



# ADDENDUM #1

DATE: 03/09/2023  
FROM: Tyler Quattrocchi  
ARLINGTON HEIGHTS PARK DISTRICT  
TO: PROSPECTIVE BIDDERS – 2023 Sport Courts  
SUBJECT: ADDENDUM #1 –

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Addenda to Bid Document

- 1) Attached are the Contractor Scope of Work and Bid Submission Form.

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**BIDDERS ARE REQUESTED TO SIGN THIS FORM AS A FORMAL RECEIPT OF THIS ADDENDUM AND TO RETURN IT WITH THE BID FORM.**

SIGNED BY BIDDER \_\_\_\_\_

## SCOPE OF WORK

## Site Work

- 1) General Conditions and requirements: Administration, Portable Toilets for duration of Project including maintenance, Protective Measures, Construction Fence, Erosion Control, Dumpsters and debris removal and disposal.
- 2) Provide everything required for the following specification sections: Site Clearing, Earth Moving, Asphalt Paving, Concrete Paving, Tennis Court Surfacing, Armor Crack Repair System for Tennis Courts, Line Primer, Soil Preparation, Turf and Grasses, Storm Utility Drainage Piping.
- 3) **Demolition:** Remove and dispose all specified asphalt and salvage any clean subgrade stone for re-use. Furnish all labor, tools, and equipment required and necessary to complete the following where necessary: site demolition, clearing, and disposal, including but not limited to: Saw cutting, demolition, disposal, site clearing, curbs, asphalt, concrete, paving, sidewalks and all other demolition required to provide a clear site and for new construction. Existing conditions are to be verified prior to bidding for actual quantities. Demolition and excavation debris shall be hauled from the site and legally disposed of by this Contractor. All demolition items indicated to be salvaged shall be carefully removed in order to preserve the item, Coordinate the removal of salvaged items from the site.
- 4) **Site Work:** Excavation, topsoil removal, topsoil placement, stripping, stockpiling, spoil removal, rough grading, subgrading, finish grading, cutting, filling, backfilling, fill, granular material, consolidation, compaction, proof rolling, disking, aerating, geotextile filter fabric, silt fence, erosion control, dust control, tree & vegetation protection, existing construction and utility protection, dewatering, barricades, traffic control, temporary construction fencing, temporary construction entrances, etc. Provide grading, site cuts, and fills to subgrades, contours, or elevations indicated, including curb cuts. Provide additional grading to promote site drainage during construction. Upon completion grade all areas disturbed by construction. Place clean topsoil as necessary to meet landscape requirements. Proof roll the subgrade on all curb and paved areas immediately prior to the installation of stone base. Proof roll the granular subbase on all curb and paved areas immediately prior to the curb and paving installations. Provide a loaded tandem axle vehicle for proof roll testing.
- 5) All subgrade and granular base shall be finish-graded and mechanically consolidated and compacted to  $\pm 0.05$  of a foot of the correct elevation. All backfill will be placed in mechanically consolidated and compacted lifts not to exceed the specified amount (12 inches maximum if not indicated). Testing may be performed by an independent testing agency hired by the Owner as required by the specifications. All trench backfilling under slab on grade, sidewalks, walkways, curbs, asphalt pavement, or other hard surfaces will be granular and mechanically consolidated and compacted to 95% modified proctor. All turf areas using soil backfill will also require mechanical consolidation and compaction to avoid future depressions in lawn areas and compacted to 80% modified proctor. Specifications require compaction to the maximum density with optimum moisture content. This may

require the removal of material that may be too wet or the addition of water to achieve the optimum moisture content to ensure correct compaction.

- 6) **Site utilities:** including, but not limited to, storm sewer system, pipes, fittings, manholes, PVC pipe, coring, catch basins, underdrains, inlet filter basket, frames, grates, inlets, excavation, saw cutting, pavement repairs, backfill, spoil removal, granular material, compaction, dewatering, demolition and removal of utility lines.
- 7) **Concrete:** form work, concrete, reinforcing steel, mesh, finishing, dowels, expansion joints, sidewalks, walks, curing compound, saw cutting, construction joints, expansion joints, concrete accessories, finishes, formwork, formwork accessories, reinforcing accessories, control joints, construction joints, expansion joints, isolation joints, joint filler, joint sealants. Provide all joints, dowels, and sealants as required.
- 8) **Paving:** granular base, asphalt paving, tack coat, primer, sealants, geotextile fabric, Geogrid, engineered layout, traffic control. Finish grade and compact all subgrade materials prior to the installation of granular base. Provide granular base, primer and fabric as required for all paving. Paving fabrics to be placed in longest continuous lengths possible and maintained through fence lines in paving field where possible. No quilting. Proof Roll stone base prior to Asphalt Paving
- 9) **Landscaping:** Provide all landscaping including but not limited to: seed mix, soil preparation, watering, benches. Restoration of turf areas disturbed from construction activities.
- 10) **Fencing:** Top rails, mid rails, bottom rails, tension bands, gates, transoms, ties. Remove, salvage and reinstall fence material as described. Remove (1) fence post for construction access and replace fence post at conclusion of paving work at Heritage Park
- 11) **Sport Equipment:** Provide Tennis Court and Basketball Court Color Coating, Striping and Crack Repair. Recreation Equipment, Tennis and basketball Posts and Nets, including Installation.
- 12) All layout required to complete this scope of work; no additional compensation shall be approved for the replacement of any layout found to be missing, removed, or damaged
- 13) This contractor will provide a complete as-built survey for the project upon completion of the proposed work. A complete as-built survey shall be completed by this contractor utilizing the services of a licensed professional surveyor. This as-built survey shall include, but not be limited to: all grading, paving, hard surfaces, site utility, structures and pipe inverts, storm water calculations, etc. The as-built survey shall include all new improvements.
- 14) Locate and hand excavate for public and private utilities as required for installations under this scope of work. Any damage to existing services will be at this Contractors expense.
- 15) Allowance for a temporary stabilized construction entrance; provide, maintain, and remove as required. Install Temporary Road for construction, staging and access; the CA-1 stone road capped with CA-6 consolidated and compacted. Provide a 10' wide by 100' long temporary road to be outlined by AHPD. These temporary roads shall be installed, maintained, and removed by this contractor. Upon removal of the temporary road, the existing conditions shall be graded to prepare for new construction or repair of turf.

- 16) Furnish and Install Silt Fence. Complete and comply with all regulatory requirements of the SWPPP and IEPA required by the permit and/or governing local storm water agencies, including but not limited to personnel training, erosion controls, sediment controls, BMPs, maintenance, spill prevention/cleanup/and reporting, and all other requirements associated with your scope of work. This contractor shall provide the general stormwater site inspections and reporting for all aspects for this project.
- 17) Provide granular material under slabs, sidewalks, walkways, curbs, concrete paving.
- 18) Provide all dewatering including pumping of accumulated groundwater and rainwater required for the completion of this scope of work.
- 19) Finish grade and mechanically compact granular material under the sidewalks.
- 20) Provide Allowance of \$30,000 for items directed by the Park District and specify unit prices on bid form.

Contractor: \_\_\_\_\_

Contact: \_\_\_\_\_

Phone: \_\_\_\_\_

Bid Due Date: 03/20/2023 @ 1:00 pm. 410 N Arlington Heights Rd.

Project: 2023 Sport Courts Replacement

Location: Virginia Terrace Park, Heritage Park, Evergreen Park, Pioneer Park

Pre-Bid Meeting: 03/13 @ 10am @ Heritage Park, 506 W. Victoria Ln.

Bid Documents: 2023-03-07 IFB Drawings & Supplemental Info

Project Schedule: 05/01/2023-10/01/2023

BASE BID PRICE Total:

\_\_\_\_\_ Dollars  
(\$ \_\_\_\_\_)

**Alternates:**

Alternate #1: Hot Mix Asphalt at Virginia Terrace Park and Evergreen Park in lieu of Concrete Pavement.

Add/Deduct/No Change \$ \_\_\_\_\_

Alternate #2: Tensar Geogrid

Add/Deduct/No Change \$ \_\_\_\_\_

Alternate #3: Light Poles

Add/Deduct/No Change \$ \_\_\_\_\_

**Voluntary Alternates:**

Description of Alternate Proposed (state any change in time required or additional qualifications):

Add/Deduct/No Change \$ \_\_\_\_\_

**Unit Prices:**

Concrete Paving 4" walks \$ \_\_\_\_\_/SF

Asphalt Paving 3" walks \$ \_\_\_\_\_/SY

Removal of Asphalt Walks \$ \_\_\_\_\_/SY

Removal of Unsuitable Soil \$ \_\_\_\_\_/SY

Import, Placement and Compaction of CA-6 \$ \_\_\_\_\_/SY

Operator \$ \_\_\_\_\_/HR

**Quantities and Values**

- Evergreen Park: \$ \_\_\_\_\_
- Virginia Terrace: \$ \_\_\_\_\_
- Heritage Park: \$ \_\_\_\_\_
- Pioneer Park: \$ \_\_\_\_\_



## ADVERTISEMENT FOR BID

### **Project Name: Sport Court Replacements**

Notice is hereby given to potential Bidders that the Arlington Heights Park District (the “District,” “Park District” or “Owner”) will receive sealed bids for the above referenced Project until **03/20/2023 at 1:00 PM** at the Arlington Heights Park District, 410 N. Arlington Heights Road, Arlington Heights, Illinois 60004 at which time the bid proposals will be publicly opened and read aloud. The scope of the project includes: demolition, excavation, concrete, asphalt paving and color coating for the following park locations: Heritage, Virginia Terrace, Evergreen and Pioneer Parks.

