. Remove all foreign matter larger than 1” in diameter. There shall be no visible plants, roots, debris or any foreign material present prior to installation.
2. Finished grades shall slope to drain, be free of depressions or other irregularities, lightly compacted to prevent settlement, and shall be uniform in slope between grading controls and the elevations indicated.
3. Finished grade for seeded lawn areas shall meet existing grades at contract limits and be ½” below top of curbs, walk paving, and metal edging if used.
4. Finished grade for sodded areas shall meet existing grades at contract limits and be 1” below top of curbs, walk paving, and metal edging if used.

B. Before lawn installation obtain Landscape Architect's acceptance of finish grading. Restore seedbed areas if eroded or otherwise disturbed after finish grading.

3.5 SEEDING AND MULCHING

A. Moisten prepared area before seeding if soil is dry. Water thoroughly and allow surface to partially dry before seeding. Do not create muddy soil.

B. Pay close attention to weather conditions. Ensure each area being seeded is fully completed in advance of weather conditions such as heavy rains and strong winds that will result in damage to the unfinished work. Fully completed shall mean seeding, dragging, mulching, crimping and tackifier.

C. Seeding Procedures:

1. Do not sow seed when weather conditions are unfavorable, such as during drought or high winds.
2. Perform seeding with only approved equipment. Do not broadcast or drop seed when wind velocity exceeds 10 mph.
3. Sow the seed uniformly at a rates specified under 2.1 of this section. For dormant seeding, increase seeding rates by 25% 9 (if accepted by Owner's Repreentative).
4. Do not use wet seed or seed that is moldy or otherwise damaged.
5. Do not seed against existing trees. Limit extent of seed to outside edge of planting saucers, plant beds and other seed beds.
6. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
7. Immediately following seeding, rake, drag or float all seed beds to provide a light covering of topsoil approximately 1/8 inch deep. When using equipment that lightly injects the seed into the soil, include equipment that lightly rolls the seed bed to provide good moisture contact between the seed and soil.
8. Maintain soil moisture in accordance with 3.11 below.

D. Mulching Procedures:

1. Do not use any straw that contains weeds and other plants that will contaminate the seed beds with unspecified plants. Carefully inspect each bale of straw prior to spreading and any bales observed to be contaminated with weeds shall be removed from the site on a daily basis.
2. Do not mechanically blow straw when wind speeds exceed 10 mph.
3. Remove all straw that has been deposited outside the limits of seeding and on adjacent pavement, plant beds and tree saucers.
4. Spread straw mulch evenly at the rate of approximately 2 tons dry straw per acre. Place all mulch over all seeded areas within 24 hours after seeding. A mechanical blower or hand spreading shall be used to apply mulch material, provided the machine has been specifically designed and approved for this purpose. Mulch shall be uniform in thickness and cover resulting in a blanket of straw approximately 1 ½ inches loose thickness with little to no visible soil.
5. Slopes 4:1 or steeper and drainage swales shall be stabilized with erosion control blanket in accordance with 3.12 below.
6. For dormant seeding, mulching shall be replaced with erosion control blanket in accordance with 3.12 below at no additional cost to the Owner.

E. Anchoring Mulch Procedures:

1. Anchor the mulch by using both an approved crimping device and applying tackifier on the mulched surface immediately following mulching operation.
2. Mulch shall be crimped in all seed beds where slopes are less than 4:1 (H:V) and of sufficient width to allow equipment to perform crimping without damaging the finish seed bed. Crimp all locations in two directions. When finished, straw shall be anchored one to two inches into the seed bed in rows no more than eight inches apart.

3. Tackifier shall be applied at the rate recommended by the manufacturer and shall be applied uniformly to all mulch either simultaneously with mulching operation or in a separate application. Take precautionary measures to prevent materials from marking or defacing structures, pavements, utilities, or plantings. Immediately clean all stains and damaged areas.
4. Any seed and mulch displaced due to improper crimping and bonding with tackifier shall be immediately replaced to the specified condition at no addition cost to the Owner.

3.6 HYDROSEEDING AND HYDROMULCHING

A. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.

B. Moisten prepared area before seeding if soil is dry. Water thoroughly and allow surface to partially dry before seeding. Do not create muddy soil.

C. Pay close attention to weather conditions. Ensure each area being seeded is fully completed in advance of weather conditions such as heavy rains and strong winds that will result in damage to the unfinished work. Fully completed shall mean, seeding, mulching, crimping and tackifier.

D. Hydroseeding and mulching shall be installed as a two-step process.

1. Step One: Apply the seed and water slurry at the specified seed-sowing rate, with a light application of an approved hydraulic fiber mulch tracer.
2. Step Two: Apply the specified straw mulch and tackifier at specified rate, see 3.5 D and E above. Combining both steps into one will not be permitted.

E. Hydroseeding – Step One Procedures:

1. Fertilizer and soil amendments shall be applied as specified under 3.3 above and shall not be included within the step one slurry.
2. Apply seed on the previously prepared bed at the rates specified under 2.1 of this section. For dormant seeding, increase seeding rates by 25%.
3. Water used shall be obtained from fresh water source, and shall be free from injurious chemicals and other toxic substances at all times. Identify to the Owner all sources of water at least two weeks prior to use. The Owner, at his/her discretion, may take samples of the water at the source or from the tank at any time and have a laboratory test the samples for chemical and saline content.
4. Mixtures shall be constantly agitated from the time they are combined until they are finally applied to the seed bed. Once combined, mixtures shall be used within 8 hours.
5. Apply slurry uniformity and at the prescribed rate, avoiding misses and overlapping areas, gauging quantities of mixtures to measured application areas. Checks on the rate and uniformity of application may be made by the Landscape Architect observing the degree of wetting, or by distributing test sheets and observing the quantity of seed deposited thereon.
6. Direct application nozzle sufficiently upward so that the mixture falls to the ground in a uniform shower. Never direct spray toward the ground in a manner that produces erosion or runoff. Discontinue application during periods of high wind that affect the ability to properly apply the seed at a uniform cover.
7. Maintain soil moisture in accordance with 3.11 below.

F. Mulching – Step Two Procedures:

1. Hydromulching is not permitted. Apply straw mulch and erosion control blanket and anchor to soil as specified under 3.5 above.
2. Mulch all seeded areas with specified hydraulic mulch following the same requirements outlined under 3.6 E above.
3. Hydraulic mulch shall be applied at the following rates:

a. 100% cellulose fibers: 2,000 lb/acre on slopes flatter than 4:1 (H:V).

b. 70% wood fiber / 30% cellulose fiber: 2,500 lb/acre of slopes flatter than 4:1. (H:V).

4. Slopes 4:1 or steeper shall be stabilized with erosion control blanket in accordance with 3.12 below.
5. For dormant seeding, mulching shall be replaced with erosion control blanket in accordance with 3.12 below at no additional cost to the Owner.

G. Anchoring Mulch Procedures:

1. Spray hydraulic mulch tackifier concurrent with or immediately after mulching following the same requirements outlined under 3.6 E above.
2. Use only an approved tackifier applied at the rate recommended by the manufacturer.
3. Tackifier shall be applied at the rate recommended by the manufacturer and shall be applied uniformly to all mulch either simultaneously with mulching operation or in a separate application. Take precautionary measures to prevent materials from marking or defacing structures, pavements, utilities, or plantings. Immediately clean all stains and damaged areas.
4. Any seed and mulch displaced due to improper installation of tackifier shall be immediately replaced to the specified condition at no addition cost to the Owner.

3.7 TURF RENOVATION

A. All preparation work shall be conducted in accordance with 3.1 through 3.4 above. Following surface preparation, lawn installation shall be completed in accordance with the applicable lawn installation methods specified above. Blend newly seeded areas into adjacent existing lawns.

B. Renovate existing lawns where indicated. In areas where diseased or contaminated lawns are identified, remove existing topsoil and dispose off site.

C. Renovate lawns damaged by Contractor's operations, such as storage of materials, haul roads or other areas outside the limits of work.

D. Renovate lawns where topsoil containing foreign materials, such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations has occurred. Remove existing topsoil and dispose off-site.

E. Mow, dethatch, core aerate, and rake existing turf where identified.

F. Maintain soil moisture in accordance with 3.11 below.

3.8 WATERING

A. Watering Procedures:

1. Immediately following lawn installation water all bed areas thoroughly and immediately with a fine mist until soil is soaked to a depth of at least 2-inches or as indicated above. Puddling of water or allowing the seedbed to dry is unacceptable.
2. For seeded areas, maintain soil in a moist condition (in hot dry weather irrigation may be required 2-4 times per day) until seeds have sprouted and reached a height of 1-inch. Water thereafter a minimum of once every 2-3 days unless natural rainfall has provided equivalent watering. Provide irrigation to moisten soil to a depth of 4” to encourage deeper rooting.
3. For sodded areas, begin watering the entire area within 24 hours of installation and water daily for the first two weeks; twice a day in hot dry weather. Keep soil in all areas moist but not soaked to 2-inches below the bottoms of the plants. Water thereafter a minimum of once every 2-3 days unless natural rainfall has provided equivalent watering until Final Acceptance. During this period, moisten soil to a minimum depth of 4” to encourage deeper rooting.

4. Watering at accelerated rates that dislodge seed and mulch materials or cause erosion shall be immediately repaired at no cost to the Owner.

3.9 EROSION CONTROL BLANKET

A. Erosion Control Blanket Procedures:

1. Install erosion control blanket as indicated in on the Plans and all seed beds with slopes 4:1 (H:V) or steeper.
2. Immediately following seeding, erosion control blanket shall be rolled out in place in the direction of the slope fall line. The material shall be applied without stretching and shall lie smoothly but loosely on the soil surface. Installers shall minimize walking directly on the seed or topsoil bed either before or after the blanket is applied.
3. All ends shall be buried a minimum of 4 inches deep and the trench shall be firmly tamped after closing.
4. In cases where roll ends join, the up-slope piece shall overlap the down-slope piece by at least 18 inches.
5. Anchor edges prior to backfilling trench, all overlaps at 12-inch intervals, and the center of each panel on 3-foot intervals.
6. The upslope ends of the blanket shall be buried a minimum of 6 inches deep and anchored at 12-inch intervals prior to backfilling trench.
7. Reseed all disturbed edges immediately following straw blanket installation and work seed into blanket.

3.10 MAINTENANCE

A. General: Maintain and establish lawn areas by watering, fertilizing, pest and weed control, litter removal, mowing, trimming, repairs, and performing other operations as required to establish healthy, viable lawn. Maintenance shall also include grade repair, seeding, sodding all associated soil amendments and fertilizers.

B. Provide all maintenance under the supervision of a skilled employee of the lawn installer. The skilled maintenance supervisor shall be: capable of operating the automatic irrigation system controller, conducting turf diagnostics to identify the presence of disease, insect and fertility problems, and directing a maintenance crew in the performance of horticultural maintenance practices identified below. Maintenance requirements identified below shall be the basis for information to be included in the Maintenance Schedule and Irrigation Plan identified under 1.5.C of this section and thoroughly documented under the required Maintenance Report Forms to verify the work has been properly performed.

1. Failure to perform and submit factual Maintenance Report Forms could result in non-payment for said services and require the extension of the warranty and maintenance period an additional year at the Contractor’s expense.

C. Provide all equipment, materials, labor and services to maintain the landscape beginning immediately after each area is installed and continuing until Final Acceptance and the end of the warranty period. During this period, perform the following:

1. Inspect the entire landscape at least once per week during the growing season and perform needed maintenance promptly.
2. Prior to each mowing, collect all debris, litter and miscellaneous materials accumulating on the site and remove from the site.
3. Irrigation: Irrigate all turf areas to maintain optimum moisture within the root zone as specified under 3.11 above. When using an automatic sprinkler system, the lawn installer responsible for maintenance shall bear full responsibility to set each zone to the correct frequency and duration.

4. Mow all lawns weekly during the growing season and as described below. Mowing frequencies shall be adjusted based on cutting requirements and may require more frequent visits during high growth periods. Use mulching mower only with sharpened blades and alternate direction of each mowing session to prevent rutting.
5. Fertilize as described below.
6. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards. Apply herbicides and pesticides as described below.
7. Remove leaves bi-weekly during the fall as they accumulate on the lawns. Bag and dispose off-site. Do not mow in advance of leaf removal.
8. Repair bare, eroded or settled areas and restore to provide a uniformly smooth lawn with the specified grasses. Provide same materials and installation procedures as those used in the original installation.
9. Reclaim/replace soil materials and turf damaged or lost in areas of subsidence. Roll, regrade, and replant bare or eroded areas to produce a uniformly smooth lawn.
10. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

D. Mowings: Mow turf as soon as top growth is tall enough to cut. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. At the time of each mowing, adjust mowing equipment to meet this requirement. 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 the following grass height:

1. Mow Kentucky bluegrass, fescue to a height of 2-1/2 to 3-inches.
2. For sodded lawns wait at least 2 weeks after installation for first mowing.
3. Mowing heights may increase during the hot summer months based on regional conditions.
4. Collect all grass clippings if mowings are not sufficiently timed to allow for composting into the existing lawn and accumulations of clippings can be observed on the surface of the grass. Collection and off-site disposal shall be performed at no additional cost to the Owner.

3.11 POST-INSTALLATION FERTILIZATION

A. Apply fertilizers at the time of season, rate of application and grade of N-P-K that maximizes the health of the lawn and minimizes the potential run-off of fertilizers to adjacent waterways and groundwater. Avoid the use of phosphorus unless site soils are deficient of this nutrient.

B. During the warranty and maintenance period, fertilize warm season grasses three times and cool season grasses two times during the growing season.

C. Test site topsoil in early-spring and base actual rates on testing recommendations.

D. Apply fertilizer during the following dates;

1. Spring (April / May): Cool season grasses: After the second spring mowing apply fertilizer at a rate of 1 lb. actual nitrogen per 1,000 square feet of lawn. Nitrogen shall be 70% slow-release. Avoid the use of phosphorous and apply at 4-0-1 ratio of N-P-K.
2. Fall (September/October): Warm and cool season grasses: 8 weeks following application of spring apply fertilizer at a rate of 1.5 lbs. actual nitrogen per 1,000 square feet of lawn. Nitrogen shall be water soluble, quick release. Avoid the use of phosphorous and apply at 3-0-1 ratio of N-P-K.

3.12 PESTICIDE APPLICATION

A. Apply pesticides, and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

B. Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

3.13 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

D. Protect newly seeded areas from stormwater flows discharging from paved surfaces until grass establishment. Additional water diversion and erosion control measures such as wattles and check dams may be utilized at Contractor's discretion and expense.

E. Remove nondegradable erosion-control measures after grass establishment period.

END OF SECTION

SECTION 329300 - EXTERIOR PLANTINGS

PART 1 - GENERAL

1.1 Related Documents

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

1.2 SUMMARY

A. Section Includes:

1. Tree and shrub plantings.
2. Herbaceous perennials, ornamental grasses.
3. Plant procurement.
4. Planting mixtures.
5. Plant mulch.
6. Maintenance.
7. Warranty replacements.

B. Related Requirements:
1. Section 311000 “Site Clearing” for stripping on-site topsoil.
2. Section 312000 “Earth Moving” for mass grading of the site.
3. Section 329100 “Soil Preparation (Topsoil)” for lawns and plant mixture amendment.
4. Section 329200 “Lawns” for lawn seeding and sodding.
5. Section 334600 “Subdrainage” for plant bed and tree pit underdrainage system.

1.3 REFERENCES AND REGULATORY REQUIREMENTS

A. Hortus Third, The Staff of the L.H. Bailey Hortorium. 1976. MacMillan Publishing Co., New York.

B. ASTM International, as referenced herein as ASTM.

C. American Standard for Nursery Stock, as referenced herein as ANSI Z60.1-2004.

D. United State Department of Agriculture (USDA), Plant disease and insect control Phytosanitary and Export Certifications.

E. United States Composting Council, Seal of Testing Assurance (STA), Procedures for sampling and testing as outlined in the Test Methods for the Examination of Composting and Compost (TMECC) protocols.

1.4 DEFINITIONS

A. Balled and Burlapped Stock: Plants dug with firm, natural balls of earth in which they were grown, with a ball size not less than diameter and depth recommended by ANSI Z60.1 for type and size of plant required; wrapped with burlap, tied, rigidly supported, and drum laced with twine with the root flare visible at the surface of the ball as recommended by ANSI Z60.1.

B. Bare-Root Stock: 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 the minimum root spread according to ANSI Z60.1 for type and size of plant required.

C. Container-Grown Stock: Healthy, vigorous, well-rooted plants grown in a container, with a 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 for type and size of plant required.

D. Fabric Bag-Grown Stock: Healthy, vigorous, well-rooted plants established and grown in-ground in a porous fabric bag with well-established root system reaching sides of fabric bag. Fabric bag size is not less than diameter, depth, and volume required by ANSI Z60.1 for type and size of plant.

E. Finish Grade: Elevation of finished surface of planting soil.

F. Mycorrhizal Inoculum: Fungi either introduced or naturally occurring in the soil that greatly increased plant roots growth and ability to absorb nutrients and water.

G. Pesticide: A substance or mixture intended for preventing, destroying, repelling, or mitigating a pest. Pesticides include insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. They also include substances or mixtures intended for use as a plant regulator, defoliant, or desiccant. Some sources classify herbicides separately from pesticides.

H. Pests: Living organisms that occur where they are not desired or that cause damage to plants, animals, or people. Pests include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.

I. Planting Area: Areas to be planted.

J. Planting Soil: Existing, on-site soil; imported soil; or manufactured soil that has been modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.

K. Plant; Plants; Plant Material: These terms refer to vegetation in general, including trees, shrubs, vines, ground covers, ornamental grasses, annuals, perennials, bulbs, corms, tubers, or herbaceous vegetation.

L. Root Flare: Also called "trunk flare." The area at the base of the plant's stem or trunk where the stem or trunk broadens to form roots; the area of transition between the root system and the stem or trunk.

M. Root Production Method (RPM): A trademark technology referred to as root production method for a variety of tree and shrub species resulting is a dense fibrous root system for small sized plants.

N. Single Central Leader: A single central dominant leader branch, free of secondary co-dominant stems that would compete with the central leader, either naturally occurring or professionally trained in the nursery with no stem deformities or residual woody stubs from original leader.

O. Specimen Plant: Exceptionally heavy, symmetrical, and tightly knit, growth, superior in form, with properly spaced branching.

P. Stem Girdling Roots: Roots that encircle the stems (trunks) of trees below the soil surface.

Q. Subgrade: The surface or elevation of subsoil remaining after excavation is complete, or the top surface of a fill or backfill before planting soil is placed.

R. Sheared Evergreen: Any evergreen tree or shrub that has been heavily trimmed or pruned to remove the natural shape of the plant. An evergreen tree grown at a “Christmas “tree farm is typically sheared.

S. Young Plants: Lining out stock, seedlings generally sold within the wholesale trade for continued cultivation.

T. 'Detention POD': Stormwater area within linear planting islands with varying depth of aggregate wrapping a percolating detention system.

1.5 SUBMITTALS

A. The Landscape Architect will not be traveling to tag trees and plant material. The Contractor will submit photographs of plant material to be installed prior to delivery to the site. The Owner's Representative and Landscape Architect reserve the right to reject any plant material delivered to the site due to condition and appearance at no cost to the County.

B. The Contractor will provide photographs of each plant or groups of plants for approval. Images can be jpeg, pdf etc.

1.6 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.7 DELIVERY, STORAGE, AND HANDLING

A. General:

1. Packaged Materials: Deliver packaged materials in original unopened containers showing weight, analysis and name of manufacturer. During shipment and storage on site, protect materials from breakage, moisture, heat or other damage.
2. Store materials only in locations approved by the Owner.

B. Bulk Materials:

1. Do not dump or store bulk materials near structures, utilities, walkways and pavements, or on existing turf areas or plants.
2. Provide erosion-control measures to prevent erosion or displacement of bulk materials; discharge of soil-bearing water runoff; and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
3. Accompany each delivery of bulk materials with appropriate certificates.

C. Plant Materials:

1. During shipment, do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Do not bend, stack or bind plants in a manner that damages bark, breaks branches or root systems, deforms root balls or destroys natural shape.
2. Transport plants in closed vehicles or with the entire load properly covered to protect from drying winds, heat, freezing or other exposure that may be harmful. Schedule shipping to minimize on-site storage of plants. Closed vehicles shall be adequately ventilated/refrigerated.
3. Stock shall not be shipped until the planting preparations have been completed. If planting is delayed more than 24 hours after delivery, set plants and trees in their appropriate aspect (sun, filtered sun, or shade), protect from weather and mechanical damage, and keep roots moist.

    a. Heel-in bare-root stock. Pack root system in wet straw, hay, or other suitable material to keep root system moist until planting. Soak roots that are in less than moist condition in water for two hours. Plants with dry roots will be rejected. Any bare-root plants requiring sweating to break dormancy must have this procedure carried out before plants arrive onsite.

b. Set balled stock on ground and cover ball with soil, or bark mulch.
c. Do not remove container-grown stock from containers before time of planting.
d. Water root systems of plants stored on-site deeply and thoroughly with a fine-mist spray. Water as often as necessary to maintain root systems in a moist, but not overly wet condition.