Each bid must be placed in a sealed opaque envelope and shall be clearly marked "**Sealed Bid – Sport Court Replacements**" and addressed and delivered to the Arlington Heights Park District, Attention: **BID Dept.**, 410 N. Arlington Heights Road, Arlington Heights, Illinois 60004.

Bid Documents may be obtained from the Arlington Heights Park District website: <https://www.ahpd.org/capital-improvements/rfps-and-bids/>. For more information, contact Tyler Quattrocchi, Park Planner.

There is a pre- bid meeting on **03/13/2023 at 10:00 AM at Heritage Park**, 506 W. Victoria Ln.

The District reserves the right to waive all technicalities, to accept or reject any or all bids, or to accept only portions of a bid and reject the remainder without disclosure for any reason. Failure to make such a disclosure will not result in accrual of any right, claim or cause of action by any Bidder against the District. Owner will award the Contract to the lowest most responsible and responsive Bidder, as determined by Owner. In considering the Bidder’s responsibility, the Owner may evaluate, among other factors, the ability of the Bidder to provide experienced labor sufficient in numbers to timely and properly complete the Work, the financial capability of the Bidder, and the performance of the Bidder on other projects.

Bids shall not include federal excise tax or state sales tax for materials to be incorporated in, or totally consumed in the prosecution of the Work. A tax exemption certificate will be furnished by the Park District at the request of the Bidder. The Park District’s tax exemption number shall only be used by the successful Bidder for the Work of this Project only.

After the bid opening, no bid may be withdrawn or canceled for a period of (60) calendar days.

The Work of this Project is subject to the Illinois *Prevailing Wage Act*, 820 ILCS 130/0.01 *et seq.* A prevailing wage determination has been made by the Park District, which is the same as that determined by the Illinois Department of Labor for public works projects in Cook County. The Contract entered into for the Work will be drawn in compliance with said law and proposals should be prepared accordingly and provide for payment of all laborers, workmen, and mechanics needed to perform the Work at no less than the prevailing rate of wages (including

the prevailing rate for legal holiday and overtime work as applicable) for each craft, type of worker, or mechanic.

All bids must be accompanied by cashier's check, certified check, or bid bond payable to the order of the Arlington Heights Park District for ten percent (10%) of the amount of the bid as provided in the Instructions to Bidders. No proposals or bids will be considered unless accompanied by such bond or check.

The Contractor(s) selected will also be required to comply with all applicable federal, state and local laws, rules, regulations and executive orders, including but not limited to those pertaining to equal employment opportunity.

By Order Of:

Board of Park Commissioners  
Arlington Heights Park District  
03/07/2023





## INSTRUCTIONS TO BIDDERS

**DATE: March 7, 2023**

**BID REQUEST: Sport Court Replacements**

Sealed bids will be accepted until **03/20/2023 at 1:00 PM** and immediately thereafter publicly opened and read aloud at the Arlington Heights Park District Administration Office, 410 N. Arlington Heights Road, Arlington Heights, Illinois 60004. Bids arriving after this time will be rejected and will be returned unopened, including mailed bids regardless of when post marked. All Bidders are welcome to attend the bid opening. After bid opening, bids will be submitted for approval to the Arlington Heights Park District Board of Park Commissioners at a regularly scheduled meeting.

### **1. Preparation and Submission of Bid Proposal**

It is the sole responsibility of the Bidder to see that his bid is received in proper time. **No faxed or e-mail bid or modification of a bid will be considered.** The Park District is not responsible for the premature opening of bids not marked as required. Any bid opened prematurely due to the failure of the Bidder to mark the envelope in accordance with these Bid Documents will be considered non-responsive. Bidders' prices are to include the delivery of all materials; including; equipment, supplies, tools, scaffolding, transportation, insurances, bonds, warranties, and all other items and facilities, and the performance of all labor and services, necessary for the proper completion of the Work except as may be otherwise expressly provided in the Contract Documents. Bids shall not include federal excise tax or state sales tax for materials to be incorporated in, or totally consumed in the prosecution of, the Work. An exemption certificate will be furnished by the Park District upon request of the Bidder.

Bidder must acknowledge all Addenda received in the spaces provided on the Contractor Bid Form. By submitting a bid, Bidder indicates that all considerations issued by Addendum are incorporated in the bid.

Bidders shall return all Bid Documents, including Drawings and Specifications with the bid, and **no sheets shall be detached from any part of the Bid Documents.**

Attached to the Bid Form will be one or more certifications regarding the Bidder's compliance with applicable laws. **Failure of a Bidder to complete/submit a required**

**certification shall be the basis for immediate rejection of that Bidder's bid.** The certification of the successful Bidder shall become a part of the Contract with the Park District.

The Bidder shall submit its prices on the attached Bid Proposal Form. The Bid Proposal Form shall be executed properly and all writing, including all signatures, shall be with black ink. Failure to use the Bid Proposal Form provided could result in rejection of the bid. Do not detach any portion of this document; invalidation of the bid could result.

The Bidder shall specify in figures, in the places provided, a price for each of the separate items called for in the Bid Form.

## **2. Requirement of Bidders**

Bidders must be able to demonstrate that they: 1) have experience in performing and have successfully performed and are still actively engaged in performing work similar in kind and scope to the Services; and 2) are able to show that they have adequate laborers and materials to successfully complete the Services as indicated in the Bid Documents and within the time required by the Bid Documents. The Contractor shall not have been debarred or determined ineligible for public contracts by any governmental agency.

**The following information must be attached to the bid proposal. Failure to do so may result in disqualification of the Bidder.**

On a separate sheet, list at least five (5) service contracts your organization has completed in the past two (2) years, which are comparable in scope, giving the name of the client, client contact and telephone number, and length of contract.

On a separate sheet, list all administrative proceedings and litigation filed by or against Bidder in the past five (5) years, including the name and case number, name/jurisdiction of the court or administrative agency, and a summary of each claim/case, including current status and if no longer pending, the disposition. The foregoing includes but is not limited to information regarding any proceedings and actions taken by any governmental agency to debar or disqualify the Bidder from bidding on public contracts, including the name of the agency initiating the proceeding/action, the nature of the proceeding/action, the claimed basis for the proceeding/action and the current status or disposition of the proceeding/action.

**Initial here if there is nothing to disclose:** \_\_\_\_\_

On a separate sheet, indicate all instances in which Bidder has been rejected for not being a responsible bidder, giving the name of the client, client contact and telephone number, and an explanation of the circumstances surrounding the rejection.

**Initial here if there is nothing to disclose:** \_\_\_\_\_

On a separate sheet, provide a list of all contracts to which you were a party and with respect to which you were declared to be in breach of one or more provisions, giving the type of contract, the project location where applicable, the names and addresses of the parties to the contract, the name of the party declaring the breach, the nature of the claimed breach and current status or resolution of the claim.

**Initial here if there is nothing to disclose:** \_\_\_\_\_

Other required submittals include: Bid Proposal; Contractor's Compliance and Certifications. **Failure of a Bidder to complete/submit these documents shall be the basis for immediate rejection of that Bidder's bid.**

### **3. Examination of Site, Drawings, Specifications**

Each Bidder shall visit the site(s) of the proposed Work and fully acquaint himself with conditions, as they exist, and shall undertake such additional inquiry and investigation as he shall deem necessary so that he may fully understand the requirements, facilities, possible difficulties and restrictions attending the execution of the Work under the Contract. Bidder shall thoroughly examine and be familiar with all of the Bid Documents including but not limited to the Drawings and the written Specifications. Any conflicts or discrepancies found between or among Bid Documents, including but not limited to the Drawings and written Specifications, and the site conditions, or any errors, omissions or ambiguities in the Drawings or written Specifications shall be immediately reported to the Park District and written clarification requested prior to submission of a bid.

The failure or omission of any Bidder to obtain, receive or examine any form, instrument, or information or to visit the Project site(s), and become knowledgeable with respect to conditions there existing, or to seek needed clarification shall in no way relieve any Bidder from any obligations with respect to his/her bid. By submitting a bid, the Bidder agrees, represents and warrants that he has undertaken such investigation as he deemed necessary, has examined the site(s) and the Bid Documents, has obtained all needed clarifications and where the Bid Documents indicate in any part of the Work, that a given result be produced, that the Bid Documents are adequate and the required result can be produced as indicated in the Specifications and Drawing(s). Once the award has been made, failure to have undertaken and completed the foregoing tasks shall not be cause to alter the original Contract or to request additional compensation.

### **4. Acceptance or Rejection of Bids**

The Park District may accept the bid of, and award the Contract for the Work to, the lowest responsive and responsible Bidder as determined by and in the sole discretion of the Park District.