4. Schedule shipping aquatic tubers and plugs to result in on-site storage time of less than one day prior to installation. If delays beyond the contractor's control occur after delivery, store plants to ensure viability. All aquatic plants that are in a state of decay at the time of planting shall be rejected regardless of its condition at the time of delivery to the site.
5. Labels: Prior to shipping, each plant or bundle of like variety and size shall be labeled with legible weatherproof tags indicating the correct name and size of plant. Label aquatic plants (tubers, plugs, and/or bare-root) individually or in bundles of like variety.
6. Handle plants at all times in accordance with the best horticultural practices. Lift B&B materials from the bottom of the ball only; do not roll the plants. Plants handled otherwise will be subject to rejection. Balled and burlapped plants which have cracked or broken balls are not acceptable and shall not be planted. Plants with mechanical damage, deformation or breakage will not be accepted and are to be replaced at the Contractor's expense.

1.8 SCHEDULING

A. Work Schedule:

1. Upon authorization to proceed with the work, submit a project work schedule indicating the dates of each of the following items:

a. Submittal schedule.
b. Tagging of plants in nurseries.
c. Delivery of other materials to the site.
d. Staking of plant locations on the site.
e. Delivery of plant material to the site.
f. Planting.
g. Substantial Completion of the work.
h. Maintenance period.

2. Update schedule monthly to reflect progress of the work.

B. Planting Season:
1. Materials shall be installed during planting seasons normally recognized in the job locality.

2. USDA Hardiness Zone 5:

a. B&B and container grown plants, planting season shall be from April 1 through June 1 and from October 1 until the prepared soil becomes frozen.
b. Evergreen plants from April 1 through June 1 and from September 15 through October 15.
c. Bare root woody plants and aquatic tuber and root stock only in spring from April 1 through approximately June 1 but no later than full leaf-out of existing woody and aquatic plants.
d. Bulbs, corms and tubers from September 15 through November 1 and from April 1 through June 1. Spring vs. fall planting is species dependent and Contractor shall comply with seasonal limitations identified on the plant list included on the drawings.

3. USDA Hardiness Zone 6:

a. B&B and container grown plants, planting season shall be from March 15 through May 15 and from October 1 until the prepared soil becomes frozen.
b. Evergreen plants from March 15 through May 15 and from October 1 through November 1.

c. Bare root woody plants and aquatic tuber and root stock only in spring from March 15 through approximately May 15 but no later than full leaf-out of existing woody and aquatic plants.
d. Bulbs, corms and tubers from October 1 through November 15 and from March 15 through May 15. Spring vs. fall planting is species dependent and Contractor shall comply with seasonal limitations identified on the plant list included on the drawings.

4. If special circumstances warrant installation outside the normal planting season, submit a written request to the Landscape Architect describing conditions and stating the proposed variance. Planting outside the planting season could extend warranty obligations and will be dependent upon the extent of the variance.
5. Weather limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.
6. Coordination with lawn installation: Plant trees, shrubs, and other plants after finish grades are established but before seeding/sodding unless otherwise indicated. When planting trees, shrubs, and other plants after seeding/sodding, protect completed areas, and promptly repair damage caused by planting operations.

1.9 WARRANTY, MAINTENANCE and acceptance

A. Substantial Completion:

1. The Substantial Completion inspection shall occur for the phase of work. Two Notices of Substantial Completion will be issued. Following the inspection, the Landscape Architect will issue a punch list identifying all work requiring completion or correction.
2. The Substantial Completion inspection for the landscape shall occur in phases based upon the phasing plan approved at the beginning of the work by the Landscape Architect. Following the inspection, the Landscape Architect will issue a punch list identifying all work requiring completion, replacement or correction.
3. The Contractor shall complete all punch list items within 2 weeks of its issuance. All repairs and plant replacements shall occur at no additional cost to the Owner.
4. Substantial Completion will be provided for all planting areas complying with the following:
5. Landscape Architect approval of all specified submittals.
6. The work shall be 100% complete including all site preparation, earthwork, plant mixture installation, plantings, lawns, irrigation and clean-up), and ready for inspection.
7. After receiving a Notice of Substantial Completion warrant and maintain all plantings in accordance with 3.13 of this Section in a vigorous, well-kept condition until Final Acceptance.

B. Final Acceptance:

1. Prior to plant dormancy and the expiration of the warranty and maintenance period, the Landscape Architect will conduct an inspection of all plantings. There shall be clear evidence through factual reporting by the contractor and field observations made by the Owner or Landscape Architect that the specified maintenance has occurred. Following the inspection, the Landscape Architect will issue a punch list identifying all work requiring completion, replacement or correction.
2. The contractor shall complete all punch list items within 2 weeks of its issuance. All repairs and plant replacements shall occur at no additional cost to the Owner.
3. Final Acceptance will be based upon Owner approval and the work having:

a. Been well maintained with all landscape plantings in a healthy growing condition free of disease and insect problems.
b. All maintenance items completed and documented by Contractor through maintenance report forms.

4. Final Acceptance and the end of the warranty period for the landscape will occur only after all punch list items have been satisfactorily completed and the site is left in the condition specified under Cleanup and Protection.

C. Warranty and Maintenance Period:

1. The end of the warranty and maintenance period shall be:

a. One year following fall Substantial Completion.

2. Prior to and during the warranty and maintenance period, replace any plants that are damaged, dead, or, in the opinion of the Landscape Architect, are unhealthy, or have lost more than 25% of their natural shape due to dead branches, excessive pruning or improper maintenance. Rejected plant materials shall be removed from the site immediately after being rejected and legally disposed off-site. Replacement plants shall be installed within 2 weeks following the inspection unless otherwise agreed to in writing by the Owner.
3. Only one replacement of any plant is required after Substantial Completion, except for losses due to failure to comply with specified installation and/or maintenance requirements.
4. Make replacements in accordance with the original specifications, plant list, and notes. Fully restore areas damaged by replacement operations to their original and specified condition.
5. The Contractor will not be held responsible for defects resulting from neglect by Owner, abuse or damage by others, or unusual phenomena or incidents beyond landscape installer's control which result from, hail storms, winds over 100 miles per hour, fires or vandalism, unless Contractor has not completed specified installation in a manner that could have protected the landscaping from these phenomena.
6. If, in the opinion of the Landscape Architect, it is advisable to extend the warranty and maintenance period for an additional growing season, the contractor will be notified of such requirement by the Owner. Improper planting and/or failure to perform and document the specified maintenance in accordance with contract requirement shall be the basis for extending the period of establishment for a second growing season. All specified maintenance and warranty requirements will be required during this extended period and all costs shall be the responsibility of the Contractor.

PART 2 - PRODUCTS

2.1 WATER

A. Water for lawns shall be available from on-site sources.

B. Water shall be free of wastewater effluent or other hazardous chemicals. On-site sources of water may be available from the creek at no cost or from City hydrant with appropriate metering. Confirm prior to commencing work.

2.2 TOPSOIL

A. Refer to Section 329100.

2.3 PLANTING MIXTURES

A. General: All planting mixtures shall be well pulverized, blended materials, free of rocks, debris of any type, tree roots, and other extraneous materials that will impede plant growth. When blending off-site amendments (peat, compost, etc.) with topsoil, the topsoil shall be pulverized and screened to remove all non-soil materials greater than ½ inch diameter. On-site sub-soils will not be permitted for use in plant mixtures.

B. Standard planting backfill for individual tree and shrub pits shall be: 1 part existing, well pulverized soil excavated from planting pit or from site topsoil stockpile thoroughly blended with 1 part off-site topsoil and 1 part compost or peat.

C. Plant bed mixture for shrubs beds shall be: 1 part existing, well-pulverized soil excavated from planting bed or site topsoil stockpiles thoroughly blended with 1 part off-site topsoil and 1 part compost or peat.

D. Plant bed mixture for shrubs beds shall be: 2 parts off-site topsoil thoroughly blended with 1 part compost or peat.

E. Plant bed mixture for beds comprising a mix of shrubs, perennials, annuals, ornamental grasses and groundcover shall be 2 parts off-site topsoil thoroughly blended with 1 part compost or peat.

2.4 SOIL AMENDMENTS

A. Peat shall be a product having at least 95% organic content consisting of sphagnum peat moss with a pH range of 3.0 – 4.0 and Von Post decomposition value of H1 – H3, or low-lime reed-sedge peat with a pH range of 4.0 to 5.0 and Von Post decomposition value of H4 – H6. Product shall be free of sticks, wood or other debris.

B. Compost shall be a heavily decomposed mature/stabilized, humus-like material derived from the aerobic decomposition of yard clippings or other compostable materials. Manure is not suitable for use. The compost shall have a dark brown or black color, be capable of supporting plant growth without ongoing addition of fertilizers or other soil amendments and shall not have an objectionable odor. The compost shall be free of plastic, glass, metal and other physical contaminants, as well as viable weed seeds and other plant parts capable of reproducing (except airborne weed species).

1. pH: 5.5 to 8.
2. Moisture content: 35 to 55 percent by weight. No visible free water or dust is produced when handling it.
3. Sieve analysis: 100 percent passing ¾ inch screen.
4. Soluble salt content: Less than 5 percent.
5. Organic matter content: Minimum 60 percent.

C. Sand shall be clean, coarse, ungraded, meeting the requirements of ASTM C33 for fine aggregates.

D. pH Adjusters:

1. Lime shall be finely ground agricultural grade dolomitic limestone containing not less than 85% calcium and magnesium carbonates conforming to ASTM C602, Class T or O.
2. Elemental sulfur shall be granular, biodegradable, horticultural grade material containing at least 90% sulfur, with a minimum of 99% passing through No. 6 sieve and a maximum of 10% passing through No. 40 sieve.

2.5 FERTILIZER

A. Fertilizers are required at the time of installation and during the warranty/maintenance period. The fertilization program shall be based on soil testing and formulations and rates of application shall be based on test reports provided by the independent testing laboratory.

B. The independent testing laboratory shall also prepare a custom formulation and rate for each category of plants to be installed and maintained; i.e. trees, shrubs, perennials/ornamental grasses, annuals and bulbs.

C. Fertilizers shall include organic and inorganic, slow release and water-soluble nitrogen and the percentages shall be based on soil types and the time of year being applied. Fertilizers shall not be applied during the hot summer months unless specific to blooming plants or in the late summer when plant growth will not harden off prior to the first killing frost.

D. The fertilizer to be used to amend the soil before planting shall be granular fertilizer that conforms to applicable state and federal regulations, and contains no less than 60% slow-release nitrogen.

E. Fertilizer to be used during the year warranty maintenance period shall be a complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, not less than 30% of the nitrogen from a slow release source. Fifty percent of the nitrogen shall be derived from natural organic sources. The formulations shall be as outlined in 3.13B.12 of this Section.

2.6 PESTICIDES AND HERBICIDES

A. Pesticides and herbicides shall be registered and approved by the EPA, acceptable to authorities having jurisdiction, and of type recommended by manufacturer for each specific problem and as required for project conditions and application. Do not use restricted-use pesticides and herbicides unless authorized in writing by authorities having jurisdiction.

1. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
2. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

PART 3 - EXECUTION

3.1 EXAMINATION

A. General:

1. Prior to beginning work, examine and verify the acceptability of the project site and notify the Landscape Architect of unsatisfactory conditions. Do not proceed with the work until unsatisfactory conditions have been corrected or resolved.
2. Verify that no foreign or deleterious material has been deposited in soil within a planting area.
3. Where planting occurs in close proximity to other site improvements, provide adequate protection to all features prior to commencing work. Promptly repair any items damaged during planting operations to their original condition.
4. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
5. Suspend spoil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
6. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
7. If plants die or are rejected due to non-conformity to contract requirements, they must be removed from the site immediately and replaced before Substantial Completion.

B. Utilities: Have all underground utilities located by servicing agencies. In the vicinity of utilities, hand-excavate to minimize possibility of damage.

C. On-site sources of water will be available for use by the landscape installer.

D. Pesticides and Other Chemicals:

1. General: All plants delivered to the site shall be free of disease, pests, eggs, and larvae. Promptly remove all plants that do not conform to this requirement.

a. Insecticides should only be used to control pests when present in quantities that will be detrimental to plant vigor.
b. Applying foliar herbicides to control weeds in plant beds after installation will not be permitted unless approved in advance by the Landscape Architect. Approval will only be granted if plants to be controlled cannot be effectively removed by hand pulling. Foliar herbiciding will only be permitted as part of the weed control program developed by the Contractor in advance of planting.
c. All chemical shall be stored and mixed off-site. No chemicals of any type shall remain on site at the end of each work day.
d. Do not apply over water or dispose of used container on-site.
e. Post all pesticide and herbicide applications.

2. Pre-emergent application:

a. Apply granular chemicals in accordance with Manufacturer's instruction.
b. Apply in early spring just prior to targeted species breaking dormancy. Do not apply too early in the spring.
c. Do not apply when weather conditions will prevent an effective application or will result in in-effective control of targeted species.
d. Spread granular chemical only in areas intended to be treated. Promptly remove all granular material spread over pavement and in areas not intended to be treated.

3. Post-emergent application :

a. Protect all landscape plantings outside of target areas.
b. Mixing, cleaning or disposal of pesticides, herbicides, and other chemicals will not be permitted on site. Notify the Owner at least 24 hours prior to any application.
c. Do not spray chemicals when wind exceeds 5 MPH.
d. Repeat procedures until desired effect is achieved.
e. Mixing, application and clean-up procedures shall be in accordance with manufacturer's instructions.

E. Coordination with Other Work:

1. The Contractor shall coordinate work with other contractors or trades to determine the appropriate sequence of landscape installation with respect to other work on the site.
2. Completed work installed out of construction sequence which is subsequently disturbed by the completion of work by other trades shall be repaired by the landscape installer at no cost to the Owner.
3. Maintain grade stakes and layout controls set by others until removal is mutually agreed upon by all parties concerned.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

B. Install erosion control measures, if necessary, to prevent erosion or displacement of soils and discharge of soil-bearing water run-off or airborne dust to adjacent properties, natural resources and walkways.

C. Vegetation Removal: Strip and dispose of organic debris and root mat.

3.3 LAYOUT

A. Accurately lay out each plant location and planting bed edges according to the drawings, using clearly visible painted, labeled stakes or plastic flags. Spray paint continuous lines on bare soil delineating plant bed boundaries. When scaling locations on the drawings, use at least 2 known reference points as layout controls to determine plant locations. Do not proceed with planting operations until locations have been reviewed and approved in writing by the Landscape Architect.

B. Prior to installation, all plant locations and bed edges must be approved by the Landscape Architect, who may field adjust locations at no additional cost to Owner. Plants installed without layout approval are subject to relocation by the Contractor at their expense.

3.4 PLANT INSTALLATION

A. General: Complete all plantings, metal edging and mulching prior to fine grading adjacent seed beds.

1. For plant beds, complete rough grading.

B. Planting Pit Excavation:

1. For individual plant pits in seeded areas, spread seed bed topsoil to the uniform depth and rough grade prior to layout and planting pit excavation.
2. Remove rocks and other unclassified underground obstructions to at least 6 inches below the finished planting depth of the root ball. Trim perimeter of planting pit leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Ensure that root ball will sit on undisturbed base soil to prevent settling. If plant pits are initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
3. If underground utilities or other surface or subsurface obstructions are encountered that cannot be removed, do not proceed with planting operations until alternate planting locations have been selected and approved by the Landscape Architect.
4. Size and configure planting pits in accordance with the planting details. If rotating augers or other mechanical diggers are used, scarify the side walls and bottom of the pit.
5. Where poor soil percolation is probable, test drainage by filling planting pits with 12 inches of water. Record the drainage time for each pit and if, in the opinion of the Landscape Architect, the water does not adequately drain off within 24 hours, install drains or raise plant pits as directed.
6. Keep excavations covered or otherwise protected after working hours and when unattended by Installer's personnel.

C. Planting Bed Excavation:

1. Refer to Section 311000 – Site Clearing for vegetation removal and topsoil salvage for reuse in plant mixture.
2. Refer to Section 312000 – Earth Moving for earthwork requirements.
3. In locations where plant beds are shown on the drawings and earth moving is not required other than achieving the specified plant bed subgrades, excavate plant beds to the depth shown on the planting details. Remove all existing vegetation as described under 3.2C above. Following vegetation removal, strip existing topsoil and stockpile for testing and mixing with specified on/off-site topsoil and peat/compost. Remove surplus excavated subsoil material that is not part of the specified planting soil to an area designated by the County and legally dispose off-site. Following vegetation removal, top dress plant bed with four inches compost plant bed mixture and rototill into upper twelves inches of soil.
4. Grade subgrade smooth and uniform. Slope to perimeter of plant bed when underdrains are required to collect accumulated water within the bed.
5. Transition from plant bed subgrade to adjacent seed bed subgrade outside the limits of the plant bed to ensure full depth plant bed mixture is provided.
6. Where plant beds terminate next to pavement surfaces, subgrade transitions shall be 12 inches wide within the plant bed to protect pavement base material from being undermined.

7. Obtain approval from the Landscape Architect for all subgrades prior to placing plant mixtures. Notify the Landscape Architecture at least 48 hours in advance of placing plant mixture.
8. Keep excavations covered or otherwise protected after working hours and when unattended by Installer's personnel.

D. Mixing and Placing Planting Mixtures:

1. Install planting bed and planting pit mixtures to the specified proportions and depths. On-site mixing of existing topsoil with off-site materials shall result in a homogenous blend of all ingredients. Screen all mixture to remove foreign debris and rocks greater than ½ inch diameter prior to placement.
2. Place planting bed mixture in 6 inch lifts and lightly compact to prevent settlement after planting. Settlement that occurs after planting will require plant removal and the addition of additional plant mixture at the Contractor’s expense. When placing mixture in raised planters, set finish grade elevations 2 inches low for mulch placement.
3. Grade planting areas to a smooth, uniform surface plane. Roll and rake, remove ridges, and fill depressions to meet grade.
4. Before planting, obtain Landscape Architect’s approval of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

E. Fertilizing:

1. Prior to or during planting, amend all planting pit and bed mixes by incorporating fertilizer at rates specified by soil test reports as specified under Section 329100 – Soil Preparation (Topsoil). Do not broadcast fertilize over the surface of the soil or onto any plant root ball.
2. For individual plant pits, incorporate fertilizer into back fill during planting operations. For plant beds, pre-mix fertilizer prior to installation.

F. Planting and Backfill:

1. Do not plant when the ground is frozen or saturated.
2. Balled and burlapped plants: Do not use planting stock if root ball is cracked or broken before or during planting operation. Set the plant in the center of planting pit with the crown set between 1 inch above adjacent soil for shrubs and 2 inches above adjacent soil for trees. Plant root flares shall not be set below adjacent finish grade. Face plant to give the best appearance or relationship to primary views. Cut away burlap, rope, wire or other wrapping materials from the the entire root ball and remove from pit. If plastic wrap or other non-degradable materials are used in lieu of burlap, completely remove them from the root ball before backfilling. Backfill planting pit approximately two-thirds full, add fertilizer, water and allow planting mixture to settle. After the water has been absorbed, complete backfilling and tamp lightly to grade to prevent future settlement, and form a watering basin with plant mixture of the size indicated on Plans.
3. Container-grown plants: Remove containers and make at least five vertical cuts one-half to one inch deep around the root ball and thoroughly loosen the roots on the outside of the ball. Plant as specified above for balled and burlapped plants, and as modified herein. All container-grown stock shall be planted so that top of container soil is level with surrounding grade. Do not plant higher to account for mulch, as mulch should not cover plant crown.

3.5 SPECIAL PLANTING CONSIDERATIONS:

A. Mycorrhizal Inoculum:

1. Rototill 2 granular pounds per 1000 square feet into the top 8 inches of soil for plant beds or as recommended by supplier. Incorporate 1 pound per cubic yard of plant pit backfill as backfill is being placed.

B. Sloped Plantings:

1. When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball. Complete planting as specified under 3.4 F above.

3.6 MULCHING

A. Uniformly install mulch on all trees and shrub beds to depth shown on Plans within 48 hours of planting.

B. Keep mulch out of the crowns of shrubs and perennials, at least 3 inches from all tree trunks, and off sidewalks and roadways.

3.7 PRUNING

A. After planting, prune trees and shrubs to remove all dead, dying, broken, or crossed limbs flush with the ground or main stem leaving no stubs. Do not prune to shape or to compensate for transplanting shock without prior approval from the Landscape Architect. Retain natural form of the plant type. Prune using standard professional horticultural and arboricultural practices. Remove trimmings from the site.

B. Employ workers experienced in this type of work.

3.8 CLEANUP AND PROTECTION

A. Remove excess and waste material daily. When planting has been completed, clear the site of all debris, stockpiles and materials.

B. Repair any damage to existing landscape, paving or other such features as a result of work related to this contract to its original condition.

C. Protect landscape work and materials from damage due to landscape operations, operations by other Contractors and trades, and trespassers. Maintain protection during installation and maintenance periods. Treat, repair or replace damaged landscape work as directed.

3.9 MAINTENANCE

A. Provide all maintenance under the supervision of a skilled employee of the landscape installer. The skilled maintenance supervisor shall be: capable of operating the automatic irrigation system controller, conduct plant diagnostics to identify the presence of disease and insect problems, and be capable of directing a maintenance crew in the performance of horticultural maintenance practices identified below. Maintenance requirements identified below shall be the basis for information to be included in the Maintenance Schedule and Irrigation Plan identified under 1.5 C of this section and thoroughly documented under the required Maintenance Report Forms 1.5.D to verify the work has been properly performed.

1. Failure to perform and submit factual Maintenance Report Forms could result in non-payment for said services and require the extension of the warranty and maintenance period an additional year at the Contractor’s expense.