The Owner reserves the right to (1) reject all bids; (2) reject only certain bids which are non-conforming or non-responsive to the bid requirements; (3) accept only a portion, part or specific items of Work of all and reject others, as the Owner shall in its sole discretion determine to be in its best interest; and/or (4) award the Contract to the responsible Bidder submitting the lowest bid responsive to the bidding requirements. No bid will be accepted from or Contract awarded to any person, firm or corporation that is in arrears or is in default to the Park District upon any debt or contract, or that is a defaulter, as surety or otherwise, upon any obligation to said Park District or that has failed to perform faithfully any previous contract with the Park District.

In the event of a rejection of a portion, part, or certain items of Work of all bids, the bid of each Bidder shall automatically be deemed reduced by the amount of such rejected part or item at the unit price or other cost designated therefore by that Bidder on its submitted Contractor Bid Proposal Form. The successful Bidder so selected may not refuse to enter into a Contract with the Owner on the basis that the Owner awarded a Contract for less than all portions or items of the Work specified in the Bid Documents. The Arlington Heights Park District Board of Park Commissioners reserves the right to waive any technicalities or irregularities, and to disregard any informality on the bids and bidding, when in its opinion the best interest of the Park District will be served by such actions and in accordance with applicable law.

## **5. Surety**

All bids must be accompanied by a bid bond or bank cashier's check or certified check payable to the Arlington Heights Park District for ten percent (10 %) of the amount of the bid and drawn on a responsive and responsible bank doing business in the United States. All bids not accompanied by a bid security, when required, will be rejected.

The bid security of all except the three (3) lowest responsive and responsible Bidders will be returned after the decision to accept or reject bids by the Arlington Heights Park District Board of Park Commissioners. The bid security of the successful Bidder will be returned after acceptance by the Park District of an acceptable Performance Bond, Labor and Materials/Payment Bond and a certificate of insurance naming the Arlington Heights Park District as the certificate holder and as additional insured, and the successful Bidder has executed and returned to the Park District the Contract for the Work presented by the Park District.

Prior to beginning Work, the successful Bidder shall furnish a Performance Bond, and Labor and Materials/Payment Bond in the amount of 110% of the Contract Sum, using a form similar to the AIA-A312-2010 form, or its current equivalent, or one acceptable to Owner, cosigned by a surety company licensed to conduct business in the State of Illinois and with at least an "A" rating and a financial rating of at least "X" in the latest edition of the Best Insurance Guide. Said bond shall guarantee the faithful performance of the Work in accordance with the Contract, the payment of all indebtedness incurred for labor and

materials, and guarantee correction of Work. The cost of each bond shall be included in the Contract Sum. The Bidder and all Subcontractors shall name the Park District as an obligee on all bonds. Said bonds shall meet the requirements of the Illinois Public Construction Bond Act, 30 ILCS 550/0.01 *et seq.* and any further amendments thereto. Bidder shall include in its Performance Bond and Labor and Material Payment Bond such language as shall guarantee the faithful performance of the Prevailing Wage Act as required in these Bid Documents.

The Performance Bond and Labor and Material Payment Bond will become a part of the Contract. The failure of the successful Bidder to enter into the Contract and supply the required bonds and evidence of insurance within ten (10) days after the Contract is presented for signature, or within such extended period as the Park District may grant, shall constitute a default, and the Park District may either award the Contract to the next responsible Bidder, or re-advertise for bids. In the event of a default, the Owner need not return the defaulting Bidder's bid surety and may charge against the defaulting Bidder for the full difference between the amount for the bid and the amount for which a Contract for the Work is subsequently executed, irrespective of whether the amount thus due exceeds the amount of the defaulting Bidder's bid surety.

## **6. Withdrawal of Bid**

Bidders may withdraw or cancel their bids at any time prior to the advertised bid opening time by signing and submitting a request for said withdrawal. After the bid opening time, no bid shall be withdrawn or canceled for a period of sixty (60) calendar days.

## **7. Award, Acceptance and Contract**

Owner will award the Contract to the lowest most responsible and responsive Bidder, as determined by Owner. In considering the Bidder's responsibility, the Owner may evaluate, among other factors, the ability of the Bidder to provide experienced labor sufficient in numbers to timely and properly complete the services, conformity with the Specifications, serviceability, quality, and the financial capability of the Bidder, and the performance of the Bidder on other projects.

The Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bid Documents, and to determine the low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

Bids will be awarded to one Bidder for the entire Project or to any series of Bidders for an appropriate proportion of the Project. If specified in the Bid Form, awards will be based upon the submitted unit prices.

The acceptance of a bid will be by a Notice of Award, signed by a duly authorized representative of the Park District; no other act by the Park District shall constitute the

acceptance of a bid. The acceptance of a bid by the Park District shall bind the successful Bidder to execute and perform the Work of the Contract. The successful Bidder to whom the Contract is awarded by the Park District shall sign and deliver to the Park District for execution by the Park District all required copies of the Contract, along with all required insurance and surety documents within ten (10) days after presentation to him of the Contract for signature. In case the Bidder shall fail or neglect to do so, he will be considered as having abandoned the Contract, and as being in default to the Owner. The Owner may thereupon re-advertise or otherwise award said Contract and forfeits the Bid Security.

The Invitation to Bid, Instructions to Bidders, General Conditions, Supplementary and/or Special Conditions, if any, Drawings, Specifications, Contractor Bid Proposal Form, Addenda, if any, Contractors Compliance and Certifications Attachment, and Substance Abuse Certification and the Prevailing Wage Determination and Supersedes Notice comprise the Bid Documents. The Bid Documents, together with the Standard /Form of Agreement between Owner and Contractor AIA Document A101-2017, as modified by the Park District (or such other form of agreement or contract selected by Owner), and the Performance Bond and Labor Material Payment Bond and proof of insurance comprise the Contract Documents.

## **8. Interpretation of the Contract Documents**

The Park District shall in all cases determine the amount or quantity of the several kinds of Work which are to be paid for under this Contract, and shall decide all questions which may arise relative to the execution of the Contract on the part of the Contractor, and all estimates and decisions shall be final and conclusive. The Park District shall have the right to make alterations in the lines, grades, plans, forms, or dimensions of the Work herein contemplated either before or after the commencement of the Work. If such alterations diminish the quantity of the Work to be done, they shall not constitute a claim for damage or for anticipated profits on the work dispensed with, or if they increase the amount of Work, such increase shall be paid according to the quantity actually done and at the price or prices stipulated for such Work in the Contract. The Park District reserves the right to approve, an equal to or superior to product or equipment required under the Specifications, or to reject as not being and equal to or superior to the product or equipment required under the Specifications. If the Bidder is in doubt as to the interpretation of any part of the Bid Documents, or finds errors, discrepancies or omissions from any part of the Contract Documents, he must submit a written request for interpretation thereof not later than three (3) days prior to opening of bids to the Park District. Address all communications to [tquattrocchi@ahd.org](mailto:tquattrocchi@ahd.org) at the Park District. If an error or omission is discovered in the Bid Documents after the bid opening, the Park District reserves the right: i) to determine whether to require the submission of new bids; or ii) if the error or omission is of such a nature that it was reasonably discoverable upon a careful review of the Bid Documents, to award the Contract to the lowest responsive and responsible Bidder as determined by the Park District and to require that Contractor

to perform the Work in accordance with an issued correction by the Park District and/or Architect and for the amount bid by the Contractor. Such decisions are final and not subject to recourse. Errors and omissions made by the Bidder cannot be corrected after the bid opening.

## **9. Addenda**

Any interpretation, correction to, or addition to the Bid Documents will be made by written Addendum and will be delivered by mail or fax to each prime Bidder of record. The written Addenda constitute the only interpretations of the Bid Documents; the Park District accepts no responsibility for any other claimed interpretations or communications.

It is the responsibility of each Bidder to verify that he has received all Addenda prior to submitting a bid. It is also the responsibility of each Bidder to verify that all subcontractors and material suppliers whose prices are incorporated in the Bidder's bid are familiar with the Bid Documents in their entirety, including all Addenda issued up to the time of bid opening.

In the event a conflict or omission is discovered in the Bid Documents after the issuing of the last Addendum such that an interpretation cannot be issued by the Park District prior to bidding, the Bidder is directed to estimate on and provide the quantity and quality of material and labor consistent with the overall represented and indicated Work so as to provide all materials, equipment, labor, and services necessary for the completion of the Work in accordance with the Bid Documents.

## **10. Substitutions during Bidding**

Unless otherwise indicated, the use of brand names in the Specifications is used for the purpose of establishing a grade or quality. Bidders proposing to use an alternate that is equal to or superior to in every respect to that required by the Specifications must request approval in writing to the Park District at least seven (7) business days prior to the bid opening and mark the item as 'or approved equal'.

Additionally, Bidders requesting approval for use of an alternate must provide certification by the manufacturer that the substitute proposed is equal to or superior in every respect to that required by the Contract Documents, and that its in-place performance will be equal to or superior to the product or equipment specified in the application indicated. The Bidder, in submitting the request for substitution, waives the right to additional payment or an extension of Contract Time because of the failure of the substitute to perform as represented in the request for substitution.

The Park District may request additional information or documentation necessary for evaluation of the request for substitution. The Park District will notify all Bidders of

acceptance of the proposed substitute by means of an Addendum to the Bid Documents. Park District's approval of a substitute during bidding does not relieve the Contractor of the responsibility to submit required shop drawings and to comply with all other requirements of the Contract Documents, including but not limited to proper performance of all components of the Work and suitability for the uses specified.

Bids proposing alternates not previously approved by the Park District will be considered non-responsive and rejected. The Park District reserves the right to determine whether a substituted selection, in its judgment, is equal to or better quality and therefore an acceptable alternate. Such decisions are final and not subject to recourse.



## GENERAL CONDITIONS OF THE CONTRACT FOR CONSTRUCTION

The American Institute of Architects "AIA Document A201-2017 General Conditions of the Contract for Construction," 2007 Edition, as modified by Owner, and included in this Project Manual are the General Conditions.

### SUPPLEMENTAL CONDITIONS

The "General Conditions of the Contract, AIA Document A201, 2017 Edition" (the "General Conditions"), as modified by Owner, are hereby amended to include the following:

#### I. Insurance and Indemnity Requirements

Contractor shall procure and maintain for the duration of the contract, insurance against claims for death, injuries to persons, or damages to property which may arise from or in connection with the performance of work hereunder by the Contractor, his agents, representatives, employees or subcontractors of the types and in the amounts listed below.

- A. Commercial General and Umbrella Liability Insurance.** Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella insurance with a limit of not less than **\$3,000,000 each occurrence**. If such CGL insurance contains a general aggregate limit, it shall apply separately to this project/location. CGL insurance shall be written on Insurance Services Office (ISO) occurrence form CG 00 01, or a substitute form providing equivalent coverage, and shall cover liability arising from premises, operations, independent contractors, products-completed operations, personal injury and advertising injury, and liability assumed under an insured contract (including the tort liability of another assumed in a business contract). Owner, its elected and appointed officials, officers, employees and agents shall be included as an insured under the CGL, **using ISO additional insured endorsement CG 20 10** or a substitute providing equivalent coverage, and under the commercial umbrella, if any. This insurance shall apply as primary insurance with respect to any other insurance or self-insurance afforded to Owner. There shall be no endorsement or modification of the CGL limiting the scope of coverage for liability arising from pollution, explosion, collapse, or underground property damage.
- B. Continuing Completed Operations Liability Insurance.** Contractor shall maintain commercial general liability (CGL) and, if necessary, commercial umbrella liability insurance with a limit of not less than \$3,000,000 each occurrence for at least three years following substantial completion of the work. Continuing CGL insurance shall be written on ISO occurrence form CG 00 01, or substitute form providing equivalent coverage, and shall, at minimum, cover liability arising from products-completed operations and liability assumed under an insured contract. Continuing CGL insurance shall have a products-completed operations aggregate of at least two times its each occurrence limit. Continuing commercial umbrella coverage, if any, shall include liability coverage for

damage to the insured's completed work equivalent to that provided under ISO form CG 00 01.

- C. Business Auto and Umbrella Liability Insurance.** Contractor shall maintain business auto liability and, if necessary, commercial umbrella liability insurance with a limit of not less than \$1,000,000 each accident. Such insurance shall cover liability arising out of any auto including owned, hired and non-owned autos. Business auto insurance shall be written on Insurance Services Office (ISO) form CA 00 01, CA 00 05, CA 00 12, or a substitute form providing equivalent liability coverage equivalent to that provided in the 1990 and later editions of CA 00 01.
- D. Workers Compensation Insurance.** Contractor shall maintain workers compensation as required by statute and employers liability insurance. The commercial umbrella and/or employers liability limits shall not be less than \$1,000,000 each accident for bodily injury by accident or \$1,000,000 each employee for bodily injury by disease. If Owner has not been included as an insured under the CGL using ISO additional insured endorsement CG 20 10 under the Commercial General and Umbrella Liability Insurance required in this Contract, the Contractor waives all rights against Owner and its officers, officials, employees, volunteers and agents for recovery of damages arising out of or incident to the Contractor's work.
- E. General Insurance Provisions.**
- 1. Evidence of Insurance.** Prior to beginning Work, Contractor shall furnish Owner with a certificate of insurance and applicable policy endorsements, executed by a duly authorized representative of each insurer, showing compliance with the insurance requirements set forth above. All certificates shall provide for 30 days written notice to Owner prior to the cancellation or material change of insurance referred to therein. Written notice to Owner shall be by certified mail, return receipt requested. Failure of Owner to demand such certificate, endorsement or other evidence of full compliance with these insurance requirements or failure of Owner to identify a deficiency from evidence that is provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance. Owner shall have the right, but not the obligation, of prohibiting Contractor or any subcontractor from entering the Project site until such certificates or other evidence that insurance has been placed in complete compliance with these requirements is received and approved by Owner. Failure to maintain the required insurance may result in termination of this Contract at Owner's option. With respect to insurance maintained after final payment in compliance with a requirement above, an additional certificate shall provide certified copies all insurance policies required above within 10 days of Owner's written request for said copies.
- 2. Acceptability of Insurers.** For insurance companies which obtain a rating from A.M. Best, that rating should be no less than A VII using the most recent edition of the A.M. Best's Key Rating Guide. If the Best's rating is less than A VII or a Best's rating is not

obtained, the Owner has the right to reject insurance written by an insurer it deems unacceptable.

**3. Cross-Liability Coverage.** If Contractor's liability policies do not contain the standard ISO separation of insureds provision, or a substantially similar clause, they shall be endorsed to provide cross-liability coverage.

**4. Deductibles and Self-Insured Retentions.** Any deductibles or self-insured retentions must be declared to the Owner. At the option of the Owner, the Contractor may be asked to eliminate such deductibles or self-insured retentions as respects the Owner, its officers, officials, employees, volunteers and agents or required to procure a bond guaranteeing payment of losses and other related costs including but not limited to investigations, claim administration and defense expenses.

**5. Subcontractors.** Contractor shall cause each subcontractor employed by Contractor to purchase and maintain insurance of the type specified above. When requested by the Owner, Contractor shall furnish copies of certificates of insurance evidencing coverage for each subcontractor.

#### **F. Indemnification**

To the fullest extent permitted by law, the Contractor shall waive all right of contribution and shall indemnify and hold harmless the Owner and its officers, officials, employees, volunteers and agents from and against all claims, damages, losses and expenses, including but not limited to legal fees (attorney's and paralegals fees and court costs), arising out of or resulting from the performance of the Contractor's work, provided that any such claim, damage, loss or expense (i) is attributable to bodily injury, sickness, disease or death, or injury to or destruction of tangible property, other than the work itself, including the loss of use resulting therefrom and (ii) is caused in whole or in part by any wrongful or negligent act or omission of the Contractor, any Subcontractor, anyone directly or indirectly employed by any of them or anyone for whose acts any of them may be liable, regardless of whether or not it is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or otherwise reduce any other right or obligation of indemnity which would otherwise exist as to any party or person described in this Paragraph. Contractor shall similarly protect, indemnify and hold and save harmless the Owner, its officers, officials, employees, volunteers and agents against and from any and all claims, costs, causes, actions and expenses including but not limited to legal fees, incurred by reason of Contractor's breach of any of its obligations under, or Contractor's default of, any provision of the Contract.

BID PROPOSAL

Bidder is:

An Individual:

By: \_\_\_\_\_ (SEAL)

(Individual's Name)

Doing business as \_\_\_\_\_

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

Phone Number: \_\_\_\_\_

A Partnership:

By: \_\_\_\_\_ (SEAL)

(Firm Name)

\_\_\_\_\_

(General Partner)

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

Phone Number: \_\_\_\_\_

A Corporation:

By: \_\_\_\_\_ (SEAL)

(Corporation Name)

\_\_\_\_\_

(State of Incorporation)

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

(Name of Person Authorized to Sign)

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

(Secretary)

(CORPORATE SEAL)

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

Phone Number: \_\_\_\_\_

By submission of its bid, the Bidder acknowledges, agrees, represents, declares and warrants:

1. That it has visited and examined the site, and is fully familiar with and has satisfied itself as to the site and the local and other conditions under which the Work is to be performed, including without limitation, (i) surface conditions of the site and subsurface conditions readily observable or ascertainable upon the exercise of reasonable diligence and all structures and obstructions thereon and thereunder, both natural and manmade; (ii) the nature, location, and character of the general area in which the Project is located, including without limitation, its climatic conditions, available labor supply and labor costs, and available equipment supply and equipment costs; and (iii) the quality and quantity of all materials, supplies, tools, equipment, labor, and professional services necessary to complete the Work in the manner and within the cost and time frame indicated by the Contract Documents; and has correlated the Bidder's personal observations with the requirements of and matters indicated in or by the proposed Contract Documents;
2. To hold the bid open for sixty (60) days subsequent to the date of the bid opening;
3. To enter into and execute a Contract with the Owner within ten (10) days after the date of the Notice of Award, if awarded on the basis of this bid, and in connection therewith to:
  - (a) Furnish all bonds and insurance required by the Contract Documents;
  - (b) Accomplish the Work in accordance with the Contract Documents; and
  - (c) Complete the Work within the time requirements as set forth in the Contract Documents;
4. That the Bidder has carefully examined the Instructions to Bidders, the Drawings and Specifications, and the Project Manual in its entirety, in order to determine how these affect the bid proposal, the forms of the Contract, the required Contract bonds, and duration thereof, and that the Bidder has inspected in detail the site of the proposed Work, and been familiarized with all of the requirements of construction, and of the governing municipalities under whose jurisdiction the Project falls (its codes, ordinances and construction requirements therein), and understands that in making this proposal, the Bidder waives all rights to plead any misunderstanding regarding the same;
5. That if this proposal is accepted, the Bidder is to provide all of the necessary equipment, tools, apparatus, labor, and other means of construction, and to do all of the Work and to furnish all of the materials specified in the Contract Documents in the manner and at the time therein prescribed, and in accordance with the requirements set forth;
6. To furnish a Bid Bond in accordance with the Instructions to Bidders;