B. Provide all equipment, materials, labor and services to maintain the landscape beginning immediately after each plant is installed and continuing until Final Acceptance and the end of the warranty period. Perform all work under the direct supervision of a technician trained to recognize and treat conditions affecting the establishment and growth of the plants and perform the following:

1. Inspect the entire landscape at least once per week during the growing season and perform needed maintenance promptly.
2. Irrigation:

    a. Irrigate all plants to maintain optimum moisture within the root zone. Reoccurring overly dry or wet conditions shall be grounds for rejection of plant material. When using an automatic sprinkler system, the landscape installer responsible for maintenance shall bear full responsibility to set each zone to the correct frequency and duration.
    b. If the automatic irrigation system is inoperative or not present, provide an approved temporary irrigation system or hand water from a source approved by the Owner's Representative. The system shall have the ability to be operated without moving hoses or sprinklers around the site between seeded/planted areas (i.e. system can be set to water one area for the required maintenance period), and may be automated with a timer. Supply all water and equipment at the Contractor's expense from a source approved by the Owner's Representative.

3. All pruning shall be performed by or under the supervision of a licensed arborist. Prune dead wood and broken limbs as identified, in accordance with 3.7 - Pruning. Do not shear evergreens or any shrubs unless specifically required to be maintained as a sheared hedge. Maintain the natural shape of trees and shrubs.
4. Maintain stakes and guys taut and in the specified condition. Repair trees wraps if loose, torn or untied.
5. Maintain all plant beds and tree saucers weed free. Edge shrub and perennial beds and tree rings at least monthly during the growing season, keeping all tree rings to a uniform diameter. Hook mulch monthly and add mulch as needed.
6. Deadhead perennials as necessary during maintenance visits to extend blooming periods.
7. In spring – prior to the start of the growing season, cut all ornamental grasses, perennials ,annuals flush with the ground and remove cuttings from the site.
8. Apply treatments as necessary to keep plants and planted areas free of insects, pests, and disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and herbicides. Treatments include utilizing physical and cultural controls.
9. All pesticides shall be applied by a licensed pesticide applicator. Apply pesticides and all other chemical products and biological control agents in accordance with the authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner at least 24 hours before each application is performed. No mixing or disposal of chemicals is allowed onsite.
10. Apply antidesiccant to upright conifers December through February, at least once per month. In locations subject to high wind or salt spray, install burlap windscreens around spreading conifers and broadleaf evergreens but do not allow burlap to touch evergreen plants.
11. Collect all litter and debris from plant beds and dispose off-site.
12. Fertilization:

    a. Trees, shrubs and ornamental grasses: Fertilize once in the fall after the first hard freeze (usually October) but before the ground freezes; 1 pound of 4-1-2 (N-P-K) per 1,000 square feet of ground below the tree canopy or shrub bed.
    b. Perennials: Fertilize twice, once in the early spring and again 8 weeks later with 1 pound of 5-10-5 (N-P-K) per 100 square feet.
    c. Annuals and bulbs: For bed plantings, use high phosphorous granular fertilizer 10-20-10 (N-P-K) monthly during the growing season applied at a rate identify on the package label. For potted annuals, use high phosphorous water-soluble fertilizer 10-20-10 (N-P-K) every 2 weeks applied at a rate identified on the package label.

13. Remove dead and unacceptable plants as their condition becomes apparent.
14. At the end of the warranty period, but prior to Final Inspection, remove all guying, trunk wrap, watering saucers and top dress tree rings and beds 1 inch deep with the specified mulch product.

END OF SECTION

Appendix

GEOTECHNICAL EXPLORATION AND ENGINEERING SERVICES REPORT

PROPOSED IVES FIELD RECREATION ENHANCEMENTS

Highland Park, Michigan

SmithGroup, Inc.
500 Griswold St, # 1700
Detroit, MI 48226

July 03, 2025
NTH Project No. 24002549-GEO

NTH Consultants, Ltd.
41780 Six Mile Rd.
Suite 200
Northville, MI 48168

NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

41780 Six Mile Rd., Suite 200; Northville, MI 48168
Phone 248-553-6300

Mr. Mark Woodhurst
SmithGroup, Inc.
500 Griswold St, # 1700
Detroit, MI 48226

July 03, 2025
NTH Project No. 24002549-GEO

RE: Report on Geotechnical Exploration and Engineering Services
Proposed Ives Field Recreation Enhancement
Highland Park, Michigan

Dear Mr. Woodhurst,

NTH Consultants Ltd. (NTH) is pleased to submit this geotechnical engineering report for the proposed Ives Field Recreation Enhancement project located at 179 Midland Street in Highland Park, Michigan. NTH conducted this study in accordance with the agreed-upon geotechnical scope of work outlined in the project work authorization, dated March 13, 2025.

NTH appreciates the opportunity to have been of service to you, and we look forward to participating during the construction phase of this project. If you have any questions, or require additional information, please contact us.

Sincerely,

NTH Consultants, Ltd.

Signed by:
Luay F. Al-Durzi
4E6388E8B7E34B4...

Luay F. Al-Durzi, P.E.
Project Engineer

DocuSigned by:
Deep Bansal
2E4BB3E071BA49B...

Deep Bansal, P.E.
Senior Project Engineer

LAD/DB/mlk

Attachments

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APPENDIX

1.0 INTRODUCTION

This report presents the results of a geotechnical engineering investigation and analyses performed by NTH Consultants, Ltd. (NTH) for the proposed Ives Field Recreation Enhancement project located at 179 Midland Street in Highland Park, Michigan. The purpose of the study was to evaluate the general subsurface conditions at the site of the proposed project and provide recommendations for the structure foundations and other site preparation and grading.

The data obtained during the NTH geotechnical exploration, along with our evaluations, recommendations, and analyses, are provided in the following sections of this report.

2.0 PROJECT BACKGROUND AND UNDERSTANDING

NTH understands that SmithGroup, Inc. (SmithGroup) is working for the City of Highland Park to renovate the existing park. The existing park is bounded by 3rd Ave to the east, Midland Street to the north, Pitkin Street to the south, and Hamilton Ave to the west. There are some private properties located in the northwest quadrant of the block.

The project site consists of an existing Ernest T. Ford Recreation Center building and an open fitness area surrounded by an open grassy field. The southwest portion of the site consists of an open baseball field. The proposed renovation includes the addition of a new playground, a concrete pad, two new pickleball courts, baseball/softball fields with dirt infields, and a new pedestrian walk system.

Historical aerial views of the site show that the western side has included several open sports fields, while the eastern side featured commercial developments until the 1960s. Following this period, Midland Land School was built on the northern side of the park, until it was demolished in the early 2010s. Subsequently, the area remained undeveloped until it was converted into a community park in 2021.

Specific details of the park equipment and associated loads were not available at the time of this geotechnical study. However, NTH anticipates that structural loads associated with the proposed park equipment will be generally light. As such, it is expected that the proposed park equipment and security fence can be supported on a shallow spread or shallow drilled shaft foundation system.

3.0 GEOTECHNICAL STUDY ACTIVITIES

3.1 FIELD EXPLORATION

Field services associated with geotechnical exploration were conducted on May 28, 2025. Prior to performing the subsurface exploration, the Michigan one-call utility locating center (the MISS DIG system) was contacted to identify the location of existing underground utilities on the site.

3.1.1 Test Boring

Subsurface conditions at the site were explored by drilling seven test borings, designated as SG-01 through SG-07, as shown on the Exploration Location Plan, Figure No. 1 of the Appendix. The test boring locations were selected by SmithGroup and established in the field by NTH staff utilizing the provided soil boring layout.

The test borings were drilled by NTH's subcontractor, Brax Drilling, under the full-time observation of NTH staff. The test borings were drilled using a CME-45B truck-mounted drilling rig, and they were extended to a depth of 10 feet below the existing ground surface using Solid Stem Augers (SSA) with an outside diameter of 4 inches.

Within the test boring, soil samples were collected at 2.5 feet intervals to the exploration depth of 10 feet. Soil samples were obtained using a 1-3/8-inch inside diameter, split-barrel sampler per the Standard Penetration Test (SPT) method (ASTM D1586). The soil samples recovered from the test borings were sealed in glass containers and transported to NTH's laboratory for further classification and testing. NTH will retain these samples for 60 days after the date of this report. At that time, NTH will dispose of the samples unless otherwise instructed.

Upon completion, the soil borings were backfilled with soil cuttings, and leftover cuttings were spread near the borings.

3.2 PRESENTATION OF DATA

NTH has evaluated the soil and groundwater conditions encountered in the test boring and presented these conditions in the form of individual Logs of Test Boring, Figure No. 3 of the Appendix. General Notes defining the nomenclature used to describe the encountered soil conditions on the Log of Test Boring and elsewhere in this report are presented as Figure No. 2. In addition to subsoil stratification, the test boring logs present SPT results, observed groundwater levels, drilling and sampling information, and other pertinent information. NTH prepared the test boring logs included within this report on the basis of field and laboratory classification and testing. The ground surface elevation shown on the test boring logs and elsewhere in this report was obtained from Google Earth and was not surveyed; therefore, it should be considered approximate. All elevations provided herein are based on the North American Vertical Datum of 1988 (NAVD 88).

The stratification shown on the test boring logs represents the soil conditions at the actual explored locations. Variations in subsoil conditions may occur away from and between the boring locations. Additionally, the stratigraphic lines represent the approximate boundary between soil types; however, the transition may be more gradual than what is shown.

3.3 LABORATORY TESTING

Representative soil samples obtained during the field investigation were subjected to laboratory testing to evaluate the pertinent engineering characteristics of the subsoils. The testing included moisture content (ASTM D2216), dry density (ASTM D7263), grain size distribution (ASTM D 422), and unconfined compressive strength (ASTM D2166). The results of the soil laboratory testing are

presented in the Tabulation of Laboratory Test Data, Figure No. 4 of the Appendix. The test results for moisture content, dry density, and unconfined compressive strength are also indicated on the test boring log.

In addition to laboratory testing, field pocket penetrometer measurements were made on cohesive soil samples obtained from the test boring as an aid in evaluating their consistency description in the field. The pocket penetrometer values are indicated on the boring log.

4.0 SUBSURFACE CONDITIONS

4.1 GENERALIZED SOIL AND GROUNDWATER CONDITIONS

Based on the information developed during the course of this investigation, NTH evaluated the general subsurface conditions at the project site. Subsurface conditions encountered at the test boring location generally consist of a surficial topsoil layer followed by an undocumented fill underlain by native silty clay to the explored depth of the borings.

Surficial Material – Surficial material consists of approximately 2 to 6 inches of topsoil with a variable percentage of organics (roots) and gravel.

Undocumented Fill – Undocumented fill material was encountered below the surficial material. This layer generally consists of sand, silty sand, clayey sand, and sandy clay that extends to approximate depths ranging from 4 to 7 feet below the ground surface (bgs), corresponding to approximate elevations ranging from 635 to 632 feet. Variable amounts of debris were encountered within this layer, consisting of wood, concrete, plastic, glass, and brick. Relative density for the granular fill ranges from very loose to medium dense, and the consistency of the cohesive fill encountered at SG-3 was noted to be soft.

Native Cohesive Soils – Native cohesive soils consisting of silty clay with variable percentages of sand and gravel were encountered directly below the undocumented fill layer. A stiff to hard brown mottled gray silty clay layer extends to the exploration depth of approximately 10 feet bgs, corresponding to an approximate elevation ranging from 629 to 630 feet. The unconfined compressive strength of the silty clay was found to range from approximately 3,040 to more than 9,000 pounds per square foot (psf).

Groundwater Conditions - Groundwater was encountered during drilling at the location of SG-03 at a depth of 5 feet. No groundwater was encountered in any of the test borings upon completion of the drilling. Please note that the static groundwater level may not be discernible when drilling in cohesive soils. This is due to the low permeability of such soils and the tendency of drilling operations to seal off the natural paths of groundwater flow.

5.0 EVALUATION AND RECOMMENDATIONS

The following sections present our geotechnical engineering evaluations and recommendations pertaining to the proposed development.

5.1 SUBSURFACE EVALUATIONS

The existing undocumented fill deposits are of variable composition and densities, and they contain debris. As such, the fill deposits do not appear to have been placed in a controlled manner and, in their present condition, could undergo future settlement when subjected to additional loads. Accordingly, in the existing condition, the fill deposits are not considered to be suitable for the support of the structure foundations and will require further improvement, as discussed in Sections 5.2 (Site Preparation and Grading).

The undocumented fill materials that do not contain excessive amounts of deleterious materials may be left in place beneath pavements and sidewalks that do not impose high loads, if planned for this site, provided that subgrade preparation recommendations outlined in this report are adhered to, and settlement exceeding 1 inch can be tolerated. Otherwise, the undocumented fill soils will need to be removed in their entirety and replaced with engineered fill. In addition, undocumented fill soils that are free of deleterious materials and excessive moisture may be used as backfill materials in non-structural areas of the site, such as landscaped areas.

5.2 SITE PREPARATION AND GRADING

NTH anticipates that the final grade for project elements will be close to the existing ground surface. Regardless of the amount of earthwork required to achieve a final grade, NTH recommends that all earthwork operations be performed under adequate specifications and are properly controlled and observed in the field. All active or inactive utilities within the proposed construction areas should be identified for relocation, abandonment, or protected prior to (or during, if appropriate) any excavation operations. Extreme care should be exercised when making excavations close to existing utilities to prevent undermining or damage to the utilities. If excavations must be extended deeper than adjacent existing utilities, provisions should be made either to underpin the existing utility or to provide suitable lateral bracing.

In general, the construction on an undocumented fill is not preferable due to the variable composition and density of the undocumented fill. However, due to the depth of the fill within the vicinity of the proposed development, the removal of these fill materials will be expensive and difficult. In their present condition, the existing undocumented fill deposits are unsuitable for the direct support of the playground structure foundations due to variability of material and densities, amount of debris, and lack of control during placement. Therefore, the foundation recommendations listed in Section 5.3 should be followed for the structural foundations.

Initial site development activities should include clearing of the site, followed by the removal of any existing topsoil from the project area as well as removal of some of the existing surficial fill that contains large amount of organics and debris. For purposes of contract documents, organic soils that should be removed are any soils containing 4 percent or greater organic content. The material removal should extend a horizontal distance of at least 5 feet beyond planned construction lines.

Once a working surface has been established, the areas exposed as a result of site clearing and rough grading operations should be thoroughly proof-rolled using a heavy rubber-tired vehicle such as a dump truck or front-end loader, where feasible. Any areas that exhibit excessive movement or instability during proof-compaction or proof-rolling should be stabilized by aeration, drying, and re-compaction, if weather conditions are favorable, or by removal of the yielding soils and their

replacement with engineered fill. In addition, areas of cohesive subgrade soils within the playground structure excavations that appear to have been disturbed should be removed and replaced with engineered fill.

In addition to proof-rolling operations, site preparation activities should also include the thorough proof-compaction using a heavy vibratory roller of not less than 20 tons rated weight, making a minimum of ten overlapping passes in each of two perpendicular directions (where practical). In addition to detecting unstable areas, the compaction operation will serve to densify the near surface granular deposits, thereby improving their load supporting and settlement characteristics. During proof-compaction operations, any areas that exhibit yielding should be stabilized by removal and conditioning of the yielding soils or their replacement with engineered granular fill.

Material for engineered fill used to achieve design grades in proposed structure areas should consist of clean granular material such as soil meeting the requirements of Michigan Department of Transportation (MDOT) Class II granular material or MDOT 21AA dense-graded aggregate. NTH recommends that only MDOT Class II sand or 21AA aggregate be used below foundations to replace any unsuitable bearing soils, where they exist.

The fill material should be placed in uniform horizontal layers (lifts), the thickness of which is compatible with the type and condition of the material being placed, the area of placement, and the type of compaction equipment being used. In general, NTH recommends that lifts do not exceed 12 inches in loose thickness for materials being compacted with a medium, smooth vibratory roller (granular soils in structural areas) or 8 inches in loose thickness for cohesive materials being compacted using a large Sheep's-foot or segmental wheeled roller (cohesive soils in general fill areas, if applicable). Other types of compaction equipment may permit reducing or allowing increased lift thickness to achieve suitable compaction. Within structural areas, the fill should be compacted to achieve a density of at least 95 percent of the maximum dry density as determined by the Modified Proctor compaction test (ASTM D1557). All fill material should be placed and compacted at or near optimum moisture content. In-situ density tests should be performed to verify that proper compaction is achieved. Frozen material should not be used as fill, nor should fill be placed on a frozen subgrade.

It should be noted that the site subsoils, and particularly cohesive subsoils, tend to soften when wet or when disturbed by construction traffic. Therefore, depending on the weather conditions and the type of equipment and construction procedures used, instability may develop in excavation bottoms left open for any period of time. If excess wetting of subsoils occurs, the excessively wetted (unsuitable) material should be removed and replaced with suitable granular soils or crushed aggregate that is placed and compacted as engineered fill. NTH recommends that the site grading be maintained to provide for rapid runoff of precipitation to reduce the potential for water infiltration.

If earthwork operations are to be performed during wet or cold weather, significant difficulty should be anticipated in drying and stabilizing any exposed cohesive soils. Under such circumstances, it may be necessary to use imported granular soils and/or coarse aggregate such as MDOT 21AA crushed limestone to achieve proper stabilization.

5.3 FOUNDATION RECOMMENDATIONS

Based on our evaluations of the subsurface conditions and the information provided, conventional shallow foundations and drill shaft foundations may be used to support the proposed park equipment.

The proposed park equipment can be indirectly supported on existing clean, properly compacted, undocumented fill. For this approach, the intent is to have the footings bear on a pad of compacted aggregate up to 2 feet thick that is placed subsequent to proof compaction of the surficial fill materials. This approach would only be used for the support of lightly loaded playground equipment for this project and would not be used for buildings or other settlement-sensitive structures (if planned).

It is our opinion that existing fill deposits could potentially be allowed to remain in place below a pad of engineered fill provided that (1) existing fill materials below the bottom of the pad do not contain appreciable amounts of organic matter or debris, and (2) settlement of the completed structures in excess of 1 inch total and ½ inch differential can be tolerated, if it were to occur. If these requirements cannot be met at any footing location, the existing fill deposits would need to be completely removed and replaced with engineered fill. Regardless of the consistency or density of the fill deposits, if the fill materials are found to contain appreciable amounts of organic matter (in excess of 4 percent organic content), the fill must not be allowed to remain below the compacted aggregate pad and must be removed in its entirety and replaced with engineered fill.

Note that the allowable shallow bearing capacities presented in Sections 5.3.1 and 5.3.2 were developed based on consideration of long-term static loading. Higher allowable values may be used for resisting temporary transient loads, such as wind and/or seismic loads. Foundation design for these types of transient loading conditions may be based on allowable shallow bearing pressures that are increased by 33% above the values presented in the referenced sections below.

NTH recommends that all foundation excavations be observed and tested in the field by a qualified person to verify that adequate in-situ soil bearing conditions, compatible with the recommendations outlined in this report, are achieved. Should soils with inadequate bearing capacity be encountered at the bearing levels of the foundations, the excavations should be extended until suitable bearing soils are achieved.

5.3.1 Conventional Shallow Foundations (Lightly Loaded Park Equipment)

The proposed playground equipment may be supported by a conventional shallow foundation system consisting of spread and strip foundations bearing at a minimum depth of 3.5 feet below the ground surface, bearing on compacted engineered fill established on the improved subgrade.

A net allowable soil bearing pressure of 1,500 psf may be used for the design of the playground equipment footings bearing on an engineering fill pad, provided the recommendations described herein are followed. The engineered fill pad should be constructed by excavating to a depth of 2 feet below the planned bearing level of the footings and removal of any exposed organic soils and/or debris, compact the exposed subgrade to 95% percent of the maximum dry density, followed by placing a layer of 1×3 aggregate to a loose thickness of 12 inches, placing a layer of crushed aggregate meeting the requirements for MDOT 21AA dense-graded aggregate to the design bearing level of the footing, and thoroughly compacting the entire aggregate surface using a

high-powered compaction equipment, such as a hoe-pack. It is expected that this compaction will cause densification of the aggregate layers as well as some penetration of the lower 1×3 aggregate into the underlying subgrade, resulting in lowering of the surface of the pad. An additional 21AA aggregate should be placed and compacted in the same manner to result in the top of the pad reaching the design bearing level.

For lateral resistance of shallow spread footings bearing on engineered fill, an allowable friction factor of 0.27 may be used. This value includes a factor of safety of 1.5. If foundations are to be constructed during periods of freezing weather, they should be insulated or otherwise protected against freezing temperatures. Furthermore, care will be required during winter construction to verify that the foundations are not constructed on frozen soil.

All strip footings should be at least 18 inches in width, and isolated spread footings should be at least 24 inches in their least dimension, regardless of the resulting bearing pressure. Spread footings constructed adjacent to existing footings as well as new footings/foundations at different levels, should be designed and constructed so that the least distance between them is equivalent to or more than the difference in their bearing levels.

5.3.2 Drilled Shaft Foundations

Based on the available information, foundation elements for the security fence and posts can also be supported on the shallow drilled shafts. Based on the soil conditions encountered during the investigation, we recommend that the drilled shafts bear on the native very stiff to hard silty clay encountered at depths of approximately 4 feet to 7 feet below the ground surface. Drilled shafts with a minimum diameter of 2 feet bearing on the very stiff silty clay on the basis of a net allowable bearing pressure of 5,000 psf. In addition to bearing capacity, these foundations must be designed to provide adequate lateral capacity for the supported structures. We recommend that an allowable lateral modulus of subgrade reaction of 25 pounds per cubic inch (pci) be used for determining the lateral capacity of the drilled shafts in the existing undocumented fill material. The top 42 inches of the drilled pier foundation should be ignored during the lateral design as the soil has a tendency to pull away from the foundation when it freezes.

Due to the presence of the granular soil, we anticipate the foundations will require the use of casing to reduce the potential caving of the sides of the excavation. Therefore, the contractor should have adequate casing on-site to support the walls of the excavation for the entire depth of the excavation. The casing will also serve to limit the movement of the surrounding soils that could affect nearby structures.

Based on the data obtained during this investigation, we do not anticipate significant groundwater-related problems during construction with excavations that terminate above the groundwater level. Should groundwater enter the excavation (or through the bottom of the excavation if the casing is used), the contractor should be prepared to pump out groundwater using a submersible pump prior to placing any concrete. In addition, some side-wall instability could occur, and in such cases, the contractor should be prepared to fully case the hole during excavation or use slurry to maintain a stable hole during drilling. When withdrawing the casing a surplus head of concrete must be maintained with the casing to prevent soil from intruding into the excavation.

5.4 SUPPORT OF PICKLEBALL COURT, SIDEWALKS, AND PAVEMENTS

Indirect support for the pickleball court, sidewalk, and pavement can be achieved by utilizing the existing, properly compacted, undocumented fill. Procedures detailed in the site preparation and grading section of this report should be followed. Specifically, the existing fill soil is to be excavated to a depth of 12 inches below the existing grade and subsequently replaced with engineered fill up to the design subgrade elevation. A layer of biaxial geogrid should be installed between the aggregate lifts to enhance the load-bearing capacity of the soil and prevent lateral spreading, thereby improving overall stability and reducing potential settlement. We recommend that the geogrid layer should not be more than 6 inches below the bearing level.

Materials for the engineered fill layer may consist of material meeting the specifications for MDOT 21AA dense-graded aggregate. The subgrade resulting from the satisfactory completion of the site and subgrade preparation activities outlined in this report can be used for the support of a pickleball court and pavement.

For the rigid (concrete) pavements and conventional flexible pavements (asphalt) and based on the slight variation of subgrade soils along the alignment, a modulus of subgrade reaction (k) value of 80 psi/in and a resilient modulus (MR) value of 4,000 psi, typical of granular and cohesive soils expected at the site, is recommended. Note that if the existing fill deposits are left in place beneath pavements, some settlement of the pavements cannot be precluded.

The pavement surface and the layer surfaces should be sloped to facilitate surface and subsurface drainage. A slope of 1% to 2% is typically sufficient to support drainage. Additionally, a series of subsurface drains should be included to collect subsurface water and move it away from the pavement structure. It is critical to ensure proper subsurface drainage and reduce the risk of frost-heave effects as well as subgrade softening under saturated conditions.

5.5 GROUNDWATER CONDITIONS AND CONTROL

As indicated earlier in this report, groundwater was encountered during drilling at the locations of SG-03 at 5.0 feet below the ground surface. It should be noted that fluctuations in groundwater levels should be anticipated due to seasonal variations and following periods of prolonged precipitation or drought. In addition, water level observations during drilling in predominantly cohesive soils are not necessarily indicative of the static groundwater level. This is due to the relatively low permeability of such soils and the tendency of drilling operations to seal the natural paths of groundwater flow. Fluctuations in the groundwater levels at this site should be anticipated with seasonal variations and following periods of prolonged precipitation.

The groundwater level encountered was found to be in a perched condition at the time of our investigation. Perched conditions may be present within the granular fill soils after wet weather events due to the low-permeability cohesive soils beneath them. Groundwater accumulations in excavations that terminate in the cohesive soils below the upper granular soils are expected to be controllable with pumping from construction sumps extending into the clay soils, provided that inflows from the upper granular soils are controlled. It is important to divert any surface water away from the excavations and properly control it in the field. Foundation excavations should be left open for as little time as possible to protect the bearing soils from disturbance by ponded water or construction traffic.

5.6 TEMPORARY EXCAVATIONS AND EARTH SUPPORT REQUIREMENTS

All excavations deeper than 5 feet should be properly sloped or otherwise structurally retained to provide stable and safe working conditions. In areas where there is inadequate space to allow for proper side slopes for trenches and other excavations, vertical walls with properly designed and installed lateral bracing, or a combination of slopes and braced vertical walls may be used. In all cases, Michigan Department of Labor and Economic Opportunity (LEO) requirements, i.e., the Michigan Occupational Safety and Health Act (known as MIOSHA) and related regulations, as well as any additional local regulations or owner requirements, must be followed and adequate protection provided for workers and adjacent structures.

Construction traffic and excavated material stockpiles should be kept away from excavations a minimum distance equal to the full depth of the excavation unless the resulting surcharge loads are accounted for in the design of the lateral bracing system. The contractor's proposed excavations, support systems, and sequence of construction should be reviewed by a qualified engineer prior to allowing the contractor to commence work.

5.7 DATA REVIEW AND FIELD MONITORING

The evaluations and recommendations presented in this report relative to site preparation and foundations have been formulated based on the information, some of which may be preliminary and approximate, provided to us and/or the assumptions stated herein relating to the proposed project. NTH's understanding of this data has been outlined in the pertinent sections of this report. Any significant changes in this information should be brought to our attention for review with respect to the prevailing subsurface conditions.

Experience indicates that the actual subsurface conditions at a site may vary from those generalized on the basis of test borings made at specific locations. Therefore, we recommend that NTH be retained to provide soil engineering services during the site preparation, excavation, and foundation installation phases of the proposed project. This is necessary to observe compliance with the design concepts, specifications, and recommendations. Also, field monitoring allows design changes to be made in a timely manner in the event that subsurface conditions differ from those anticipated prior to the start of construction.

6.0 LIMITATIONS

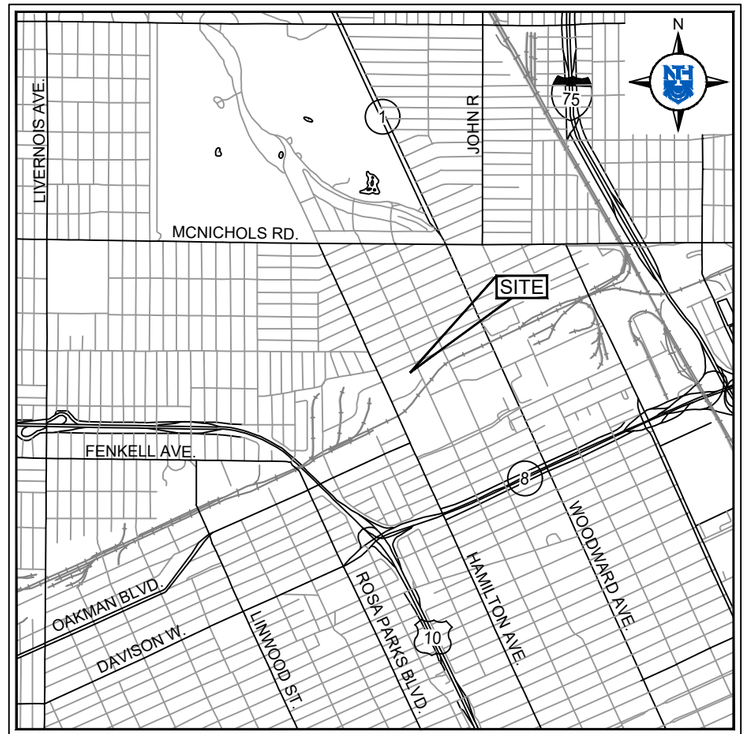
This report is intended for specific use in the design and construction of the proposed Ives Field Recreation Enhancement located in Highland Park, Michigan. NTH's work was performed in accordance with the prevailing standard of practice in this area at the time the work was performed. No other warranty, express or implied, is provided or intended.

This report is intended for the exclusive use of SmithGroup and their representatives. This report presents NTH's opinion as of this date, based on the results of the study described herein, and on the information provided during the course of the study. The results of this study may not be relied upon by parties other than those identified above without prior knowledge and written consent of NTH.

The scope of the present study was limited to evaluation of subsurface conditions for the support of the proposed equipment replacement and other related aspects of development. No environmental or hydrological testing or analyses were performed as part of this geotechnical study.

APPENDIX

- Figure No. 1 – Exploration Location Plan
- Figure No. 2 – NTH General Notes
- Figure No. 3 – Log of Test Boring
- Figure No. 4 – Tabulation of Laboratory Data
- Figure No. 5 – Grain Size Distribution Curves



SITE LOCATION MAP SCALE: NONE

LEGEND

TEST BORING DRILLED BY BRAX DRILLING
UNDER THE OBSERVATION OF NTH CONSULTANTS, LTD.
ON MAY 28, 2025

N

GRAPHIC SCALE

120 0 120

1" = 120'

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and Environmental Services

NTH PROJECT No: 24002549-GEO	CAD FILE NAME: D24002549O1
DESIGNED BY: LAD	INCEP DATE: 19 JUN 2025
DRAWN BY: DET	DRAWING SCALE: 1" = 120'
CHECKED BY: DB	PLOT DATE: 19 Jun 2025

EXPLORATION LOCATION PLAN

PROPOSED IVES FIELD RECREATION ENHANCEMENT
HIGHLAND PARK, MICHIGAN

FIGURE No.

1

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GENERAL NOTES

TERMINOLOGY

Unless otherwise noted, all terms utilized herein refer to the Standard Definitions presented in MDOT Geotechnical Manual

PARTICLE SIZES

Boulder	-	Greater than 12 inches (304.8mm)
Cobble	-	3 inches (76.2mm) to 12 inches (304.8 mm)
Gravel - Coarse	-	3/4 inches (19mm) to 3 inches (76.2mm)
Fine	-	No. 4 - 3/16 inches (4.76mm) to 3/4 inches (19mm)
Sand - Coarse	-	No. 10 (2.00mm) to No. 4 (4.76mm)
Medium	-	No. 40 (0.425mm) to No. 10 (2.00mm)
Fine	-	No. 200 (0.075mm) to No. 40 (0.425mm)
Silt	-	0.002mm to 0.075mm
Clay	-	Less than 0.002mm

CLASSIFICATION

The major soil constituent is the principal noun, i.e., clay, silt, sand, gravel. The second major soil constituent and other minor constituents are reported as follows:

Secondary Soil Constituent (percent by weight)	**Tertiary Soil Constituents (percent by weight)**	
≥12% for fine grained and ≥30% for coarse grained (Use adjectives, Eg: Clayey__, Silty_, etc.)	5 to < 12% for fine grained and 15 to < 30% for coarse grained soils (Use "with__" at the end, following the primary constituent)	< 5% for fine grained and < 15% for coarse grained soils (Use "with Trace of_" at the end of the classification)

COHESIVE SOILS

If clay content is sufficient so that clay dominates soil properties, clay becomes the principal noun with the other major soil constituent as modified; i.e., silty clay. Other minor soil constituents may be included in accordance with the classification breakdown for cohesionless soils; i.e., silty clay with trace of sand and gravel.

Consistency	**Cohesion (psf)**	**Approximate Range of (N)**
Very Soft	0 – 250	≤ 2
Soft	> 250 – 500	3 – 4
Medium Stiff	> 500 – 1,000	5 – 8
Stiff	> 1,000 – 2,000	9 – 15
Very Stiff	> 2,000 – 4,000	16 – 30
Hard	> 4,000	> 30

Consistency of cohesive soils is based upon an evaluation of the observed resistance to deformation under load and not upon the Standard Penetration Resistance (N).

COHESIONLESS SOILS

Density Classification	**Relative Density %**	**Approximate Range of (N)**
Very Loose	≤ 20	≤ 4
Loose	> 20 – 40	5 – 10
Medium Dense	> 40 – 70	11 – 30
Dense	> 70 – 85	31 – 50
Very Dense	> 85 – 100	> 50

Relative density of cohesionless soils is based upon the evaluation of the Standard Penetration Resistance (N), modified as required for depth effects, sampling effects, etc.

SAMPLE DESIGNATIONS

AS - Auger Sample - directly from auger flight
BS - Miscellaneous Sample - bottle or bag
S - Split Spoon Sample - ASTM D 1586
LS - Split Spoon Sample S with Liner Insert 3 inches in length
ST - Shelby Tube Sample - 3 inch diameter unless otherwise noted
PS - Piston Sample - 3 inch diameter unless otherwise noted
RC - Rock Core - NX core unless otherwise noted
CS - Continuous Sample - from rock core barrel or continuous sampling device
VS - Vane Shear

STANDARD PENETRATION TEST (ASTM D 1586) - A 2.0" outside-diameter, 1-3/8" inside-diameter, split barrel sampler is driven into undisturbed soil by means of a 140-pound weight falling freely through a vertical distance of 30 inches. The sampler is normally driven three successive 6-inch increments. The total number of blows required for the 2nd and 3rd 6-inch penetrations is the Standard Penetration Resistance (N).

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BOREHOLE NUMBER SG-1

Sheet 1 of 1

CLIENT Smithgroup
PROJECT NAME Highland Park Ives Field Recreation Enhancements
PROJECT NUMBER 24002549-GEO
PROJECT LOCATION Highland Park, MI
DATE STARTED 05-28-2025 **COMPLETED** 05-28-2025
COORDINATES N: 333941.5 ft E: 13463315.7 ft
DRILLING CONTRACTOR Brax Drilling
GROUND ELEVATION 640.0 ft **FINAL DEPTH:** 10.0 ft
EQUIPMENT CME-45B truck mounted drill rig using 4 inch O.D. S.S.A. to E.O.B.
GROUNDWATER LEVELS
BACKFILL Borehole backfilled with soil cuttings.
AT TIME OF DRILLING Not encountered.
DRILLER T. Rau **LOGGED BY** A. Varghese
AT END OF DRILLING Not encountered.
CHECKED BY L. Al-Durzi
AFTER DRILLING Not recorded.

Elevation (ft)	Depth (ft)	Material Description	Sample Type Number	Blow Counts (N Value)	Recovery %
639.8	0.2	TOPSOIL: Brown SILTY SAND with Organics (Roots)			
		FILL: Loose to Medium Dense Brown SILTY SAND with Gravel and Debris (Wood and Concrete)	LS-1	8-11-7 (18)	72
			LS-2	4-5-4 (9)	50
635.5	4.5	FILL: Loose Brown SAND with Silt and Trace of Gravel			
			LS-3	6-9-11 (20)	78
633.5	6.5	Hard Brown Mottled Gray SILTY CLAY with Trace of Sand and Gravel			
			LS-4	6-11-15 (26)	67
630.0	10.0	Terminated at 10.0 ft. E.O.B.			

N Value: 10 20 30 40 50
HAND PENET.
UNC. COMP. (TSF): 1 2 3 4 5 6 7 8

Unconf. Comp. St. (TSF)	Moisture Content (%)	Dry Density (pcf)
	9.7	105.0
8.38	14.4	123.3
4.50		

NOTES

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BOREHOLE NUMBER SG-2

Sheet 1 of 1

CLIENT Smithgroup
PROJECT NAME Highland Park Ives Field Recreation Enhancements
PROJECT NUMBER 24002549-GEO
PROJECT LOCATION Highland Park, MI
DATE STARTED 05-28-2025 **COMPLETED** 05-28-2025
COORDINATES N: 333972.8 ft E: 13463215.3 ft
DRILLING CONTRACTOR Brax Drilling
GROUND ELEVATION 639.0 ft **FINAL DEPTH:** 10.0 ft
EQUIPMENT CME-45B truck mounted drill rig using 4 inch O.D. S.S.A. to E.O.B.
GROUNDWATER LEVELS
BACKFILL Borehole backfilled with soil cuttings.
AT TIME OF DRILLING Not encountered.
DRILLER T. Rau **LOGGED BY** A. Varghese
AT END OF DRILLING Not encountered.
CHECKED BY L. Al-Durzi
AFTER DRILLING Not recorded.

ELEVATION (ft)	MATERIAL DESCRIPTION	Elevation (ft)	Depth (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY %	UNCONF. COMP. ST. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
638	TOPSOIL: Brown SILTY SAND with Organics (Roots)	638.8	0.2							
	FILL: Loose to Medium Dense Brown SILTY SAND with Clay and Debris (Wood, Brick, and Concrete)				LS-1	8-12-10 (22)	22			
634				5	LS-2	7-4-4 (8)	33		14.7	108.0
	Hard Brown Mottled Gray SILTY CLAY with Trace of Sand and Gravel	632.5	6.5		LS-3	3-5-8 (13)	56	4.28	14.2	122.3
629		629.0	10.0	10	LS-4	7-11-22 (33)	83	4.50		
	Terminated at 10.0 ft. E.O.B.									
624				15						
619				20						
614				25						

N Value: 10 20 30 40 50
HAND PENET.
UNC. COMP. (TSF): 1 2 3 4 5 6 7 8

NOTES

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

BOREHOLE NUMBER SG-3

Sheet 1 of 1

CLIENT Smithgroup
PROJECT NUMBER 24002549-GEO
DATE STARTED 05-28-2025 **COMPLETED** 05-28-2025
DRILLING CONTRACTOR Brax Drilling
EQUIPMENT CME-45B truck mounted drill rig using 4 inch O.D. S.S.A. to E.O.B.
BACKFILL Borehole backfilled with soil cuttings.
DRILLER T. Rau **LOGGED BY** A. Varghese
CHECKED BY L. Al-Durzi

PROJECT NAME Highland Park Ives Field Recreation Enhancements
PROJECT LOCATION Highland Park, MI
COORDINATES N: 333939.1 ft E: 13463156.3 ft
GROUND ELEVATION 639.0 ft **FINAL DEPTH:** 10.0 ft
GROUNDWATER LEVELS
AT TIME OF DRILLING 5.0 ft
AT END OF DRILLING Not encountered.
AFTER DRILLING Not recorded.

Elevation (ft)	Material Description	Depth (ft)	Sample Type Number	Blow Counts (N Value)	Recovery %	N Value	Hand Penet. / Unc. Comp. (TSF)	Unconf. Comp. St. (TSF)	Moisture Content (%)	Dry Density (pcf)
638.5	TOPSOIL: Brown SILTY SAND with Gravel and Organics (Roots)	0.5								
	FILL: Medium Dense Brown SILTY SAND with Gravel and Debris (Wood and Concrete)		LS-1	6-8-5 (13)	28				7.0	
636.0		3.0								
	FILL: Very Loose Brown SILTY SAND with Clay, Gravel, and Debris (Wood and Plastic)		LS-2	1-1-2 (3)	33					
634.0	▽	5.0								
	FILL: Very Soft Brown SANDY CLAY with Gravel		LS-3	2-7-11 (18)	67		◆	3.50		
632.0		7.0								
	Very Stiff to Hard Brown Mottled Gray SILTY CLAY with Trace of Sand and Gravel		LS-4	6-11-18 (29)	78		■	6.98	14.8	121.7
629.0		10.0								
	Terminated at 10.0 ft. E.O.B.									

NOTES

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

BOREHOLE NUMBER SG-4

Sheet 1 of 1

CLIENT Smithgroup
PROJECT NUMBER 24002549-GEO
DATE STARTED 05-28-2025 **COMPLETED** 05-28-2025
DRILLING CONTRACTOR Brax Drilling
EQUIPMENT CME-45B truck mounted drill rig using 4 inch O.D. S.S.A. to E.O.B.
BACKFILL Borehole backfilled with soil cuttings.
DRILLER T. Rau **LOGGED BY** A. Varghese
CHECKED BY L. Al-Durzi

PROJECT NAME Highland Park Ives Field Recreation Enhancements
PROJECT LOCATION Highland Park, MI
COORDINATES N: 333913.3 ft E: 13463137.8 ft
GROUND ELEVATION 639.0 ft **FINAL DEPTH:** 10.0 ft
GROUNDWATER LEVELS
AT TIME OF DRILLING Not encountered.
AT END OF DRILLING Not encountered.
AFTER DRILLING Not recorded.

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft)	Depth (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY %	N Value (10 20 30 40 50)	HAND PENET. / UNC. COMP. (TSF) (1 2 3 4 5 6 7 8)	UNCONF. COMP. ST. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
		TOPSOIL: Brown SILTY SAND with Organics (Roots)	638.7	0.3									
		FILL: Loose Brown SILTY SAND with Gravel and Debris (Wood, Plastic, and Brick)	636.0	3.0		LS-1	4-3-3 (6)	50					
634		FILL: Very Loose Brown CLAYEY SAND with Gravel and Debris (Brick)	632.0	7.0	5	LS-2	1-1-1 (2)	17				15.2	
		Hard Brown Mottled Gray SILTY CLAY with Trace of Sand and Gravel	629.0	10.0		LS-3	4-8-11 (19)	44			4.50		
629		Terminated at 10.0 ft. E.O.B.			10	LS-4	7-14-20 (34)	83			4.50		
624					15								
619					20								
614					25								

NOTES

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

BOREHOLE NUMBER SG-5

Sheet 1 of 1

CLIENT Smithgroup
PROJECT NAME Highland Park Ives Field Recreation Enhancements
PROJECT NUMBER 24002549-GEO
PROJECT LOCATION Highland Park, MI
DATE STARTED 05-28-2025 **COMPLETED** 05-28-2025
COORDINATES N: 333916.4 ft E: 13463100.0 ft
DRILLING CONTRACTOR Brax Drilling
GROUND ELEVATION 639.0 ft **FINAL DEPTH:** 10.0 ft
EQUIPMENT CME-45B truck mounted drill rig using 4 inch O.D. S.S.A. to E.O.B.
GROUNDWATER LEVELS
BACKFILL Borehole backfilled with soil cuttings.
AT TIME OF DRILLING Not encountered.
DRILLER T. Rau **LOGGED BY** A. Varghese
AT END OF DRILLING Not encountered.
CHECKED BY L. Al-Durzi
AFTER DRILLING Not recorded.