7. To furnish Performance/Labor and Material Payment Bond in accordance with the Instructions to Bidders;

8. To commence Work as specified in the Instructions to Bidders, and to prosecute the Work in such a manner, and with sufficient materials, equipment and labor as will ensure its completion within reasonable time, it being understood and agreed that the completion within such reasonable time is an essential part of this Contract;

9. That he has checked carefully the bid figures and understands that he shall be responsible for any errors or omissions based on these Specifications and alternates as submitted on the Bid Proposal Form;

10. That it is understood and agreed that the Arlington Heights Park District reserves the right to: a) accept or reject any or all bids; b) waive any technicalities; c) award to one Bidder the entire Project or to any series of Bidder for an appropriate proportion of the Project; and d) accept Alternates in any order or combination and to determine low Bidder on the basis of the sum of the Base Bid and Alternates accepted.

Submitted this \_\_\_\_ day of \_\_\_\_\_, 2023

Name: \_\_\_\_\_  
By: \_\_\_\_\_  
Signature \_\_\_\_\_  
Title: \_\_\_\_\_

SUBSCRIBED AND SWORN TO before me  
this \_\_\_\_\_ day of \_\_\_\_\_ 2023

\_\_\_\_\_  
Notary Public

STATE OF ILLINOIS     )  
  )  
COUNTY OF \_\_\_\_\_ )

## CONTRACTOR COMPLIANCE AND CERTIFICATIONS ATTACHMENT

**Note: The following certifications form an integral part of the Agreement between the Owner and Contractor. Breach by Contractor of any of the certifications may result in immediate termination of the Contractor's services by Owner.**

THE UNDERSIGNED CONTRACTOR HEREBY ACKNOWLEDGES, CERTIFIES, AFFIRMS AND AGREES AS FOLLOWS:

- A. Contractor has carefully read and understands the contents, purpose and legal effect of this document as stated above and hereafter in this document. The certifications contained herein are true, complete and correct in all respects.
- B. Contractor shall abide by and comply with, and in contracts which it has with all persons providing any of the services or Work on this Project on its behalf shall require compliance with, all applicable Federal, State and local laws and rules and regulations including without limitation those relating to 1) fair employment practices, affirmative action and prohibiting discrimination in employment; 2) workers' compensation; 3) workplace safety; 4) wages and claims of laborers, mechanics and other workers, agents, or servants in any manner employed in connection with contracts involving public funds or the development or construction of public works, buildings or facilities; and 5) steel products procurement.
- C. All contracts for this Project are subject to the provisions of the Illinois Prevailing Wage Act (820 ILCS 130/0.01 *et seq.*), providing for the payment of the prevailing rate of wage to all laborers, workmen and mechanics engaged in the Work. Contractor shall pay prevailing rates of wages in accordance with the wage determination included with the Contract Documents and any subsequent determinations issued by the Illinois Department of Labor which shall supersede the determination included in the Contract Documents, all in accordance with applicable law. Contractor is responsible for determining the applicable prevailing wage rates at the time of bid submission and at the time of performance of the Work. Failure of Contractor to make such determination shall not relieve it of its obligations in accordance with the Contract Documents. Contractor shall also comply with all other requirements of the Act including without limitation those pertaining to inclusion of required language in subcontracts, job site posting, maintenance and submission of certified payroll records and inspection of records. Contractor is not barred from entering into public contracts under Section 11a of the Illinois Prevailing Wage Act due to its having been found to have disregarded its obligations under the Act.
- D. To the best of Contractor's knowledge, no officer or employee of Contractor has been convicted of bribery or attempting to bribe an officer or employee of the State of Illinois, or any unit of local government, nor has any officer or employee made an admission of guilt of such conduct which is a matter of record.

- E. Contractor is not barred from bidding on or entering into public contracts due to having been convicted of bid-rigging or bid rotating under paragraphs 33E-3 or 33E-4 of the Illinois Criminal Code. Contractor also certifies that no officers or employees of the Contractor have been so convicted and that Contractor is not the successor company or a new company created by the officers or owners of one so convicted. Contractor further certifies that any such conviction occurring after the date of this certification will be reported to the Owner, immediately in writing, if it occurs during the bidding process, or otherwise prior to entering into the Contract therewith.
- F. Pursuant to the Illinois Human Rights Act (775 ILCS 5/2-105), Contractor has a written sexual harassment policy that includes, at a minimum, the following information: (i) a statement on the illegality of sexual harassment; (ii) the definition of sexual harassment under State law; (iii) a description of sexual harassment utilizing examples; (iv) the Contractor's internal complaint process including penalties; (v) the legal recourse, investigative and complaint process available through the Illinois Department of Human Rights and the Human Rights Commission and directions on how to contact both; and (vi) protection against retaliation as provided by Section 6-101 of the Illinois Human Rights Act. Contractor further certifies that such policy shall remain in full force and effect. A copy of the policy shall be provided to the Illinois Department of Human Rights upon request.
- G. Contractor shall abide by the "Employment of Illinois Workers on Public Works Act" (30 ILCS 570/0.01 *et seq.*) which stipulates that whenever there is a period of excessive unemployment in Illinois, defined as any month immediately following two (2) consecutive calendar months during which the level of unemployment in Illinois exceeds five percent (5%) as measured by the U.S. Bureau of Labor Statistics in its monthly publication of employment and unemployment figures, the Contractor shall employ not less than ninety percent (90%) Illinois laborers unless otherwise exempted as so stated in the Act. ("Illinois laborer" means any person who has resided in Illinois for at least 30 days and intends to become or remain an Illinois resident). Other laborers may be used if Illinois laborers are not available or are incapable of performing the particular type of work involved if so certified by the Contractor and approved by the Owner.
- H. (i) Contractor's bid proposal was made without any connection or common interest in the profits anticipated to be derived from the Contract by Contractor with any other persons submitting any bid or proposal for the Contract; (ii) the Contract terms are in all respects fair and the Contract will be entered into by Contractor without collusion or fraud; (iii) no official, officer or employee of the Owner has any direct or indirect financial interest in Contractor's bid proposal or in Contractor, (iv) the Contractor has not directly or indirectly provided, and shall not directly or indirectly provide, funds or other consideration to any person or entity (including, but not limited to, the Owner and the Owner's employees and agents), to procure improperly special or unusual treatment with respect to this



Agreement or for the purpose of otherwise improperly influencing the relationship between the Owner and the Contractor. Additionally, the Contractor shall cause all of its officers, directors, employees, (as the case may be) to comply with the restrictions contained in the preceding sentence.

- I. Contractor knows and understands the Equal Employment Opportunity Clause administrated by the Illinois Department of Human Rights, which is incorporated herein by this reference, and agrees to comply with the provisions thereof. Contractor further certifies that Contractor is an "equal opportunity employer" as defined by Section 2000 (e) of Chapter 21, Title 42 of the United States Code Annotated and Executive Orders #11246 and #11375 as amended, which are incorporated herein by this reference.
- J. Neither Contractor nor any substantially owned affiliated company is participating or shall participate in an international boycott in violation of the provisions of the U.S. Export Administration Act of 1979 or the regulations of the U.S. Department of Commerce promulgated under that Act.
- K. Contractor is not barred from contracting with the Owner because of any delinquency in the payment of any tax administrated by the Illinois Department of Revenue, unless it is being contested. Contractor further certifies that it understands that making a false statement regarding delinquency in taxes is a Class A misdemeanor and, in addition, voids the Contract and allows the Owner, a municipal entity, to recover in a civil action all amounts paid to the Contractor.
- L. If Contractor has 25 or more employees at the time of letting of the Contract, Contractor knows, understands and acknowledges its obligations under the Illinois Drug Free Workplace Act (30 ILCS 580/1 *et seq.*) and certifies that it will provide a drug-free workplace by taking the actions required under, and otherwise implementing on a continuing basis, Section 3 of the Drug Free Workplace Act. Contractor further certifies that it has not been debarred and is not ineligible for award of this Contract as the result of a violation of the Illinois Drug Free Workplace Act.
- M. Contractor knows, understands and acknowledges its obligations under the Substance Abuse Prevention on Public Works Act, 820 ILCS 265/1 *et seq.* A true and complete copy of Contractor's Substance Abuse Prevention Program Certification is attached to and made a part of this Contractor Compliance and Certification Attachment.
- N. The Contractor shall comply with the requirements and provisions of the Freedom of Information Act (5 ILCS 140/1 *et. seq.*) and, upon request of the Arlington Heights Park District's designated Freedom of Information Act Officer (FOIA Officer), Contractor shall within two (2) business days of said request, turn over to the FOIA Officer any record in the possession of the Contractor that is deemed a public record under FOIA.

\_\_\_\_\_  
CONTRACTOR

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

Its: \_\_\_\_\_

STATE OF \_\_\_\_\_ )

)SS

COUNTY OF \_\_\_\_\_)

I, the undersigned, a notary public in and for the State and County, aforesaid, hereby certify that \_\_\_\_\_ appeared before me this day and, being first duly sworn on oath, acknowledged that he executed the foregoing instrument as his/her free act and deed and as the act and deed of the Contractor.

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

\_\_\_\_\_  
(Notary Public)

(SEAL)

## SUBSTANCE ABUSE PREVENTION PROGRAM CERTIFICATION

The Substance Abuse Prevention on Public Works Projects Act, 820 ILCS 265/1 et seq., (“Act”) prohibits any employee of the Contractor or any Subcontractor on a public works project to use, possess or be under the influence of a drug or alcohol, as those terms are defined in the Act, while performing work on the project. The Contractor/Subcontractor **[circle one]**, by its undersigned representative, hereby certifies and represents to the Arlington Heights Park District that **[Contractor/Subcontractor must complete either Part A or Part B below]**:

A. The Contractor/Subcontractor **[circle one]** has in place for all of its employees not covered by a collective bargaining agreement that deals with the subject of the Act a written substance abuse prevention program, a true and correct copy of which is attached to this certification, which meets or exceeds the requirements of the Substance Abuse Prevention on Public Works Act, 820 ILCS 265/1 et seq. **[Contractor/Subcontractor must attach a copy of its substance abuse prevention program to this Certification.]**

\_\_\_\_\_  
Name of Contractor/Subcontractor (print or type)

\_\_\_\_\_  
Name and Title of Authorized Representative (print or type)

\_\_\_\_\_ Dated: \_\_\_\_\_  
Signature of Authorized Representative

B. The Contractor/Subcontractor **[circle one]** has one or more collective bargaining agreements in effect for all of its employees that deal with the subject matter of the Substance Abuse Prevention on Public Works Projects Act, 820 ILCS 265/1 et seq.

\_\_\_\_\_  
Name of Contractor/Subcontractor (print or type)

\_\_\_\_\_  
Name and Title of Authorized Representative (print or type)

\_\_\_\_\_ Dated: \_\_\_\_\_  
Signature of Authorized Representative

**IMPORTANT NOTICE OF RESPONSIBILITY FOR PERIODIC REVISIONS TO PREVAILING WAGE RATES**

Revisions of the following Prevailing Wage Rates are made periodically by the Illinois Department of Labor. These may be accessed by computer at <https://www.illinois.gov/idol/Laws-Rules/CONMED/Rates/2015/july/COUNTY.HTM>. As required by the Prevailing Wage Act, any and all such revisions supersede the Department of Labor's June determination. Bidders and Contractors performing work on this Project are responsible for determining the applicable prevailing wage rates at the time of bid submission and performance of the Work. Failure of a Bidder/Contractor to make such determination shall not relieve it of its obligations in accordance with the Contract Documents. In consideration for the award to it of the Contract for this Project, the Contractor agrees that the foregoing notice satisfies any obligation of the public body in charge of this Project to notify the Contractor of periodic changes in the prevailing wage rates and the Contractor agrees to assume and be solely responsible for, as a material obligation of the Contractor under the Contract, the obligation to determine periodic revisions of the prevailing wage rates, to notify its subcontractors of such revisions, to post such revisions as required for the posting of wage rates under the Act, and to pay and require its subcontractors to pay wages in accordance with such revised rates.

## SECTION 31 10 00 - SITE CLEARING

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. This Section includes the following:
  - 1. Protecting existing trees shrubs plants and grass to remain.
  - 2. Removing existing trees shrubs plants and grass.
  - 3. Clearing and grubbing.
  - 4. Stripping and stockpiling topsoil.
  - 5. Removing above- and below-grade site improvements.
  - 6. Disconnecting and capping or sealing site utilities.
  - 7. Temporary erosion and sedimentation control measures.

#### 1.2 MATERIAL OWNERSHIP

- A. Except for stripped topsoil or other materials indicated to remain Owner's property, cleared materials shall become Contractor's property and shall be removed from Project site.

#### 1.3 PROJECT CONDITIONS

- A. Traffic: Minimize interference with adjoining roads, streets, walks, and other adjacent occupied or used facilities during site-clearing operations.
  - 1. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and authorities having jurisdiction.
  - 2. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
- B. Salvable Improvements: Carefully remove items indicated to be salvaged and store on Owner's premises where indicated.
- C. Utility Locator Service: Notify utility locator service for area where Project is located before site clearing.
- D. Do not commence site clearing operations until temporary erosion and sedimentation control measures are in place.

### PART 2 - PRODUCTS

#### 2.1 SOIL MATERIALS

- A. Satisfactory Soil Materials: Requirements for satisfactory soil materials are specified in Division 31 Section "Earth Moving".
  - 1. Obtain approved borrow soil materials off-site when satisfactory soil materials are not available on-site.

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect and maintain benchmarks and survey control points from disturbance during construction.
- B. Locate and clearly flag trees and vegetation to remain or to be relocated.
- C. 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 sediment and erosion control Drawings.
- B. Inspect, repair, and maintain erosion and sedimentation control measures during construction until permanent vegetation has been established.
- C. Remove erosion and sedimentation controls and restore and stabilize areas disturbed during removal.

### 3.3 TREE PROTECTION

- A. Erect and maintain temporary fencing around tree protection zones before starting site clearing. Remove fence when construction is complete.
- B. Do not excavate within tree protection zones, unless otherwise indicated.
- C. Repair or replace trees and vegetation indicated to remain that are damaged by construction operations, in a manner approved by Architect.

### 3.4 UTILITIES

- A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility services according to requirements indicated:
  - 1. Notify Owner not less than two days in advance of proposed utility interruptions.
  - 2. Do not proceed with utility interruptions without Owner's written permission.
- B. Removal of underground utilities is included in Division 33 Sections covering site utilities.

### 3.5 CLEARING AND GRUBBING

- A. 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 required for the proposed condition and as specified in Division 31 Section "Earth Moving".

### 3.6 TOPSOIL STRIPPING

- A. Remove sod and grass before stripping topsoil.

- B. Strip topsoil to whatever depths are encountered in a manner to prevent intermingling with underlying subsoil or other waste materials.
- C. Stockpile topsoil materials away from edge of excavations without intermixing with subsoil. Grade and shape stockpiles to drain surface water. Cover to prevent windblown dust.
  - 1. Limit height of topsoil stockpiles to 72 inches
  - 2. Dispose of excess topsoil as specified for waste material disposal
  - 3. Do not stockpile topsoil within drip line of trees to remain.

### 3.7 SITE IMPROVEMENTS

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

### 3.8 DISPOSAL

- A. Disposal: 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.
  - 1. 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.

END OF SECTION 31 10 00

## SECTION 31 20 00 - EARTH MOVING

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. This Section includes the following:
  1. Preparing subgrades for walks, pavements, and lawns and grasses.
  2. Drainage course for asphalt paving.
  3. Base course for concrete walks and pavements.
  4. Base course for asphalt paving.
  5. Excavating and backfilling for utility trenches.
  
- B. Related Sections include the following:
  1. Division 01 Section "Allowances" for quantity allowance provisions related to unit-price rock excavation and authorized additional excavation.
  2. Division 01 Section "Unit Prices" for unit-price rock excavation and authorized additional excavation provisions.
  3. Division 31 Section "Site Clearing" for temporary erosion and sedimentation control measures, site stripping, grubbing, stripping and stockpiling topsoil, and removal of above- and below-grade improvements and utilities.
  4. Division 32 Section "Turf and Grasses" for finish grading, including preparing and placing topsoil and planting soil for lawns.
  5. Division 33 Sections for installing underground utilities and buried structures.

## 1.2 UNIT PRICES

- A. Unit prices for earthwork are included in Division 01 Section "Unit Prices."
- B. Quantity allowances for earthwork are included in Division 01 Section "Allowances."

## 1.3 DEFINITIONS

- A. Backfill: Soil 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: Course placed between the subbase course and paving.
  
- C. Bedding Course: Course 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 Fill:
  1. Course placed over the excavated subgrade before laying subdrainage pipe and placed around and over the subdrainage pipe.
  2. Course placed over the excavated subgrade before laying separation geotextile fabric and paving base course.
  
- F. Excavation: Removal of material encountered above subgrade elevations and to lines and dimensions indicated.
  1. Authorized Additional Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions as directed by Owner. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.



2. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions without direction by Owner. Unauthorized excavation, as well as remedial work directed by Owner, shall be without additional compensation.

G. Fill: Soil materials used to raise existing grades.

H. Structures: Modular Block Retaining walls, slabs on-grade (**excluding building**), tanks, curbs, sewerage, mechanical and electrical appurtenances, or other man-made stationary features constructed above or below the ground surface **excluding building**.

I. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below base, drainage fill, or topsoil materials.