ELEVATION (ft)	Elevation (ft)	MATERIAL DESCRIPTION	Depth (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY %	UNCONF. COMP. ST. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
	638.5	TOPSOIL: Brown SILTY SAND with Organics (Roots)	0.5							
		FILL: Loose Brown SILTY SAND with Debris (Brick)			LS-1	3-4-4 (8)	17		11.2	
	636.0		3.0							
		FILL: Very Loose Brown CLAYEY SAND with Debris (Wood and Brick)			LS-2	1-2-2 (4)	33			
634	633.0		6.0	5						
		Hard Brown Mottled Gray SILTY CLAY with Trace of Sand and Gravel			LS-3	3-5-7 (12)	61	4.49	15.2	117.5
					LS-4	8-14-20 (34)	83	4.50		
629	629.0		10.0	10						
		Terminated at 10.0 ft. E.O.B.								
624				15						
619				20						
614				25						

N Value: 10 20 30 40 50
HAND PENET.
UNC. COMP. (TSF): 1 2 3 4 5 6 7 8

NOTES

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

BOREHOLE NUMBER SG-6

Sheet 1 of 1

CLIENT Smithgroup
PROJECT NUMBER 24002549-GEO
DATE STARTED 05-28-2025 **COMPLETED** 05-28-2025
DRILLING CONTRACTOR Brax Drilling
EQUIPMENT CME-45B truck mounted drill rig using 4 inch O.D. S.S.A. to E.O.B.
BACKFILL Borehole backfilled with soil cuttings.
DRILLER T. Rau **LOGGED BY** A. Varghese
CHECKED BY L. Al-Durzi

PROJECT NAME Highland Park Ives Field Recreation Enhancements
PROJECT LOCATION Highland Park, MI
COORDINATES N: 333794.3 ft E: 13463220.6 ft
GROUND ELEVATION 639.0 ft **FINAL DEPTH:** 10.0 ft
GROUNDWATER LEVELS
AT TIME OF DRILLING Not encountered.
AT END OF DRILLING Not encountered.
AFTER DRILLING Not recorded.

ELEVATION (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	Elevation (ft)	Depth (ft)	DEPTH (ft)	SAMPLE TYPE NUMBER	BLOW COUNTS (N VALUE)	RECOVERY %	N Value (10 20 30 40 50)	HAND PENET. / UNC. COMP. (TSF) (1 2 3 4 5 6 7 8)	UNCONF. COMP. ST. (TSF)	MOISTURE CONTENT (%)	DRY DENSITY (pcf)
		TOPSOIL: Brown SILTY SAND with Organics (Roots)	638.7	0.3									
		FILL: Loose to Very Loose Brown SAND with Trace of Clay, Silt, Gravel and Debris (Concrete and Wood)				LS-1	2-2-2 (4)	44				6.2	
						LS-2	1-2-3 (5)	33					
634			634.0	5.0	5								
		Very Stiff to Hard Brown Mottled Gray SILTY CLAY with Trace of Sand and Gravel				LS-3	3-5-6 (11)	72			3.95	16.5	116.0
						LS-4	7-12-19 (31)	78			4.50		
629			629.0	10.0	10								
		Terminated at 10.0 ft. E.O.B.											
624					15								
619					20								
614					25								

NOTES

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

BOREHOLE NUMBER SG-7

Sheet 1 of 1

CLIENT Smithgroup
PROJECT NUMBER 24002549-GEO
DATE STARTED 05-28-2025 **COMPLETED** 05-28-2025
DRILLING CONTRACTOR Brax Drilling
EQUIPMENT CME-45B truck mounted drill rig using 4 inch O.D. S.S.A. to E.O.B.
BACKFILL Borehole backfilled with soil cuttings.
DRILLER T. Rau **LOGGED BY** A. Varghese
CHECKED BY L. Al-Durzi

PROJECT NAME Highland Park Ives Field Recreation Enhancements
PROJECT LOCATION Highland Park, MI
COORDINATES N: 333300.9 ft E: 13462887.7 ft
GROUND ELEVATION 639.0 ft **FINAL DEPTH:** 10.0 ft
GROUNDWATER LEVELS
AT TIME OF DRILLING Not encountered.
AT END OF DRILLING Not encountered.
AFTER DRILLING Not recorded.

Elevation (ft)	Depth (ft)	Material Description	Sample	Blow Counts (N Value)	Recovery %	N Value	Hand Penet. / Unc. Comp. (TSF)	Unconf. Comp. St. (TSF)	Moisture Content (%)	Dry Density (pcf)
638.7	0.3	TOPSOIL: Brown SILTY SAND with Organics (Roots)								
		FILL: Medium Dense Dark Brown SILTY SAND with Gravel and Debris (Brick and Wood)	LS-1	6-10-7 (17)	22					
635.0	4.0	Stiff Brown Mottled Gray SILTY CLAY with Trace of Sand and Gravel	LS-2	2-3-3 (6)	44			1.52	20.1	104.7
633.5	5.5	Hard Brown Mottled Gray SILTY CLAY with Trace of Sand and Gravel	LS-3	3-6-9 (15)	56			6.88	14.6	122.5
			LS-4	6-13-20 (33)	78			4.50		
629.0	10.0	Terminated at 10.0 ft. E.O.B.								

NOTES

Project No.	25002549-GEO	NTH Consultants, Ltd.	Proposed Ives Field Recreation Enhancement Project Highland Park, MI

TABULATION OF LABORATORY TEST DATA

Boring / Test Pit / Probe Designation	Sample Number	Depth of Sample Tip (ft)	Elevation of Sample Tip (ft)	Unconfined Compressive Strength (psf)	Failure Strain (%)	Natural Water Content (% of dry weight)	In-Place Dry Density (lbs/cu.ft)	PERMEABILITY (CM/SEC)	PARTICLE SIZE DISTRIBUTION (%)							ATTERBERG LIMITS (%)			Optimum Moisture content (%)	Proctor (Maximum Dry Density- lbf/ft²)	Unified Soil Classification
									Colloids	Clay	Silt	Fine Sand	Medium Sand	Coarse Sand	Gravel	Liquid Limit	Plastic Limit	Plasticity Index			
SG-1	LS-2	5.0	635.0	-	-	9.7	105	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-1	LS-3	7.5	632.5	16,772	15.0	14.4	123.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-2	LS-2	5.0	634.0	-	-	14.7	108.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-2	LS-3	7.5	631.5	8,560	15	14	122	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-3	LS-1	2.5	636.5	-	-	7.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-3	LS-4	10.0	629.0	13,960	15.0	14.8	121.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-4	LS-2	5.0	634.0	-	-	15.2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-5	LS-1	2.5	636.5	-	-	11.2	-	-	-	40.2		41.9	7.8	4.2	5.8	-	-	-	-	-	-
SG-5	LS-3	7.5	631.5	8,980	13.6	15.2	117.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-6	LS-1	2.5	636.5	-	-	6.2	-	-	-	11.4		74.8	8.0	3.1	2.8	-	-	-	-	-	-
SG-6	LS-3	7.5	631.5	7,910	15	16.5	116.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-7	LS-2	5.0	634.0	3,058	15.0	20.1	104.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG-7	LS-3	7.5	631.5	13,768	15.0	14.6	122.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-

FIGURE No. 4

NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

Livonia Laboratory
NTH Consultants, Ltd.
11675 Belden Ct.
Livonia, Michigan 48150
(248) 553-6300
www.nthconsultants.com

Aggregate/Soil Test Report

Report No: MAT:25-0343-S08
Issue No: 1

Client: Smithgroup, Inc.

Project: Ives Field - Highland Park
Geotechncial Services

Job No: 24002549-GEO

AASHTO ACCREDITED

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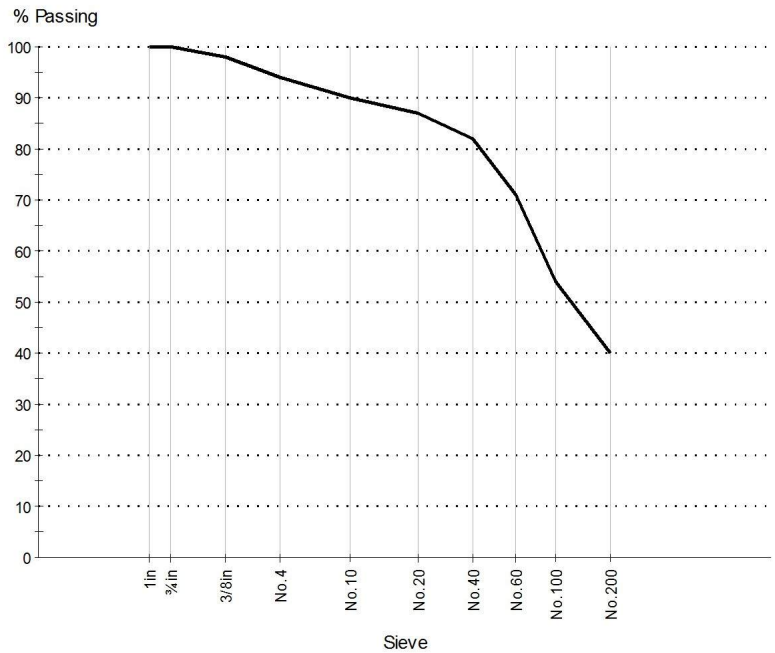
Date of Issue: 6/9/2025
Reviewed By: Joe O'Connell

Sample Details

Sample ID:	25-0343-S08
Boring No:	SG-5
Field Sample No:	LS-1
Sample Depth:	2.5
Date Sampled:	5/28/2025
Sampled By:	Abraham Varghese
Source:	In-Situ Soil
Specification:	ASTM D-422
Sampling Method:	ASTM D1586 -Split Spoon
Sample Location:	Highland Park, Michigan

Sample Description:

Particle Size Distribution



COBBLES	GRAVEL		SAND			FINES (40.2%)	
(0.0%)	Coarse (0.0%)	Fine (5.8%)	Coarse (4.2%)	Medium (7.8%)	Fine (41.9%)	Silt	Clay

Grading: ASTM D 422

Drying By: Oven
Date Tested: 6/6/2025
Tested By: Shawn Pierce

Sieve Size	% Passing	Limits
1in	100	
¾in	100	
3/8in	98	
No.4	94	
No.10	90	
No.20	87	
No.40	82	
No.60	71	
No.100	54	
No.200	40	
Finer No.200 (75µm)	39.2	

D85: 0.6442 **D60:** 0.1796 **D50:** 0.1231
D30: N/A **D15:** N/A **D10:** N/A

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NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

Livonia Laboratory
NTH Consultants, Ltd.
11675 Belden Ct.
Livonia, Michigan 48150
(248) 553-6300
www.nthconsultants.com

Aggregate/Soil Test Report

Report No: MAT:25-0343-S10
Issue No: 1

Client: Smithgroup, Inc.

Project: Ives Field - Highland Park
Geotechncial Services

Job No: 24002549-GEO

AASHTO ACCREDITED

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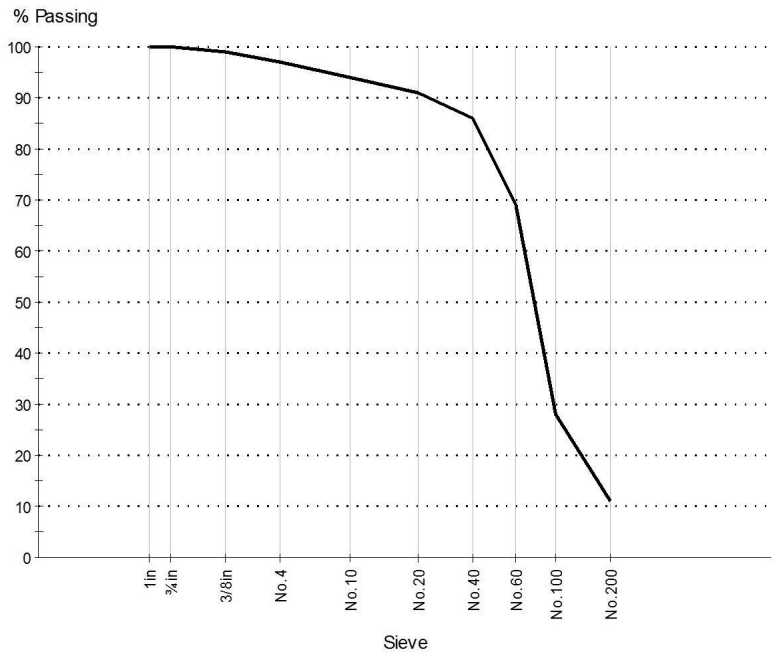
Date of Issue: 6/9/2025
Reviewed By: Joe O'Connell

Sample Details

Sample ID:	25-0343-S10
Boring No:	SG-6
Field Sample No:	LS-1
Sample Depth:	2.5
Date Sampled:	5/28/2025
Sampled By:	Abraham Varghese
Source:	In-Situ Soil
Specification:	ASTM D-422
Sampling Method:	ASTM D1586 -Split Spoon
Sample Location:	Highland Park, Michigan

Sample Description:

Particle Size Distribution



COBBLES	GRAVEL		SAND			FINES (11.4%)	
(0.0%)	Coarse (0.0%)	Fine (2.8%)	Coarse (3.1%)	Medium (8.0%)	Fine (74.8%)	Silt	Clay

Grading: ASTM D 422

Drying By: Oven
Date Tested: 6/6/2025
Tested By: Paul Newton

Sieve Size	% Passing	Limits
1in	100	
¾in	100	
3/8in	99	
No.4	97	
No.10	94	
No.20	91	
No.40	86	
No.60	69	
No.100	28	
No.200	11	
Finer No.200 (75µm)	10.2	

D85: 0.4119 **D60:** 0.2235 **D50:** 0.1973
D30: 0.1538 **D15:** 0.0883 **D10:** 0.0720
Cu: 3.10 **Cc:** 1.47

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FK Engineering Associates

Excellence in Infrastructure and Underground Engineering

30425 Stephenson Hwy
Madison Heights, MI 48071

Mr. Andrew Richmond, P.E.
Metro Consulting Associates
45345 Five Mile Road
Plymouth, Michigan 48170

October 29, 2019
FKE Project 19-144

RE: Geotechnical Investigation Report
Outdoor Fitness Pad
Highland Park, Michigan

Dear Mr. Richmond,

In accordance with our September 11, 2019 proposal, FK Engineering Associates (FKE) has prepared this Geotechnical Investigation Report as part of the design effort for an outdoor fitness pad to be located in Highland Park near the southwest corner of 3rd Avenue and Midland Street. This report presents project background information, our field investigation activities, subsurface conditions encountered, and our corresponding evaluations and recommendations with respect to the proposed outdoor fitness pad construction.

1.0 PROJECT BACKGROUND

The City of Highland Park is considering the construction of an outdoor fitness pad at the southwest quadrant of the intersection of Midland St. and 3rd Ave. This location is the former site of the Midland Elementary School, which was demolished sometime between 2011 and 2015 (according to Google Earth aerial images). Figure 1 at right shows the general structure location with reference to 3rd Avenue and Midland Street.

Figure 1 – Midland Elementary School circa 2010

The proposed fitness pad is generally envisioned to consist of an aggregate base supporting a concrete slab that will have a synthetic turf fixed to its surface. The synthetic turf currently under consideration is Ultra-Turf Tile by Ecore.

MCA has retained the services of FKE to perform a geotechnical investigation of the above-mentioned area to define subsurface conditions and to develop geotechnical engineering recommendations that correspond to the proposed construction. MCA provided the following information to help facilitate the investigation and formulate our evaluations and recommendations:

- National Fitness Campaign (7/2/2018) drawings
- Everlast Ultra Tile Product Sales Sheet

The drawings indicate plan dimensions of approximately 38 feet by 38 feet for the fitness slab.

2.0 GEOTECHNICAL INVESTIGATION

Fieldwork for the geotechnical investigation was performed on September 18, 2019. Prior to beginning the geotechnical investigation, clearances for underground utilities were obtained using the Michigan one-call utility locating center (MISS DIG). Site access was also coordinated through MCA representatives.

The geotechnical investigation consisted of drilling eight test borings designated as TB-1 through TB-8. TB-6 was drilled to 10 feet deep, all the other borings were drilled to 5 feet deep each. Overall, 45 lineal feet of drilling was performed.

Upon completion of the drilling, borings were backfilled with soil cuttings until level with the prevailing grade. Excess soil cuttings were left on site.

The test borings were drilled by our subcontractor under observation from an FKE technician and were advanced to their termination depths with a CME 75 truck-mounted drilling rig using 2¼-inch inside diameter, continuous flight, hollow stem augers.

Soil samples were obtained using the Standard Penetration Test (SPT) method (ASTM D-1586) at 2½-foot intervals to the maximum explored depth of 10 feet. The SPT method consists of driving a 2-inch outside diameter split-barrel sampler into the soil with a 140-pound weight falling freely for 30 inches. The sampler is generally driven three successive 6-inch increments, with the number of blows for each increment being recorded. The number of blows required to advance the sampler the second and third 6-inch increments is termed the Standard Penetration Resistance (N) and is presented on the individual Log of Test Boring. As added information, the blow counts for each 6-inch increment are also presented on the Logs of Test Boring.

All soil samples obtained with the split barrel sampler are designated with an "S" on the test boring log. Recovered samples were sealed in jars and transported to our office for further

classification and select laboratory testing. Our technician also recorded groundwater level observations during and following completion of drilling.

Additionally, a composite sample from the test borings was delivered to RTI Laboratories, Inc. on September 18, 2019 for waste characterization testing. The results are discussed herein and presented in the attachments of this report.

Ground surface elevations are estimated based on local topographic data (Google Earth) and are considered approximate. Test boring locations were not surveyed and are also considered approximate.

3.0 DATA PRESENTATION

Data presented in the report attachments are organized as follows:

- Figure No. 1: TB Location Plan
- Figure No. 2: FKE Soil Classification System
- Figure No. 3-10: Logs of Test Boring
- Figure No. 11: Tabulation of Laboratory Test Data
- Attachment No. 1: RTI Laboratories Test Results

The stratification shown on the Logs of Test Boring represent the subsurface conditions at the actual boring locations. Variations may occur between and away from the borings. Additionally, the stratigraphic lines represent the approximate boundary between soil types; however, the transition may be more gradual than what is shown.

We have prepared the logs included with this report based on field classification supplemented with laboratory testing where applicable. In addition to subsoil stratification, the Logs of Test Boring present groundwater observations, drilling and sampling information, and other relevant data.

4.0 SUBSURFACE CONDITIONS

The generalized subsurface conditions encountered during this investigation are discussed in the following sections.

4.1 Soil Conditions

As discussed in the Project Background, the Midland Elementary School was located on this investigation property and was demolished sometime between 2011 and 2015. The test borings drilled for this indicate fill depths that reflect this former site development. TB-1, -2, -7, and -8

were drilled along the northwest half of the proposed development parcel (parallel to Midland Street). These borings indicate fill consisting of medium to very stiff brown sandy clay that extends to about 4 feet below existing grade (TB-8 had fill to the explored depth of 5 feet). At 4 feet in these borings, stiff to hard brown and gray silty clay is present that extends to the explored depth of 5 feet (a thin layer of loose brown silty sand is present in TB-7).

The other four test borings (TB-3 through 6) were performed along the southeast half of the parcel, also generally parallel to Midland Street. These borings are within (and near) the former school footprint and indicate variable fill conditions extending to different depths. TB-4 and 5 indicate fill soils consisting of medium compact brown silty sand or sand over medium brown sandy clay fill (in TB-5) that extend to the explored depth of 5 feet. TB-6 indicates 6 feet of medium compact brown sandy clay fill over 2.5 feet of medium brown silty clay fill, while TB-3 indicates very stiff dark brown and gray silty clay fill that extends to a depth of about 4 feet.

The fill soils across the test borings contained little to trace amounts of debris including brick fragments, concrete fragments, cinders, and organic material. The following table provides a tabular summary of fill extent in each test boring.

Existing Fill Conditions (ft)		
Boring	Fill Depth	General Fill Description
TB-1	4	Medium Brown Sandy Clay with Trace Gravel, Slag, Concrete Fragments, and Organic Material
TB-2	4	Stiff Mottled Brown and Gray Silty Clay with Little Sand and Trace Gravel and Organic Material
TB-3	4	Very Stiff Mottled Dark Brown and Gray Silty Clay with Little Sand and Trace Organic Material
TB-4	5+	Medium Compact Brown Silty Sand with Trace Clay, Gravel, Cinders, and Organic Material
TB-5	5+	Medium Compact Brown Sand over Medium Compact Brown Sandy Clay (trace Organic Material)
TB-6	8.5	Medium to Stiff Dark Brown Sandy Clay over Silty Clay with Little Gravel and Trace Brick Fragments, Concrete Fragments, Glass Fragments, Cinders and Organic Material.
TB-7	3.5	Medium Brown Sandy Clay with Trace Brick Fragments and Organic Material
TB-8	5+	Medium to Very Stiff Sandy Clay with Trace Silt, Gravel and Organic Material

Below the fill (TB-1, -2, -3, -6, and -7), native soils generally consist of medium to hard brown silty clay that extends to the explored depth of the borings.

4.2 Groundwater Conditions

No groundwater was encountered during or immediately following completion of drilling at all test boring locations.

5.0 EVALUATIONS AND RECOMMENDATIONS

The following sections provide our evaluations and recommendations as they pertain to the proposed outdoor fitness pad construction.