J. Utilities: On-site underground pipes, conduits, ducts, and cables.

#### 1.4 SUBMITTALS

A. Product Data: For the following:

1. Geotextiles.

#### 1.5 QUALITY ASSURANCE

A. Geotechnical Testing Agency Qualifications: An independent testing agency qualified according to ASTM E 329 to conduct soil materials and rock-definition testing, as documented according to ASTM D 3740 and ASTM E 548.

1. Contractor shall be responsible for contacting the Owner's Geotechnical Testing Agency at those times required by the specifications for the appropriate materials and soils testing.

2. Contractor shall coordinate with the Owner's Geotechnical Testing Agency as to the Testing Agency's requirements for advance notification, but allow for a minimum 24-hr notification.

#### 1.6 PROJECT CONDITIONS

A. Existing Utilities: Do not interrupt utilities serving facilities occupied by Owner or others unless permitted in writing by Architect and then only after arranging to provide temporary utility services according to requirements indicated.

1. Notify 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. Contact utility-locator service for area where Project is located before excavating.

B. Demolish and completely remove from site existing underground utilities indicated to be removed. Coordinate with utility companies to shut off services if lines are active.

### PART 2 - PRODUCTS

#### 2.1 SOIL MATERIALS

A. General: Provide borrow soil materials when sufficient satisfactory soil materials are not available from excavations.

B. Satisfactory Soils: ASTM D 2487 Soil Classification Groups GW, GP, GM, GC, SC, SW, SP, ML, CL and SM, 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.

C. Unsatisfactory Soils: Soil Classification Groups MH, CH, OL, OH, and PT according to ASTM D 2487, 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.
  2. Unsatisfactory soils hereunder are Clean Construction or Demolition Debris (CCDD) as defined by the State of Illinois Environmental Protection Agency and is acceptable as fill material at CCDD facilities.
- D. Non-special Waste Containing Soils: Either satisfactory or unsatisfactory soils that contain non-special waste that are non-liquid non-hazardous industrial process and pollution control waste and are excluded from special waste meeting all the requirements of Section 3.475 of the Illinois Environmental Protection Act.
1. Are not CCDD
  2. Are not hazardous
  3. Are not a liquid (as determined by paint-filter test SW-846 Method 9095)
  4. Are not regulated asbestos-containing material as defined in 40 Code of Federal Regulations, Section 61.141
  5. Do not contain polychlorinated biphenyls (PCBs) regulated in accordance with 40 Code of Federal Regulations, Part 761
  6. Are not formerly hazardous waste rendered non-hazardous
  7. Do not result from shredding recyclable metals
- E. Non-Hazardous Special Waste Containing Soils: Either satisfactory or unsatisfactory soils that contain special waste as defined by Illinois Environmental Protection Act (Act) Section 809.103 and that has not been determined as hazardous in that Section of the Act.
- F. Hazardous Waste Containing Soils: Either satisfactory or unsatisfactory soils that contain hazardous special waste as defined by Section 3.220 of the Illinois Environmental Protection Act and as determined by Section 722.111 of Title 35 of Illinois Administrative Code.
- G. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 4 percent organic material content; less than 3 percent stones  $\frac{3}{4}$ -inch or larger in any dimension and roots, plants, sod, clay lumps, and other extraneous materials harmful to plant growth.
1. Topsoil shall be free of all deleterious material that may adversely affect the use of the planted surface including any metal, wood, plastic, glass or other manmade materials not intended specifically as a soil supplement.
  2. Topsoil shall be free of obnoxious weeds and invasive plants or other undesirable organisms and disease-causing plant pathogens.
  3. Topsoil particle sizes shall fall in the following ranges as percentages by mass both separately and in combination:
    - a. Clay: 35 percent to 60 percent
    - b. Silt: 35 percent to 60 percent
    - c. Sand: less than 60 percent
    - d. Silt and Clay in combination: less than 65 percent
  4. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil. Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
    - a. Supplement with imported topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 6 inches deep; do not obtain from bogs or marshes.
- H. Base Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone ASTM D 2940; conforming to State of Illinois, Dept of Transportation Gradation CA-6.
- I. Engineered Fill: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone; ASTM D 2940; conforming to State of Illinois, Dept of Transportation Gradation CA-6 or CA-7.

- J. Bedding Course: Naturally or artificially graded mixture of natural or crushed gravel, crushed stone, and natural or crushed sand; ASTM D 2940; conforming to State of Illinois, Dept of Transportation Gradation per plans.
- K. Drainage Course: Narrowly graded mixture of washed crushed stone, or washed crushed or uncrushed gravel; ASTM D 448; coarse-aggregate conforming to State of Illinois, Dept of Transportation Gradation **CA-7**
- L. Unsuitable Soil Undercut Area Fill: Per Geotechnical Engineer's Recommendations.

## 2.2 GEOTEXTILES AND GEOGRIDS

- A. Subsurface Drainage Geotextile: Nonwoven 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. Survivability: Class 2; AASHTO M 288.
  2. Grab Tensile Strength: 158 lbf; ASTM D 4632.
  3. Sewn Seam Strength: 142 lbf ; ASTM D 4632.
  4. Tear Strength: 56 lbf; ASTM D 4533.
  5. Puncture Strength: 56 lbf ;ASTM D 4833.
  6. Apparent Opening Size: No. 60 sieve, maximum; ASTM D 4751.
  7. Water Flow Rate: 110 gpm minimum; ASTM D 4491
  8. Permittivity: 0.02 per second, minimum; ASTM D 4491.
  9. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
  
- B. Separation Geotextile: Nonwoven needle punched geotextile fabric, manufactured for separation applications, made from polyolefins or polyesters; with elongation less than 50 percent; complying with AASHTO M 288 and the following, measured per test methods referenced:
  1. Survivability: Class 1; AASHTO M 288.
  2. Grab Tensile Strength: 315 lbf; ASTM D 4632.
  3. Sewn Seam Strength: 284 lbf ; ASTM D 4632.
  4. Tear Strength: 113 lbf; ASTM D 4533.
  5. Puncture Strength: 113 lbf ;ASTM D 4833.
  6. Apparent Opening Size: No. 70 sieve, maximum; ASTM D 4751.
  7. Water Flow Rate: 110 gpm minimum; ASTM D 4491
  8. Permittivity: 0.02 per second, minimum; ASTM D 4491.
  9. UV Stability: 50 percent after 500 hours' exposure; ASTM D 4355.
  
- C. Geogrid: Triaxial polypropylene material with the following minimum requirements:
 

1. Properties,	<u>Longitudinal / Transverse</u>	<u>Diagonal</u>	<u>General</u>
2. Rib Pitch, mm (in)	40 (1.60)	40 (1.60)	
3. Mid-rib depth, mm (in)	1.4 (0.06)	1.6 (0.06)	
4. Mid-rib width, mm (in)	1.2 (0.05)	1.0 (0.04)	
5. Rib shape			rectangular
6. Aperture shape			triangular
7. Junction Efficiency, %			93
8. Isotropic Stiffness Ratio			0.6
9. Radial stiffness at low strain,			
KN/M @ 0.5% STRAIN (LB/FT @ 0.5% STRAIN)			300(20,580)
10. Resistance to chemical degradation			100%
11. Resistance to ultra-violet light and weathering			70%

## PART 3 - EXECUTION

### 3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Preparation of subgrade for earthwork operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface is specified in Division 31 Section "Site Clearing."
- C. Protect and maintain erosion and sedimentation controls during earthwork operations.
- D. Provide protective insulating materials to protect subgrades and foundation soils against freezing temperatures or frost.

### 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. Discharge from dewatering operations must meet with local and State National Pollutant Discharge Elimination System (NPDES) requirements.
  - 1. Incorporate structural and non-structural Best Management Practices (BMP's) as necessary to meet NPDES and local requirements.
  - 2. Waste material shall be legally disposed of where mechanical means are used to separate sediments and other pollutants from dewatering discharge water
- C. Protect subgrades from softening, undermining, washout, and damage by rain or water accumulation.
  - 1. Reroute surface water runoff away from excavated areas. Do not allow water to accumulate in excavations. Do not use excavated trenches as temporary drainage ditches.
  - 2. Install a dewatering system to keep subgrades dry and convey ground water away from excavations. Maintain until dewatering is no longer required.

### 3.3 EXPLOSIVES

- A. Explosives: Do not use explosives.

### 3.4 EXCAVATION, GENERAL

- A. Unclassified Excavation: Excavate to as a minimum to subgrade elevations regardless of the character of surface and subsurface conditions encountered. Where topsoil depth exceeds the proposed subgrade elevation and where within pavement **or synthetic turf** areas, remove all topsoil encountered. Unclassified excavated materials may include rock, soil materials, and obstructions. No changes in the Contract Sum or the Contract Time will be authorized for rock excavation or removal of obstructions.
  - 1. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials.
- B. Classified Excavation: Excavate to subgrade elevations. Material to be excavated will be classified as earth and rock. Do not excavate rock until it has been classified and cross sectioned by Architect.
  - 1. Earth excavation includes excavating pavements and obstructions visible on surface; underground structures, utilities, and other items indicated to be removed; together with soil, boulders, and other materials not classified as rock or unauthorized excavation.