5.1 Soil Conditions

As discussed in Section 4.1, the site is blanketed by variable fill soils that range in consistency and depth. The upper granular soils (grass/vegetation) are not considered suitable for the support of the propose fitness pad concrete slab. These soils should be removed in their entirely below the pad footprint in accordance with Section 5.3.

Typically, the underlying fill soils are not considered suitable for the support of new construction. However, considering the depth of the existing fill (up to 8.5 feet deep in TB-6) it may be impractical to remove the fill and replace with engineered fill. Therefore, we offer two options for design consideration:

1. Remove all fill with the pad footprint and replace with engineered fill, and
2. Place the pad on the existing fill soils following site preparation procedures discussed in this report.

Considering the following factors, it appears that if proper site preparation activities are implemented and monitored in the field, the new fitness pad can be placed on the existing fill:

- Lightly loaded structure (no foundation, no significant loading anticipated);
- Allowed to freely move with frost/thaw cycles typically experienced in this region;
- Some differential settlement is expected and can be incurred over time;
- Low organic material content (trace amount) below the upper fill layer (topsoil) at the site;
- Close monitoring of site preparation activities to identify any loose/soft zones that warrant undercutting and replacement with engineered fill.

5.2 Groundwater Conditions

Groundwater was not encountered during this investigation. Considering the primarily cohesive subgrade profile, encountering perched groundwater is possible. Perched groundwater is a local condition in which groundwater is encountered higher than the static groundwater level due to

the presence of impermeable soils (clays) creating a tub-like effect. We anticipate that impact from these conditions will be minor and that recharge will typically be minimal and will dissipate within hours of exposure. Groundwater that infiltrates into construction excavations can be controlled using sump pits located within the excavation. We also expect that heavy precipitation can be addressed in a similar manner.

To limit the effects of groundwater and precipitation, we recommend that excavations be left open for as little amount of time as possible. Prolonged exposure of the subgrade to groundwater, precipitation, and construction traffic can negatively impact the bearing characteristics. Also, site grading should allow for rapid runoff away from active construction areas.

5.3 Site Preparation and Recommended Earthwork Operations

Specific grading information for the proposed development is not yet finalized; however, we anticipate that final grades at the site will be close to the present grades. Regardless of the amount of earthwork required to achieve final grades, we recommend that all site preparation activities be performed under adequate specifications and be properly monitored in the field.

At the start of earthwork operations, we recommend that all vegetation be removed in its entirety. Any soft or yielding soils, or soils containing more than trace amounts of organic material exposed during site clearing and excavation for concrete slab construction operations should also be removed from within the proposed fitness pad footprint. Existing underground utilities, foundation or basement remnants, or other miscellaneous obstructions should be removed, relocated elsewhere, or accounted for in the design. The resulting excavations should be backfilled with engineered fill to achieve final design grades.

The entire subgrade within the outdoor fitness pad footprint should be thoroughly proof rolled using a heavy roller. ***Product specifications for the anticipated fitness pad material mandate that the subgrade be compacted with, at minimum, two passes of a 10-ton vibratory roller compactor.*** Any areas that exhibit excessive pumping and yielding during the proof-rolling operation should be undercut and replaced with engineered fill (see Section 5.5). Perched water in the upper fill layers may result in subgrade instability and may require control by drainage ditches prior to the effective completion of proof-rolling and proof-compaction operations.

In general, the site conditioning procedures discussed above are expected to result in stable subgrade conditions. If instability occurs despite these precautions, additional corrective procedures may be required, such as localized stabilization or undercutting and replacement with crushed stone or crushed concrete (12-inch layers) to achieve proper stabilization.

5.4 Support of Concrete Slab

Per the National Fitness Campaign drawings provided, we concur with the following stipulated "Slab Notes":

- Slab Concrete to be 4,000psi at 28 days. We recommend that concrete testing be performed at the time of placement to verify compliance with this strength requirement (ASTM C39).
- Slab to be reinforced in accordance with ACI 318 using welded wire mesh as indicated.
- Concrete should not be placed when temperature is below (or expected to be below) 40°F, nor should concrete be placed on a frozen subgrade.
- Slab to be placed in 20ft by 20ft section (maximum) or provided with a ½-inch saw-cut construction joint as necessary. Based on the size of the slab being considered, two intersecting saw cuts are anticipated and can be placed such that they are perpendicular in the center of the floor slab.
- Engineered fill and subgrade materials to be compacted to 95% Modified Proctor value. We recommend that testing be implemented during compaction efforts to assure compliance with this requirement.

We offer the following additional recommendations for design consideration:

- Concrete slab should be at least 8-inches thick and should be designed by a qualified engineer, licensed in the State of Michigan. The 8-inch thickness corresponds to the requirement under the proposed training wall, though we recommend that this thickness be applied throughout the slab.
- Drainage is critically important to achieving the desired service life of the slab. As such, we recommend that the slab provide for proper sloping to aid in positive drainage of precipitation. Nation Fitness Campaign drawings call for a minimum of 1/8-inch per 12 feet. Also, we recommend that the subgrade be properly graded/sloped to designated drainage points to further assist overall site drainage characteristics.
- The exposed subgrade soils are expected to consist of variable cohesive and granular fill soils. Following successful site activities, we recommend a modulus of subgrade reaction of 75 pounds per cubic inch (pci) be used for the design of the concrete slab.
- Due to variable debris in the fill encountered during this investigation, we recommend that the design account for this by preparing provisions in the construction contract that allows for removal of such debris and its replacement with engineered fill.
- It appears that the fill extent is shallower and less variable nearer to Midland Street. Therefore, we recommend the fitness pad footprint be located such that maximum distance from the deeper fill soils (TB-4 through TB-6) can be obtained. This may limit the amount of undercutting and replacement with engineered fill.

- We recommend an 8-inch thick gravel base should be incorporated under the concrete base slab to promote proper drainage.
- Contractor should follow the specifications and recommendations provided in the Everlast Ultra Tile technical manual and guide specs.
- Final surface of the concrete slab that the tile will be installed on should be free of low spots or "bird-baths". Additionally, the concrete slab should be allowed to cure for 28 days before the tiles are installed. The final surface of the tile should typically only be a maximum of 1" above the surrounding grade unless otherwise specified by the project engineer.

5.5 Engineered Fill for Undercut Areas/Excavations

Material for backfill or engineered fill to support the new concrete slab should consist of 21AA crushed limestone (or equivalent). Fill should be placed in uniform horizontal lifts (layers) that are not more than 8 inches in loose thickness and compacted to achieve a density of at least 95 percent of the maximum dry density as determined by the Modified Proctor compaction test (ASTM D 1557). All fill material should be placed and compacted at or near the optimum moisture content. Frozen material should not be used as fill, nor should fill be placed on a frozen subgrade.

5.6 Temporary Excavations

Though not expected as part of this project, any excavations deeper than 5 feet should be properly sloped or otherwise structurally retained to provide stable working conditions. In all excavation cases, MIOSHA requirements must be employed and followed and adequate protection provided for workers.

Construction traffic and excavated material stockpiles should be kept away from excavations a minimum distance equal to the depth of the excavation, unless the resulting surcharge loads are accounted for in the design of an employed earth retention system. The contractor's proposed excavations, support systems, and construction sequences need to be reviewed by a qualified geotechnical engineer prior to start of the associated construction activities.

5.7 RTI Laboratories Inc. Results

Refer to the RTI Laboratories case narrative and associated results in Appendix A. Concentrations reported with "ND" are considered non-detected for the noted category/test meaning concentration is less than the noted reporting limit. Concentrations reported with a "J" flag in the Qual field are values below the reporting limit (RL) but greater than the established method detection limit (MDL). Concentrations reported with an "E" flag in the Qual field are values that exceed the upper quantification range.

The majority of results from the samples tested indicate "ND" with several "J" flags. No samples tested with an "E" flag.

6.0 LIMITATIONS

FKE has developed our evaluations and recommendations based on the data presented in this report and information provided by MCA to formulate our original proposal. We should be notified of any significant changes as our recommendations may require revision.

The report is intended for specific use in the proposed outdoor fitness pad development located in Highland Park, Michigan. It was a pleasure providing geotechnical engineering services to you on this project. Should you have any questions or require additional information, please call.

Respectfully submitted,

FK Engineering Associates

J. M. Elsey, E.I.T.
Assistant Project Engineer

Zachary F. Carr, P.E.
Vice President

Attachments

JME/ZFC/KDT

MCA - HIGHLAND PARK FITNESS PAD

SCALE: 1" = 50'

TEST BORING DRILLED BY DLZ UNDER FULL TIME OBSERVATION BY FKE ON SEPTEMBER 18, 2019.

FKE PROJECT No.: 19-144	CAD FILE NAME: LP.dwg
DESIGNED BY: CAM	PLOT DATE: 22-Oct-19
DRAWN BY: CAM	DRAWING SCALE: 1"=50'
CHECKED BY: JME	CREATED ON: 23-Sep-19

FKE
248.817.2946
Madison Heights, MI

REV #	DATE	REVISION TITLE
–	–	–
–	–	–
–	–	–
–	–	–

METRO CONSULTING ASSOCIATES
HIGHLAND PARK, MI
TB LOCATION PLAN

FIGURE NO.
1

S:\Project Files\2019 Project Files\19-144 MCA - Highland Park Fitness Pad\CAD\LP.dwg 10/22/2019 4:40 PM

FK ENGINEERING

SOIL CLASSIFICATION SYSTEM

SUMMARY OF SOIL NOMENCLATURE

Soils are to be classified by the fraction which has the greatest impact on the engineering behavior. Soils will be described according to a strength or density followed by color then by primary and secondary/tertiary components (i.e. soft gray silty clay or loose brown silty sand). United Soil Classification System (USCS) descriptors (ASTM D2487) may also be used. Soils which exhibit unconfined shear strength will in most cases be described as cohesive soils regardless of their clay content whereas soils without unconfined strength will be described as cohesionless soils.

COHESIVE SOIL

Strength	Unconfined Compressive Strength (psf) (Primary)	Pocket Penetrometer Test (tsf) (Primary)	SPT Value (N) (Secondary)
Very Soft	0-500	0-0.25	0-2
Soft	500-1000	0.25-0.5	3-4
Medium	1000-2000	0. 5-1.0	5-8
Stiff	2000-4000	1.0-2.0	9-15
Very Stiff	4000-8000	2.0-4.0	16-30
Hard	8000-16000	4.0-8.0	31-50
Very Hard	>16000	>8.0	>50

COHESIONLESS SOIL

Density	SPT Value (N)
Very Loose	<4
Loose	4-10
Medium Compact	11-30
Compact	31-50
Very Compact	>50

MATERIAL SIZES AND IDENTIFIER GUIDE

Gravel	3/16 inches (No. 4 Sieve) to 3 inches	Generally rounded rock particles
Coarse Sand	3/16 inches to 2 mm (No. 10 Sieve)	Grains easily seen
Medium Sand	2 mm to 0.425 mm (No. 40 Sieve)	Grains can be seen and felt
Fine Sand	0.425 mm to 0.075 mm (No. 200 Sieve)	Grains can be felt
Silt	0.075 mm to 0.005 mm	Easily cracks when rolled. Gritty feel. Dilatant.
Clay	<0.005 mm	Can be rolled. No particle size visible.

SECONDARY/TERTIARY SOIL COMPONENTS

Use secondary components when other than the primary soil appears in significant percentages. Generally the secondary component will compromise between 12 and 30 percent of the total soil weight. Tertiary components would be described as "little" and "trace" when the tertiary components are between 5 and 12 percent and less than 5 percent, respectively. The tertiary components would be inserted after the secondary and primary description (i.e. soft gray silty clay with little gravel and trace sand).

SAMPLE CODES

S	Split Spoon Sample	AU	Auger Sample
LS	Split Spoon Sample with Liner	ST	Shelby Tube Sample
BS	Bag Sample	P	Piston Tube Sample
VS	Vane Shear		

This system is based on the USCS and MDOT's Uniform Field Soil Classification System

Figure No. 2

LOG OF TEST BORING NO: TB-1

Project Name: *Highland Park Fitness Pad*

Project Location: *Highland, MI*

FK Engineering Associates

Project No: 19-144

Checked By: J. Elsey

SUBSURFACE PROFILE				SOIL SAMPLE DATA							
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 639	DEPTH (ft)	SAMPLE TYPE/NO.	BLOWS / 6 inches	STD. PEN RESIST. (N)	REC (in)	ORGANIC CONTENT (%)	MOIST. CONTENT (%)	DRY DENSITY (pcf)	UNCONF. COMP ST (psf)
638.8		FILL: Brown SAND with Little Organic Material 0.2									
637.5		FIll: Medium Brown SANDY CLAY with Trace Gravel, Slag, Concrete Fragments, and Organic Material	2.5	S-1	5 5 5	10	11	0.3	11.4	-	-
635.0		635.1 3.9 Stiff Brown SILTY CLAY with Little Sand									
		634.0 5.0 END OF BORING	5.0	S-2	3 3 4	7	13	-	-	-	4000*
632.5			7.5								
630.0			10.0								
627.5			12.5								

Total Depth: *5 FT*
Drilling Date: *9/18/19*
Inspector: *R. Williams*
Contractor: *DLZ*
Driller: *M. Grandinetti*
Drilling Method:
CME 75 ATV Truck Mounted Drill Rig 2-1/4" HSA to EOB.

Water Level Observation:
No Groundwater was encountered during or upon completion of drilling.

Notes:
*1) * - Denotes Pocket Penetrometer Value*

Plugging Procedure:
Backfilled with cuttings to prevailing grade.

Figure No. 3

LOG OF TEST BORING LOGS.GPJ 10/23/19

LOG OF TEST BORING NO: TB-2

Project Name: *Highland Park Fitness Pad*

Project Location: *Highland, MI*

FK Engineering Associates
Project No: 19-144
Checked By: J. Elsey

SUBSURFACE PROFILE				SOIL SAMPLE DATA							
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 639	DEPTH (ft)	SAMPLE TYPE/NO.	BLOWS / 6 inches	STD. PEN RESIST. (N)	REC (in)	ORGANIC CONTENT (%)	MOIST. CONTENT (%)	DRY DENSITY (pcf)	UNCONF. COMP ST (psf)
638.8		FILL: Brown SAND with Little Organic Material 0.2									
637.5		FILL: Stiff Mottled Brown and Gray SILTY CLAY with Little Sand and Trace Gravel and Organic Material	2.5	S-1	3 4 6	10	11	-	-	-	-
635.0		635.0 4.0									
		Hard Mottled Brown and Gray SILTY CLAY with Little Sand and Trace Gravel	5.0	S-2	2 4 5	9	12	-	-	-	8000*
634.0		5.0 END OF BORING									
632.5			7.5								
630.0			10.0								
627.5			12.5								

Total Depth: *5 FT*
Drilling Date: *9/18/19*
Inspector: *R. Williams*
Contractor: *DLZ*
Driller: *M. Grandinetti*
Drilling Method:
CME 75 ATV Truck Mounted Drill Rig 2-1/4" HSA to EOB.

Water Level Observation:
No Groundwater was encountered during or upon completion of drilling.

Notes:
*1) * - Denotes Pocket Penetrometer Value*

Plugging Procedure:
Backfilled with cuttings to prevailing grade.

Figure No. 4

LOG OF TEST BORING LOGS.GPJ 10/23/19

LOG OF TEST BORING NO: TB-3

Project Name: *Highland Park Fitness Pad*

Project Location: *Highland, MI*

FK Engineering Associates
Project No: 19-144
Checked By: J. Elsey

SUBSURFACE PROFILE				SOIL SAMPLE DATA							
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 639	DEPTH (ft)	SAMPLE TYPE/NO.	BLOWS / 6 inches	STD. PEN RESIST. (N)	REC (in)	ORGANIC CONTENT (%)	MOIST. CONTENT (%)	DRY DENSITY (pcf)	UNCONF. COMP ST (psf)
		638.8 FILL: Brown SAND with Little Organic Material 0.3									
637.5		FILL: Very Stiff Mottled Dark Brown and Gray SILTY CLAY with Little Sand and Trace Organic Material	2.5	S-1	4 3 3	6	13	-	-	-	8000*
635.0		635.1 3.9									
		Very Stiff Brown SILTY CLAY with Little Sand	5.0	S-2	1 1 3	4	13	-	-	-	5000*
		634.0 5.0 END OF BORING	7.5								
632.5											
630.0			10.0								
627.5			12.5								

Total Depth: *5 FT*
Drilling Date: *9/18/19*
Inspector: *R. Williams*
Contractor: *DLZ*
Driller: *M. Grandinetti*
Drilling Method:
CME 75 ATV Truck Mounted Drill Rig 2-1/4" HSA to EOB.

Water Level Observation:
No Groundwater was encountered during or upon completion of drilling.

Notes:
*1) * - Denotes Pocket Penetrometer Value*

Plugging Procedure:
Backfilled with cuttings to prevailing grade.

Figure No. 5

LOG OF TEST BORING LOGS.GPJ 10/23/19

LOG OF TEST BORING NO: TB-4

Project Name: *Highland Park Fitness Pad*

Project Location: *Highland, MI*

FK Engineering Associates
Project No: 19-144
Checked By: J. Elsey

SUBSURFACE PROFILE				SOIL SAMPLE DATA							
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 639	DEPTH (ft)	SAMPLE TYPE/NO.	BLOWS / 6 inches	STD. PEN RESIST. (N)	REC (in)	ORGANIC CONTENT (%)	MOIST. CONTENT (%)	DRY DENSITY (pcf)	UNCONF. COMP ST (psf)
		638.8 FILL: Brown Sand with Little Organic Material 0.2									
637.5		FILL: Medium Compact Brown SILTY SAND with Trace Clay, Gravel, Cinders and Organic Material	2.5	S-1	11 17 11	28	11	-	-	-	-
635.0		634.0 5.0	5.0	S-2	5 5 10	15	13	-	-	-	-
		END OF BORING									
632.5			7.5								
630.0			10.0								
627.5			12.5								

Total Depth: *5 FT*
Drilling Date: *9/18/19*
Inspector: *R. Williams*
Contractor: *DLZ*
Driller: *M. Grandinetti*
Drilling Method:
CME 75 ATV Truck Mounted Drill Rig 2-1/4" HSA to EOB.

Water Level Observation:
No Groundwater was encountered during or upon completion of drilling.

Notes:

Plugging Procedure:
Backfilled with cuttings to prevailing grade.

Figure No. 6

LOG OF TEST BORING LOGS.GPJ 10/23/19

LOG OF TEST BORING NO: TB-5

Project Name: *Highland Park Fitness Pad*

Project Location: *Highland, MI*

FK Engineering Associates
Project No: 19-144
Checked By: J. Elsey

SUBSURFACE PROFILE				SOIL SAMPLE DATA							
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 639	DEPTH (ft)	SAMPLE TYPE/NO.	BLOWS / 6 inches	STD. PEN RESIST. (N)	REC (in)	ORGANIC CONTENT (%)	MOIST. CONTENT (%)	DRY DENSITY (pcf)	UNCONF. COMP ST (psf)
		638.8 FILL: Brown SAND with Little Organic Material 0.2									
637.5		FILL: Medium Compact Brown SAND with Little Clay, and Trace Gravel and Organic Material	2.5	S-1	6 8 8	16	8	0.5	10.3	-	-
		635.5 3.5									
635.0		FILL: Medium Brown SANDY CLAY with Trace Gravel and Organic Material	5.0	S-2	2 3 4	7	10	-	-	-	4000*
		634.0 5.0 END OF BORING									
632.5			7.5								
630.0			10.0								
627.5			12.5								

Total Depth: *5 FT*
Drilling Date: *9/18/19*
Inspector: *R. Williams*
Contractor: *DLZ*
Driller: *M. Grandinetti*
Drilling Method:
CME 75 ATV Truck Mounted Drill Rig 2-1/4" HSA to EOB.

Water Level Observation:
No Groundwater was encountered during or upon completion of drilling.

Notes:
*1) * - Denotes Pocket Penetrometer Value*

Plugging Procedure:
Backfilled with cuttings to prevailing grade.

Figure No. 7

LOG OF TEST BORING LOGS.GPJ 10/23/19

LOG OF TEST BORING NO: TB-6

Project Name: *Highland Park Fitness Pad*

Project Location: *Highland, MI*

FK Engineering Associates
Project No: 19-144
Checked By: J. Elsey

SUBSURFACE PROFILE				SOIL SAMPLE DATA								
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 639	DEPTH (ft)	SAMPLE TYPE/NO.	BLOWS / 6 inches	STD. PEN RESIST. (N)	REC (in)	ORGANIC CONTENT (%)	MOIST. CONTENT (%)	DRY DENSITY (pcf)	UNCONF. COMP ST (psf)
638.8		FILL: Brown SAND with Little Organic Material 0.2									
637.5		FILL: Medium to Stiff Dark Brown SANDY CLAY with Little Gravel and Trace Brick Fragments, Concrete Fragments, Glass Fragments, Cinders, and Organic Material	2.5	S-1	14 11 7	18	16	0.1	9.8	-	-
635.0			5.0	S-2	2 1 2	3	8	-	-	-	-
633.0		6.0									
632.5		FILL: Medium Brown SILTY CLAY with Trace Sand, Cinders, and Wood Fragments	7.5	S-3	1 1 WOH	1	4	-	-	-	1000*
630.5		8.5									
630.0		Very Stiff Brown SILTY CLAY with Trace Sand and Gravel	10.0	S-4	2 5 9	14	8	-	-	-	7000*
629.0		10.0									
		END OF BORING	12.5								
627.5											

Total Depth: *10 FT*
Drilling Date: *9/18/19*
Inspector: *R. Williams*
Contractor: *DLZ*
Driller: *M. Grandinetti*
Drilling Method:
CME 75 ATV Truck Mounted Drill Rig 2-1/4" HSA to EOB.

Water Level Observation:
No Groundwater was encountered during or upon completion of drilling.

Notes:
*1) * - Denotes Pocket Penetrometer Value*

Plugging Procedure:
Backfilled with cuttings to prevailing grade.

Figure No. 8

LOG OF TEST BORING LOGS.GPJ 10/23/19

LOG OF TEST BORING NO: TB-7

Project Name: *Highland Park Fitness Pad*

Project Location: *Highland, MI*

FK Engineering Associates

Project No: 19-144

Checked By: J. Elsey

SUBSURFACE PROFILE				SOIL SAMPLE DATA								
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 639	DEPTH (ft)	SAMPLE TYPE/NO.	BLOWS / 6 inches	STD. PEN RESIST. (N)	REC (in)	ORGANIC CONTENT (%)	MOIST. CONTENT (%)	DRY DENSITY (pcf)	UNCONF. COMP ST (psf)
		638.8 FIIL: Brown SAND with Little Organic Material 0.2									
637.5		FILL: Medium Brown SANDY CLAY with Trace Brick Fragments and Organic Material	2.5	S-1	5 8 7	15	12	-	-	-	-
		635.5 3.5									
635.0		Hard Brown SILTY CLAY with Trace Sand and Gravel									
		634.3 4.8									
		634.0 Loose Brown SILTY SAND with Trace Gravel 5.0	5.0	S-2	2 2 2	4	11	-	-	-	9000*
		END OF BORING									
632.5			7.5								
630.0			10.0								
627.5			12.5								

Total Depth: *5 FT*
Drilling Date: *9/18/19*
Inspector: *R. Williams*
Contractor: *DLZ*
Driller: *M. Grandinetti*
Drilling Method:
CME 75 ATV Truck Mounted Drill Rig 2-1/4" HSA to EOB.

Water Level Observation:
No Groundwater was encountered during or upon completion of drilling.

Notes:
*1) * - Denotes Pocket Penetrometer Value*
2) UCS value for sample S-2 refers to cohesive portion of sample.

Plugging Procedure:
Backfilled with cuttings to prevailing grade.

Figure No. 9

LOG OF TEST BORING LOGS.GPJ 10/23/19

LOG OF TEST BORING NO: TB-8

Project Name: *Highland Park Fitness Pad*

Project Location: *Highland, MI*

FK Engineering Associates
Project No: 19-144
Checked By: J. Elsey

SUBSURFACE PROFILE				SOIL SAMPLE DATA								
ELEV. (ft)	PRO-FILE	GROUND SURFACE ELEVATION: 639	DEPTH (ft)	SAMPLE TYPE/NO.	BLOWS / 6 inches	STD. PEN RESIST. (N)	REC (in)	ORGANIC CONTENT (%)	MOIST. CONTENT (%)	DRY DENSITY (pcf)	UNCONF. COMP ST (psf)
		638.8 FILL: Brown SAND with Little Organic Material 0.2									
637.5		FILL: Very Stiff Brown SANDY CLAY with Trace Gravel	2.5	S-1	4 5 5	10	12	-	-	-	8000*
635.0		635.0 4.0									
		FILL: Medium Brown SANDY CLAY with Trace Silt, Gravel, and Organic Material									
		634.0 5.0	5.0	S-2	1 1 1	2	12	-	-	-	2000*
		END OF BORING									
632.5			7.5								
630.0			10.0								
627.5			12.5								

Total Depth: *5 FT*
Drilling Date: *9/18/19*
Inspector: *R. Williams*
Contractor: *DLZ*
Driller: *M. Grandinetti*
Drilling Method:
CME 75 ATV Truck Mounted Drill Rig 2-1/4" HSA to EOB.

Water Level Observation:
No Groundwater was encountered during or upon completion of drilling.

Notes:
*1) * - Denotes Pocket Penetrometer Value*

Plugging Procedure:
Backfilled with cuttings to prevailing grade.

Figure No. 10

LOG OF TEST BORING LOGS.GPJ 10/23/19

TABULATION OF LABORATORY TEST DATA

Boring / Test Pit / Probe Designation	Sample Number	Depth of Sample Tip (ft)	Elevation of Sample Tip (ft)	Unconfined Compressive Strength (psf)	Failure Strain (%)	Natural Water Content (% of dry weight)	In-Place Dry Density (lbs/cu.ft)	Permeability (cm/sec)	PARTICLE SIZE DISTRIBUTION (%)						ATTERBERG LIMITS (%)			Apparent Specific Gravity	ASTM D2974 Organic Matter (%)	Unified Soil Classification
									Clay	Silt	Fine Sand	Medium Sand	Coarse Sand	Gravel	Liquid Limit	Plastic Limit	Plasticity Index			
TB-1	S-1	2.5	636.5	-	-	11.4%	-	-	-	-	-	-	-	-	-	-	-	-	0.3	-
TB-5	S-1	2.5	636.5	-	-	10.3%	-	-	-	-	-	-	-	-	-	-	-	-	0.5	-
TB-6	S-1	2.5	636.5	-	-	9.8%	-	-	-	-	-	-	-	-	-	-	-	-	0.1	-

ENVIRONMENTAL CONSTRUCTION MANAGEMENT PLAN (ECMP)

Ives Field Recreation Enhancements Property
Highland Park, Michigan

SmithGroup, Inc.
201 Depot St., Second Floor
Ann Arbor, MI 48104

July 22, 2025
NTH Project No. 24002549-ENV

NTH Consultants, Ltd.
41780 Six Mile Rd.
Suite 200
Northville, MI 48168

NTH Consultants, Ltd.
Infrastructure Engineering
and Environmental Services

41780 Six Mile Rd., Suite 200; Northville, MI 48168
Phone 248-553-6300• Fax 248-324-5179

Mark Woodhurst
SmithGroup, Inc.
201 Depot Street, Second Floor
Ann Arbor, MI 48104

July 22, 2025
NTH Project No. 24002549-ENV

RE: Environmental Construction Management Plan (ECMP)
Ives Field Recreation Enhancements Property
Highland Park, Michigan

Dear Mr. Woodhurst:

NTH Consultants, Ltd. (NTH) has prepared this ECMP for the above-referenced project site (Site). This Plan is prepared for SmithGroup, Inc. (SG) and City of Highland Park for the upcoming construction activity at the Site.

This ECMP provides guidelines to manage subsurface contamination, if encountered, during construction and provides appropriate response action for contaminated soil and/or groundwater, if encountered.

We appreciate this opportunity to be of service to you. Should you have any questions or require additional information, please call us at 248-662-2740.

Sincerely,

NTH Consultants, Ltd.

Signed by:
Zach Moriarty
55D43996B81E494...

Zach B. Moriarty
Senior Staff Professional

DocuSigned by:
Bhushan C. Modi
2B348C09314C474...

Bhushan C. Modi
Project Manager

ZBM/BCM/mam

Attachments

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

SmithGroup, Inc., (SG) retained NTH Consultants, Ltd. (NTH) on behalf of the City of Highland Park (CHP) to prepare this ECMP for the Ives Field Recreation Enhancements property (Site). The Site comprises of the following two contiguous parcels:

Parcel Address	Tax ID/Parcel No.	Parcel Features
179 Midland Street	43-003-03-0522-000	The parcel is approximately 0.88 acres in size and consists of grass-covered playfield with a fitness court.
10 Pitkin Street	43-006-01-0152-000	The subject parcel is part of a larger property and is approximately 4.8 acres in size. The parcel consists of fence-enclosed playfield, baseball diamonds, restroom building, and landscaped areas.

A Topographic & Boundary Survey and a Site Plan are included in Appendix A.

This ECMP outlines our recommendations for soil and groundwater handling and management during the upcoming construction work at the Site. The document is for the use of SG and CHP. If the use of the Site changes or new information regarding contaminant concentrations is identified, the evaluation in this document should be conducted again and new response activities implemented, as deemed appropriate.

2.0 SUMMARY OF ENVIRONMENTAL INVESTIGATIONS

NTH conducted a Phase I Environmental Site Assessment (ESA) to identify evidence of recognized environmental conditions (RECs) in connection with the Site. The results of the Phase I ESA were provided to SG in our report (NTH Project No. 24002549-ENV) dated July 15, 2025. The Phase I ESA did not identify any evidence of RECs.

3.0 CONSTRUCTION RESPONSE ACTIVITIES

Since the Site is located in an urban environment and had previous school building, the following guidelines are developed for upcoming construction work at the Site:

- The project contractors involved in managing soil and/or groundwater during construction activities should develop a Health and Safety Plan.

- The excavated soil may be returned in the excavation, if feasible. All surplus or excess soil shall be observed and evaluated by the Owner's Environmental Consultant to develop appropriate disposal options. Off-site soil disposal activities shall be recorded with appropriate documentation such as manifests or bill of lading. Soil removed from the Site can be directly loaded into trucks for offsite transportation or stockpiled/staged temporarily at a predetermined location. The soil staging areas shall be limited to areas covered by an impervious barrier (such as paved surfaces or plastic sheeting). Stockpiled soil shall be covered with a rain barrier (such as plastic sheeting) to prevent washout.

- Project contractors shall develop a fugitive dust control plan, which shall include measures to prevent airborne dispersion and off-site migration of soil particulates. Control measures may include spraying bare areas with water or dust suppressant, placement of stone or other hard cover or other effective approved measures.

- Soil Erosion and Sedimentation Control (SESC) measures shall be in accordance with the local regulatory agency requirements and project specifications. In general, the measures shall include:

    1) Installation of silt fence around the perimeter of the Site.

    2) Placement of inlet filters over any catch basins. The filters should be maintained and regularly cleaned and replaced.

    3) Construction of vehicle decontamination areas at the Site exits to provide zones through which loose soils can dislodge from equipment and truck tires.

    4) Wet sweeping and scraping of the roadways adjacent to the Site at frequencies necessary to prevent tracking of soil and dispersion of dust from the Site.

    5) Enhanced SESC measures if the initial measures are not sufficient to control sediment migration and erosion.

- Imported fill soil for use on the Site shall be virgin material (e.g., native clay, quarry sand, natural stone, etc.) or non-contaminated/clean soil. The soil imported from a quarry or sand mine will require a letter from the borrow source indicating that the soil is native/virgin material. The soil imported from other sources should not exceed Part 201 residential cleanup criteria.

- During subsurface excavation work, if dewatering is required, then proper management and disposal of this water will be required. The water shall be managed/disposed of in accordance with CHP requirements.

- During construction activities, if visual evidence of soil contamination is encountered (such as stained or discolored soil with chemical odors) then such soil shall be sampled and analyzed/characterized by Owner's Environmental Consultant to develop appropriate response actions for proper off-site disposal in an environmentally acceptable manner.

- Bulk storage of construction related hazardous substances (fuel, lubricants etc.) shall be in an area with secondary containment to prevent spillage onto surrounding surfaces. Temporary tanks used to store hazardous substances shall be of double-wall construction with spill containment around the fill port.

The project contractors shall implement precautions including engineering controls and procedures for management, handling, and storage of hazardous substances at the Site. If there is a release of hazardous materials from on-site activities (e.g., released from temporary storage tanks, etc.), actions consistent with the requirements of applicable regulations shall be implemented.

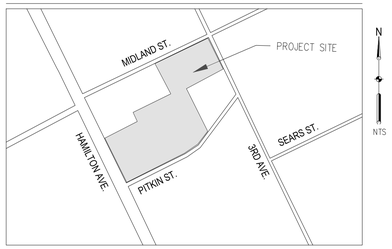
APPENDIX A

- **TOPOGRAPHIC & BOUNDARY SURVEY**
- **SITE PLAN**

TOPOGRAPHIC AND BOUNDARY SURVEY

IVES PARK, CITY OF HIGHLAND PARK, WAYNE COUNTY, MICHIGAN
ARPA PROJECT 000627 (IVES FIELD RECREATION ENHANCEMENTS)

BOUNDARY MAP -
IVES PARK, CITY OF HIGHLAND PARK, MICHIGAN



BENCHMARKS

BENCHMARK #32
BENCH-TIE; NAILED TO A UTILITY POLE; WEST OF HAMILTON; ±2.7 FEET OF CONCRETE EDGE; ±10.93 FEET OF FENCE LINE; ±65.85 FEET OF NORTH-WEST CORNER OF HYDRANT.

NORTHING = 333,254.928
EASTING = 13,462,788.270
ELEVATION = 639.36 FEET (NAVD88)

BENCHMARK #12703
BENCH-TIE; NORTH CORNER OF LIGHT POLE; ±6.5 FEET SOUTH OF BITUMINOUS SIDEWALK; ±6.5 FEET EAST OF 4.0 FEET CHAIN-LINK FENCE; ±51.7 FEET SOUTH-WEST OF CONTROL POINT (30) WITH SG. CAP REBAR.

NORTHING = 333,814.123
EASTING = 13,463,218.000
ELEVATION = 640.18 FEET (NAVD88)

CONTROL POINT TABLE

Point No.	Northing	Easting	Elevation	Description
30	333845.68	13463258.99	639.13	CP SG CAP REBAR
31	333264.68	13463089.07	637.34	CP SG CAP REBAR
32	333989.53	13463445.72	637.79	CP SG CAP REBAR
33	333197.39	13462815.41	638.32	CP MAG NAIL
34	333556.89	13463177.91	639.35	CP SG CAP REBAR
4682	333698.00	13463607.99	636.21	CP PK
11204	333713.41	13463567.51	636.08	CP SG CAP REBAR
11205	333552.03	13463461.64	635.82	CP SG CAP REBAR

NOTES

1. HORIZONTAL DATUM IS ACCORDING TO MICHIGAN STATE PLANE GRID COORDINATES, SOUTH ZONE (2113), GEOID 2018, INTERNATIONAL FEET AS LINEAR UNIT OF MEASURE.
2. VERTICAL DATUM IS ACCORDING TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88), WITH BENCHMARKS LISTED HEREON.
3. SMITHGROUP PERFORMED A TOPOGRAPHIC SURVEY UTILIZING DATA COLLECTED WITH GLOBAL POSITIONING RECEIVERS REFERENCING THE MICHIGAN CONTINUOUSLY OPERATING REFERENCE NETWORK FOR SITE CONTROL.
4. THIS SURVEY EFFORT INCLUDED A BOUNDARY SURVEY OF PARCELS COMMONLY KNOWN AS 10 PITKIN AVENUE (PID#:43006010152000) AND 179 MIDLAND STREET (PID#:43003030522000). SMITHGROUP UTILIZED DEED RECORDS AS PROVIDED BY THE CITY OF HIGHLAND PARK (QUIT CLAIM DEED AS RECORDED IN LIBER 52652, PAGE 854, WAYNE COUNTY RECORDS AND QUIT CLAIM DEED AS RECORDED IN LIBER 52652, PAGE 853, WAYNE COUNTY RECORDS). RECORD EASEMENTS AND RESTRICTIONS, IF ANY, WERE NOT REVIEWED AS PART OF THE SURVEY AS TITLE WORK WAS NOT PROVIDED AT THE TIME OF SURVEY.
5. MISS-DIG DESIGN TICKET 20250320008335 REV:000 WAS ISSUED FOR THIS PROJECT. AT THE TIME OF THIS SURVEY SMITHGROUP HAS NOT RECEIVED OR OTHERWISE REVIEWED RECORDS FROM THE FOLLOWING UTILITY AUTHORITIES: DETROIT PUBLIC LIGHTING (ELECTRIC), CITY OF HIGHLAND PARK (POTABLE WATER, SANITARY SEWER, COMBINED SANITARY/STORM ONLY).
6. THE STATUS OF THE ALLEY SHOWN AS VACATED HEREON, WAS CONFIRMED WITH THE CITY OF HIGHLAND PARK MUNICIPAL ENGINEER (METRO CONSULTING ASSOCIATES) AT THE TIME OF THE SURVEY.
7. UNDERGROUND UTILITY LOCATIONS WERE DERIVED FROM ACTUAL MEASUREMENTS ON VISIBLE UTILITIES, MISS DIG FLAGS/MARKINGS, AND/OR AVAILABLE RECORDS. THEY SHOULD NOT BE INTERPRETED TO BE EXACT LOCATIONS, NOR SHOULD THEY IT BE ASSUMED THAT THEY ARE THE ONLY UNDERGROUND UTILITIES IN THE AREA.
8. SUBSURFACE AND ENVIRONMENTAL CONDITIONS WERE NOT EXAMINED AND ARE NOT CONSIDERED A PART OF THIS SURVEY. NO STATEMENT IS MADE CONCERNING THE EXISTENCE OF UNDERGROUND OR OVERHEAD CONTAINERS OR FACILITIES THAT MAY AFFECT THE USE AND OR DEVELOPMENT OF THIS SITE.
9. ADDITIONAL SPOT ELEVATIONS MAY BE CONTAINED IN THE PROJECT DATABASE, AND ALTHOUGH NOT APPEARING IN THE RECORD PLAN DOCUMENT DUE TO SCALE AND VISIBILITY, WERE UTILIZED IN THE DIGITAL TERRAIN MODEL FOR CREATION OF THE ONE-FOOT CONTOURS. THE ADDITIONAL SPOT ELEVATION DATA IS AVAILABLE FOR FUTURE DESIGN ANALYSIS, BEING LOCATED ON A FROZEN LAYER WITHIN THE PROJECT DATABASE.

FLOODPLAIN NOTE

THIS SITE, AS SHOWN ON THIS LIMITED TOPOGRAPHIC SURVEY LIE, IN FLOOD AREA "ZONE X", ACCORDING TO FEDERAL EMERGENCY MANAGMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) NO. 26163Y, PANEL 0125E, FOR WAYNE COUNTY, MICHIGAN, EFFECTIVE DATE FEBRUARY 2, 2012. ACCORDING TO SAID PANEL, ZONE X IS DEFINED AS AREAS OF 0.2% ANNUAL CHANCE FLOOD.

LEGAL DESCRIPTION

PARCEL# 43006010152000, PER QUIT CLAIM DEED, AS RECORDED IN LIBER 52652, PAGE 854, WAYNE COUNTY RECORDS:

LOTS 522 TO 532, INCLUSIVE, AND THE EAST 12 FEET OF LOT 533, ALSO THE ADJACENT VACATED ALLEY, 18 FEET WIDE OF "THE MEDBURY SUBDIVISION" (TOWN 1 SOUTH, RANGE 11 EAST) AS RECORDED IN LIBER 27 OF PLATS, PAGE 9, WAYNE COUNTY RECORDS.

COMMONLY KNOWN AS: 179 MIDLAND STREET, HIGHLAND PARK, MICHIGAN

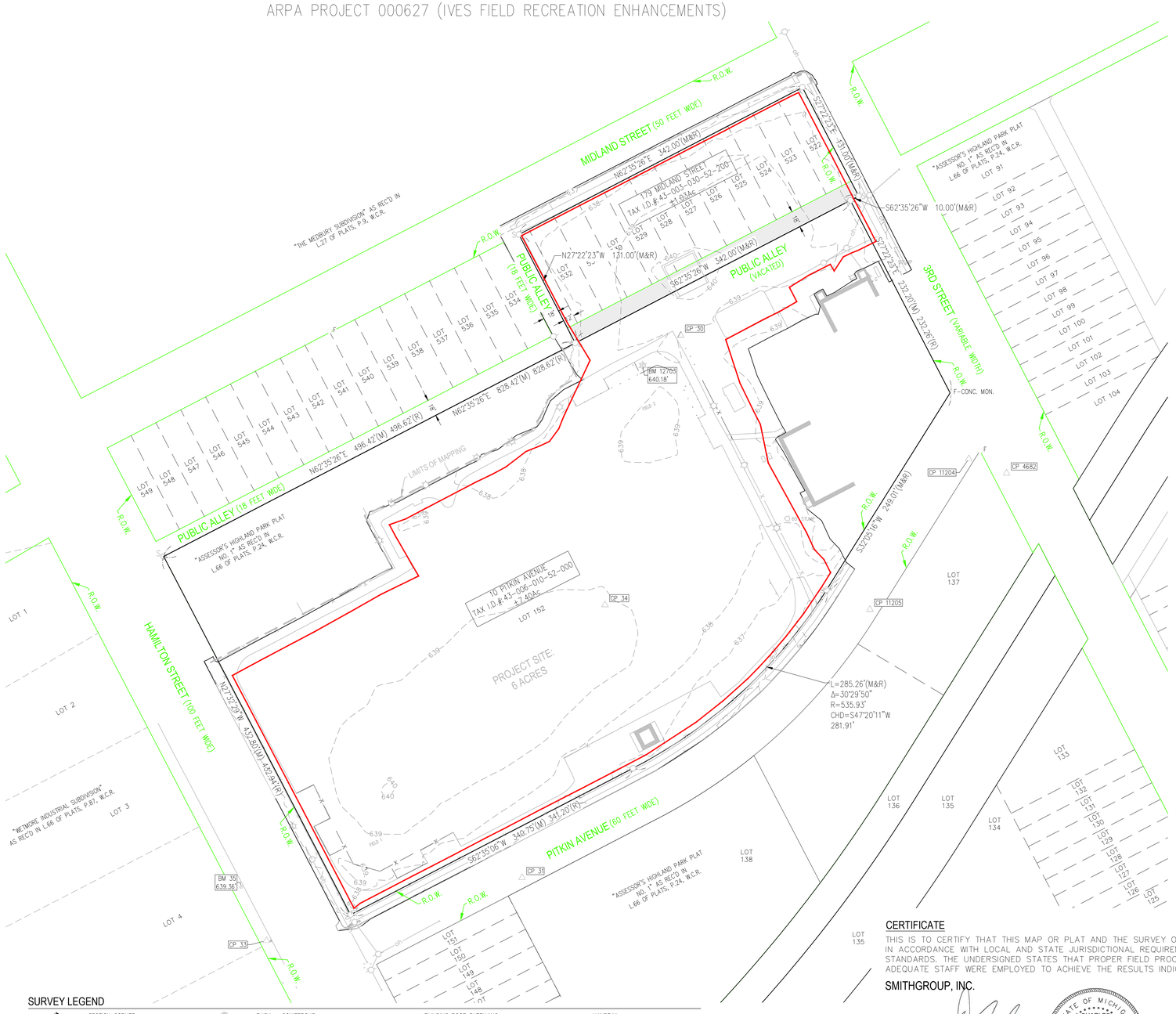
PARCEL# 43003030522000, PER QUIT CLAIM DEED, AS RECORDED IN LIBER 52652, PAGE 853, WAYNE COUNTY RECORDS:

LOT 152 OF "ASSESSOR'S HIGHLAND PARK PLAT NO. 1" OF PART OF FRACTIONAL SECTIONS 13 AND 14, TOWN 1 SOUTH, RANGE 11 EAST, CITY OF HIGHLAND PARK, WAYNE COUNTY, MICHIGAN AS RECORDED IN LIBER 66, PAGE 24 OF PLATS, WAYNE COUNTY RECORDS.

FORMERLY DESCRIBED AS:

LOT 1 "FRIEDBERG'S HIGHLAND PARK SUBDIVISION" OF PART OF FRACTIONAL SECTIONS 13 AND 14, TOWN 1 SOUTH, RANGE 11 EAST, CITY OF HIGHLAND PARK, WAYNE COUNTY, MICHIGAN AS RECORDED IN LIBER 52 OF PLATS, PAGE 24, WAYNE COUNTY RECORDS.

COMMONLY KNOWN AS: IVES FIELD, HIGHLAND PARK, MICHIGAN,



SURVEY LEGEND

SECTION CORNER	BUSH - CONIFEROUS	BUILDING ROOF OVERHANG	HANDRAIL
BENCHMARK	STUMP	ELECTRIC TRANSFORMER	GUARDRAIL
CONTROL POINT	PARK BENCH	CABLE OR TELECOM RISER	UNDERGROUND TELECOMMUNICATION
FOUND IRON PIPE	BIKE LOOP	UTILITY POLE	UNDERGROUND ELECTRIC
SET IRON WITH I.D. CAP	SIGN	GUY WIRE	FIBER OPTIC
ENDPOINT OF DIMENSION (DIM.)	DOUBLE POST SIGN	LIGHT POLE OR LAMP POST	CABLE TELEVISION
RIGHT-OF-WAY	BOLLARD OR POST	ADA DETECTABLE WARNING MAT	NATURAL GAS
WAYNE COUNTY RECORDS	FLOODLIGHT	FIRE HYDRANT	NATURAL GAS (ABANDONED)
LAND CORNER RECORDATION CERTIFICATE	CURB INLET	WATER SHUT OFF VALVE	OVERHEAD UTILITY
LIBER, PAGE	STORM MANHOLE	FIRE DEPT. CONNECTION	SANITARY SEWER
NORTH, SOUTH, EAST, WEST	COMBINED MANHOLE	POST INDICATOR VALVE	STORM SEWER
MEASURED, RECORDED VALUES	ELECTRIC MANHOLE	WELL	WATER MAIN
SPOT ELEVATION	GAS MANHOLE	IRRIGATION CONTROL VALVE	WATER MAIN (ABANDONED)
TOP OF CURB ELEVATION	COMMUNICATIONS MANHOLE	GAS SHUT OFF VALVE	SECTION LINE
GUTTER ELEVATION	WATER MANHOLE	ELECTRIC OR GAS METER	PROPERTY LINE
EDGE OF METAL ELEVATION	DOWNSPOUT	HANDHOLE ELECTRIC	PLATTED LOT LINE
TOP OF WALL ELEVATION	VENT OR CLEANOUT	TOPOGRAPHIC CONTOUR	RIGHT-OF-WAY (ROW) LINE
FINISH FLOOR ELEVATION	AIR CONDITIONER	BRUSHLINE/WOODED LIMITS	CENTERLINE OF RIGHT-OF-WAY
TREE - DECIDUOUS	HEATING/COOLING UNIT (HVAC)	BRICK PAVEMENT	EASEMENT
TREE - CONIFEROUS	END OF UTILITY NOT KNOWN/SHOWN	CONCRETE BUMPER BLOCK	MATCHLINE
BUSH - DECIDUOUS	BUILDING PERIMETER	FENCE LINE	PROJECT BOUNDARY

CERTIFICATE

THIS IS TO CERTIFY THAT THIS MAP OR PLAT AND THE SURVEY ON WHICH IT IS BASED WERE MADE IN ACCORDANCE WITH LOCAL AND STATE JURISDICTIONAL REQUIREMENTS REGULATING MAPPING STANDARDS. THE UNDERSIGNED STATES THAT PROPER FIELD PROCEDURES, INSTRUMENTATION AND ADEQUATE STAFF WERE EMPLOYED TO ACHIEVE THE RESULTS INDICATED HEREIN.

SMITHGROUP, INC.

CHARLES A. LANGOLF, PS 56210
PROFESSIONAL SURVEYOR
STATE OF MICHIGAN
charles.langolf@smithgroup.com

STATE OF MICHIGAN
CHARLES ANDREW LANGOLF
PROFESSIONAL SURVEYOR
License No. 4001056210
LICENSED PROFESSIONAL SURVEYOR

4/25/2025
DATE

IVES FIELD

179 MIDLAND ST., HIGHLAND PARK, MICHIGAN

Owner:

CITY OF HIGHLAND PARK

SMITHGROUP

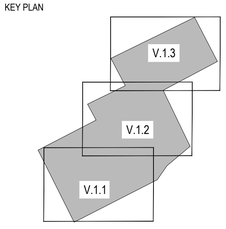
201 DEPOT STREET
SECOND FLOOR
ANN ARBOR, MI 48104
734.662.4457
www.smithgroup.com

ISSUED FOR	REV	DATE

SEALS AND SIGNATURES

NOT FOR CONSTRUCTION

KEY PLAN



DRAWING TITLE
TOPOGRAPHIC & BOUNDARY SURVEY

SCALE 1" = 60'

PROJECT NUMBER 15750

DRAWING NUMBER V.1.0

N

0 10' 20' 40'

SCALE 1" = 20'

MATCH LINE SHEET V.1.2

MATCH LINE SHEET V.1.2

TO PITKIN AVENUE
TAX I.D.#:43-006-010-52-000
±1.40AC

LIMITS OF MAPPING

CHAIN-LINK FENCE (TYP.)

"ASSESSOR'S HIGHLAND PARK PLAT NO. 1" AS RECD IN L.66 OF PLATS, P.24, W.C.R.

LOT 152

"ASSESSOR'S HIGHLAND PARK PLAT NO. 1" AS RECD IN L.66 OF PLATS, P.24, W.C.R.

TELECOM MANHOLE #15393
RIM=638.17'
N-S, T/CONDUIT=633.17'
BOTTOM=629.67'

COMBINED MANHOLE #15270
RIM=638.60'
3" V.C.P. S.E. INV.=636.10'
3" V.C.P. S. INV.=636.10'
3" V.C.P. S.W. INV.=636.10'
3" V.C.P. W. INV.=636.10'
3" V.C.P. N.E. INV.=636.10'
8" V.C.P. S.E. INV.=635.10'
8" V.C.P. N. INV.=635.10'
12" V.C.P. S.E. INV.=629.10'
12" V.C.P. W. INV.=622.80'
12" CONC. S. INV.=625.40'
45° CONC. N.N.W. INV.=621.40'
45° CONC. S.S.E. INV.=621.30'
CHANNELIZED N.N.W./S.S.E.

CATCH BASIN #15271
RIM=637.27'
12" ELBOW V.C.P. S. INV=634.97'
BOTTOM/T/DIRT=632.27'

CATCH BASIN #15269
RIM=637.42'
8" ?PIPE. N. INV=634.92'
T/WATER=635.42'
BOTTOM=632.92'

COMBINED MANHOLE #15272
RIM=637.54'
8" V.C.P. S.E. INV.=631.84'
12" V.C.P. S. INV.=630.64'
8" V.C.P. S.W. INV.=631.64'
12" V.C.P. N.W. INV.=633.04'
12" V.C.P. N.N.W. INV.=630.74'
12" V.C.P. N. INV.=630.74'
BOTTOM=630.64'

HAMILTON STREET
(100 FEET WIDE)

PITKIN AVENUE
(60 FEET WIDE)

FIELD 1

R.O.W.

CATCH BASIN #15182
RIM=636.78'
NO VISIBLE PIPES
T/WATER=635.48'
BOTTOM=634.38'

CATCH BASIN #15183
RIM=636.48'
NO VISIBLE PIPES
FILLED WITH MUD
T/MUD=635.48'

COMBINED MANHOLE #15163
RIM=637.14'
30" CONC. N.E. INV.=622.74'
30" CONC. S.W. INV.=622.64'
12" CONC. S.E. INV.=623.44'
BOTTOM=622.74'

EX. BUILDING

637.52' FF CONC DOOR SILL

CONC. PAD

CP 33

CP 34

CP 35

BM 35
639.36

ASPHALT

GRASS

CONCRETE

CHAIN-LINK FENCE (TYP.)

LOT 4

LOT 151

LOT 150

LOT 149

IVES FIELD

179 MIDLAND ST., HIGHLAND PARK, MICHIGAN

Owner:

CITY OF HIGHLAND PARK

SMITHGROUP

201 DEPOT STREET
SECOND FLOOR
ANN ARBOR, MI 48104
734.662.4457
www.smithgroup.com

ISSUED FOR	REV	DATE

SEALS AND SIGNATURES

NOT FOR CONSTRUCTION

KEY PLAN

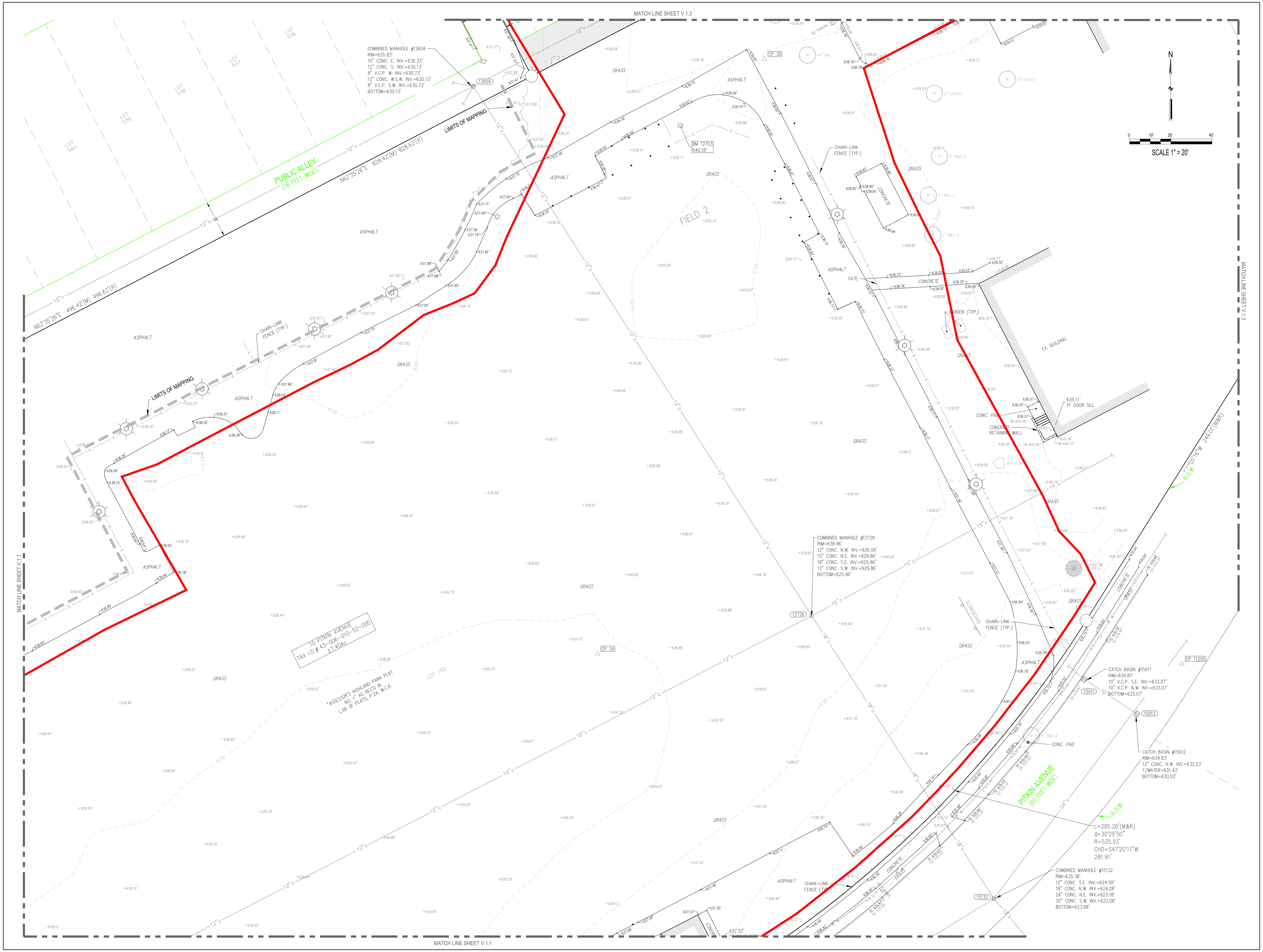
DRAWING TITLE

TOPOGRAPHIC SURVEY

SCALE 1" = 20'

PROJECT NUMBER 15750

DRAWING NUMBER V.1.1



MATCH LINE SHEET V.1.3
MATCH LINE SHEET V.1.1
PUBLIC ALLEY
(18 FEET WIDE)
N62°35'26"E 828.42'(M) 828.62'(R)
N62°35'26"E 496.42'(M) 496.62'(R)
LIMITS OF MAPPING
CHAIN-LINK FENCE (TYP.)
COMBINED MANHOLE #12604
RIM=635.83'
10" CONC. E. INV.=630.33'
12" CONC. S. INV.=630.13'
8" V.C.P. W. INV.=630.73'
12" CONC. W.S.W. INV.=630.13'
8" V.C.P. S.W. INV.=630.73'
BOTTOM=630.13'
BM 12703
640.18'
FIELD 2
EX. BUILDING
FF DOOR SILL
CONCRETE RETAINING WALL
COMBINED MANHOLE #12726
RIM=638.96'
12" CONC. N.W. INV.=626.06'
15" CONC. N.E. INV.=629.86'
18" CONC. S.E. INV.=625.96'
12" CONC. S.W. INV.=629.86'
BOTTOM=625.96'
10 PITKIN AVENUE
TAX I.D.# 43-006-010-52-000
±7.40Ac
"ASSESSOR'S HIGHLAND PARK PLAT NO. 1" AS REC'D IN L.66 OF PLATS, P.24, W.C.R.
LOT 152
PITKIN AVENUE
(60 FEET WIDE)
CATCH BASIN #15011
RIM=634.87'
10" V.C.P. S.E. INV.=633.07'
10" V.C.P. N.W. INV.=633.07'
BOTTOM=633.07'
CATCH BASIN #15012
RIM=634.83'
12" CONC. N.W. INV.=632.53'
T/WATER=631.43'
BOTTOM=630.03'
L=285.26'(M&R)
Δ=30°29'50"
R=535.93'
CHD=S47°20'11"W
281.91'
COMBINED MANHOLE #15132
RIM=635.38'
12" CONC. S.E. INV.=624.58'
18" CONC. N.W. INV.=624.28'
24" CONC. N.E. INV.=623.18'
30" CONC. S.W. INV.=623.08'
BOTTOM=623.08'
N
SCALE 1" = 20'

IVES FIELD

179 MIDLAND ST., HIGHLAND PARK, MICHIGAN

Owner:

CITY OF HIGHLAND PARK

SMITHGROUP

201 DEPOT STREET
SECOND FLOOR
ANN ARBOR, MI 48104
734.662.4457
www.smithgroup.com

ISSUED FOR	REV	DATE

SEALS AND SIGNATURES

NOT FOR CONSTRUCTION

KEY PLAN

DRAWING TITLE

TOPOGRAPHIC SURVEY

SCALE: 1" = 20'

PROJECT NUMBER: 15750

DRAWING NUMBER: V.1.2

IVES FIELD

179 MIDLAND ST., HIGHLAND PARK, MICHIGAN

Owner:

CITY OF HIGHLAND PARK

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ISSUED FOR	REV	DATE

SEALS AND SIGNATURES

NOT FOR CONSTRUCTION

KEY PLAN

DRAWING TITLE

TOPOGRAPHIC SURVEY

SCALE 1" = 20'

PROJECT NUMBER 15750

DRAWING NUMBER V.1.3

SCALE 1" = 20'

MATCH LINE SHEET V.1.2

MIDLAND STREET (50 FEET WIDE)

PUBLIC ALLEY (VACATED)

PUBLIC ALLEY (16 FEET WIDE)

PUBLIC ALLEY (18 FEET WIDE)

3RD STREET (VARIABLE WIDTH)

179 MIDLAND STREET TAX I.D.#: 43-003-030-52-200 ±1.153Ac.

"ASSESSOR'S HIGHLAND PARK PLAT NO. 1" AS RECD IN L.66, OF PLATS, P.24, W.C.R.

CATCH BASIN #12388
RIM=636.10'
9" "PIPE, N.E. INV.=631.80'
WALL COVERING PIPE
T/WATER=632.80'
BOTTOM=631.80'

STORM MANHOLE #12390
RIM=637.26'
12" V.C.P. E. INV.=632.32'
12" V.C.P. N.W. INV.=632.52'
12" V.C.P. W. INV.=632.52'
BOTTOM=631.72'

CATCH BASIN #12243
RIM=636.26'
BOTTOM=632.56'
FILLED WITH DEBRIS
NO VISIBLE PIPES

CATCH BASIN #12218
RIM=636.38'
FILLED WITH DEBRIS
T/DEBRIS=634.88'

STORM MANHOLE #12405
RIM=637.26'
10" BRICK. N. INV.=629.46'
15" BRICK. E. INV.=629.06'
18" V.C.P. S.E. INV.=628.36'
10" V.C.P. S. INV.=629.46'
12" BRICK. W. INV.=629.06'
BOTTOM=628.36'

ELECTRIC MANHOLE #12191
RIM=637.40'
N.W. -- S.E. T/CONDUIT=631.65'
BOTTOM=627.60'

STORM MANHOLE #12174
RIM=637.79'
10" V.C.P. S. INV.=631.79'
8" V.C.P. S.W. INV.=632.89'
8" V.C.P. S.W. INV.=632.39'
6" V.C.P. W. INV.=634.99'
T/WATER=631.79'
BOTTOM=630.49'

STORM MANHOLE #12447
RIM=638.61'
T/WATER=635.31'
BOTTOM=632.11'
NO VISIBLE PIPES

STORM MANHOLE #12535
RIM=638.48'
ELBOW V.C.P. N. T/PIPE=636.28'
T/WATER=635.48'
BOTTOM=634.68'
NO OTHER VISIBLE PIPES

COMBINED MANHOLE #12604
RIM=635.83'
10" CONC. E. INV.=630.33'
12" CONC. S. INV.=630.13'
8" V.C.P. W. INV.=630.73'
12" CONC. W.S.W. INV.=630.13'
8" V.C.P. S.W. INV.=630.73'
BOTTOM=630.13'

BM 12703
640.18'

N27°22'23"W 131.00'(M&R)

S62°35'26"W 342.00'(M&R)

S62°35'26"W 10.00'(M&R)

S27°22'23"E 232.20'(M) 232.26'(R)

N62°35'26"E 828.42'(M) 828.62'(R)

LIMITS OF MAPPING

FITNESS ZONE STRUCTURE

EX. BUILDING

GENERATOR

ELECTRIC BOX

FF DOOR SILL CONC

TRANSFORMER

CONC. PAD

CHAIN-LINK FENCE (TYP.)

F-CONC. MON.

R.O.W.

GRASS

ASPHALT

CONCRETE

LOT 522 LOT 523 LOT 524 LOT 525 LOT 526 LOT 527 LOT 528 LOT 529 LOT 530 LOT 531 LOT 532 LOT 534 LOT 535 LOT 536

MATCH LINE SHEET V.1.2

LEGEND

- LIMITS OF STUDY AREA
- PARCEL BOUNDARY
- FENCE
- 123 MIDLAND STREET — PARCEL ADDRESS

NOTE: LOCATIONS AND DIMENSIONS ARE APPROXIMATE. NOT A LEGAL SURVEY.

j:\2024\24002549\reports\env\24002549-sp.dwg Plotted: 7/7/2025 2:17 PM by zmoriarty

NTH Consultants, Ltd.
Infrastructure Engineering and Environmental Services

CAD FILE NAME: 24002549-SP
PLOT DATE: 7/7/2025
DRAWING SCALE: 1" = 100'
INCEPTION DATE: 6/4/2025

NTH PROJECT No.: 24002549-00
DESIGNED BY: ZBM
DRAWN BY: ZBM
CHECKED BY: BCM

SITE PLAN

IVES FIELD PROPERTY
179 MIDLAND STREET & 10 PITKIN STREET, HIGHLAND PARK, MICHIGAN

FIGURE: 2