- a. Intermittent drilling; blasting, if permitted; ram hammering; or ripping of material not classified as rock excavation is earth excavation.
2. Where topsoil depth exceeds the proposed subgrade elevation and where within pavement **or synthetic turf** areas, remove all topsoil encountered.
3. Rock excavation includes removal and disposal of rock. Remove rock to lines and subgrade elevations indicated to permit installation of permanent construction.

### 3.5 EXCAVATION FOR STRUCTURES

- A. Excavate to indicated elevations and dimensions within a tolerance of plus or minus 1/2 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.

### 3.6 EXCAVATION FOR WALKS AND PAVEMENTS

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

### 3.7 EXCAVATION FOR UTILITY TRENCHES

- A. Excavate trenches to indicated gradients, lines, depths, and elevations.
- B. Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit and as indicated. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits as indicated. Remove projecting stones and sharp objects along trench subgrade.

### 3.8 SUBGRADE INSPECTION

- A. Notify Owner's Geotechnical Testing Agency when excavations have reached required subgrade.
- B. If Owner's Geotechnical 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 the building slabs and pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
  1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
  2. Proof-roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
  3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.
- D. Authorized additional excavation and replacement material will be paid for according to Contract provisions for changes in the Work.
- E. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities, as directed by Architect, without additional compensation.

### 3.9 UNAUTHORIZED EXCAVATION

1. Fill unauthorized excavations under other construction or utility pipe as directed by Owner's Geotechnical Testing Agency.

### 3.10 STORAGE OF SOIL MATERIALS

- A. Stockpile borrow soil materials and excavated satisfactory soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent windblown dust.

1. Stockpile soil materials away from edge of excavations. Do not store within drip line of remaining trees.

### 3.11 BACKFILL

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

### 3.12 UTILITY TRENCH BACKFILL

- A. Place backfill on subgrades free of mud, frost, snow, or ice.
- B. Place and compact bedding course on trench bottoms and where indicated. Shape bedding course to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits.
  1. Carefully compact initial backfill under pipe haunches and compact evenly up on both sides and along the full length of utility piping or conduit to avoid damage or displacement of piping or conduit. Coordinate backfilling with utilities testing.

### 3.13 SOIL FILL

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

### 3.14 SOIL MOISTURE CONTROL

- A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
  1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
  2. Remove and replace, or scarify and air dry otherwise satisfactory material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

### 3.15 COMPACTION OF BACKFILLS AND FILLS

- A. Place backfill and fill materials in layers not more than 8 inches in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.
  1. Place backfill for self-compacting CA-7 in layers of 12" maximum for material compacted by heavy compaction equipment or by hand operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures **excluding buildings** to required elevations, and uniformly along the full length of each structure.

- C. Compact materials to not less than the following percentages of maximum dry density according to ASTM D 1557
  1. Under structures, slabs on grade **excluding building**, and steps scarify and recompact top 12 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent Modified Proctor.
  2. Under pavements, curbs and walks, scarify and recompact top 4 inches of existing subgrade and each layer of backfill or fill soil material at 95 percent Modified Proctor.
  3. Under lawn or unpaved areas compact each layer of backfill or fill soil material at 85 percent Modified Proctor.

### 3.16 GRADING

- A. General: Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
  1. Provide a smooth transition between adjacent existing grades and new grades.
  2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish subgrades to required elevations within the following tolerances:
  1. Lawn or Unpaved Areas: Plus or minus 1 inch.
  2. Walks: Plus or minus 1/2 inch.
  3. Pavements: Plus or minus 1/2 inch.

### 3.17 SUBSURFACE DRAINAGE

- A. Underdrainage Pipe: Specified in Division 33 Section "Storm Utility Drainage Piping."
- B. Drainage Backfill: Place and compact filter material over subsurface drain, in width indicated, to within 12 inches of final subgrade, in compacted layers 6 inches (150 mm) thick. Overlay drainage backfill with 1 layer of subsurface drainage geotextile, overlapping sides and ends at least 6 inches .
  1. Compact each material layer to **85** percent of maximum dry unit weight according to ASTM D 1557.

### 3.18 BASE COURSE

- 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. Install separation geotextile on prepared subgrade according to manufacturer's written instructions, overlapping sides and ends.
  2. Shape base course to required crown elevations and cross-slope grades.
  3. Place base course 4 inches or less in compacted thickness in a single layer.
  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.

### 3.19 FIELD QUALITY CONTROL

- A. Geotechnical Testing Agency: Owner will engage a qualified independent geotechnical engineering testing agency to perform field quality-control testing.
- B. Allow testing agency to inspect and test subgrades and each fill or backfill layer. Proceed with subsequent earthwork only after test results for previously completed work comply with requirements.

- C. Testing agency will test compaction of soils in place according to ASTM D 1557 and ASTM D6938, 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 1 test for every 3500 sq. ft. or less of paved area, but in no case fewer than 2 tests.
  - 2. Trench Backfill: At each compacted initial and final backfill layer, at least 1 test for each 250 feet or less of trench length, but no fewer than 1 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 to depth required; recompact and retest until specified compaction is obtained.

### 3.20 PROTECTION

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

### 3.21 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION 31 20 00



## SECTION 32 12 16 - ASPHALT PAVING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

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

## 1.2 SUMMARY

- A. Section Includes:
  - 1. Hot-mix asphalt paving.
- B. Related Sections:
  - 1. Division 31 Section "Earth Moving" for aggregate subbase and base courses and for aggregate pavement shoulders.
  - 2. Division 32 Section "Tennis Court Surfacing" for bituminous surface and binder course.

## 1.3 DEFINITION

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

## 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated. Include technical data and tested physical and performance properties.
  - 1. Job-Mix Designs: Certification, by authorities having jurisdiction, of approval of each job mix proposed for the Work.
- B. Material Certificates: For each paving material, from manufacturer.
- C. Material Test Reports: For each paving material.

## 1.5 QUALITY ASSURANCE

- A. Testing Agency Qualifications: Qualified according to ASTM D 3666 for testing indicated.
- B. Regulatory Requirements: Comply with materials, workmanship, and other applicable requirements of IDOT for asphalt paving work.
- C. 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 condition of subgrade and preparatory work.
    - c. Review requirements for protecting paving work, including restriction of traffic during installation period and for remainder of construction period.
    - d. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

## 1.6 WARRANTY

- A. Provide a Contractor's warranty covering a period of two (2) years after completion and final acceptance of the Work.
  1. Contractor shall warrant the Work against defects due to faulty materials or workmanship, and shall agree to repair or replace defective work, during the warranty period, without cost to the Owner.
  - 2.

## 1.7 DELIVERY, STORAGE, AND HANDLING

- A. Deliver pavement-marking materials to Project site in original packages with seals unbroken and bearing manufacturer's labels containing brand name and type of material, date of manufacture, and directions for storage.
  1. Store pavement-marking materials in a clean, dry, protected location within temperature range required by manufacturer. Protect stored materials from direct sunlight.
- B. Paving Geotextile labeling, shipment and storage shall meet ASTM D4873

## 1.8 PROJECT CONDITIONS

- A. Environmental Limitations: Do not apply asphalt materials if subgrade is wet or excessively damp, if rain is imminent or expected before time required for adequate cure, or if the following conditions are not met:
  1. HMA Temperature: Delivered between 250 deg F and 350 deg F
  2. Prime Coat: Minimum surface temperature of 60 deg F
  3. Asphalt Base Course: Minimum surface temperature of 40 deg F in the shade and rising at time of placement.
  4. Asphalt Surface Course: Minimum surface temperature of 45 deg F in the shade at time of placement and rising at time of placement.
- B. Pavement-Marking Paint: Proceed with pavement marking only on clean, dry surfaces and at a minimum ambient or surface temperature of 55 deg F for water-based materials, and not exceeding 95 deg F. When more restrictive, manufacturer limits shall be adhered to.

## PART 2 - PRODUCTS

### 2.1 AGGREGATES

- A. General: Use materials and gradations that have performed satisfactorily in previous installations.
- B. Coarse Aggregate: ASTM D 692, sound; angular crushed stone, crushed gravel.
  1. Used in Surface Course: IDOT B Quality or better
  2. Used in Binder Course: IDOT C Quality or better
- C. Fine Aggregate: ASTM D 1073, sharp-edged natural sand or sand prepared from stone, gravel, or combinations thereof.
  1. For hot-mix asphalt, limit natural sand to a maximum of 20 percent by weight of the total aggregate mass.
  2. Quality: IDOT B Quality or better.
- D. Fractionated Reclaimed Asphalt Pavement (FRAP) shall NOT BE ALLOWED. Job-mix design shall consist entirely of virgin materials.

## 2.2 ASPHALT MATERIALS

- A. Asphalt Binder: AASHTO M 320 and AASHTO MP 1a, PG58-28
- B. Prime Coat: ASTM D 2027, medium-curing cutback asphalt matching IDOT MC-30 per Section 1032 of the Standard Specifications for Road and Bridge construction.
- C. Water: Potable.

## 2.3 AUXILIARY MATERIALS

- A. Herbicide: Commercial chemical for weed control, registered by the EPA. Provide in granular, liquid, or wettable powder form.
- B. Sand: AASHTO M 29 Grade Nos. 2 or 3.
- C. Paving Geotextile (Reflective Crack Control): AASHTO M 288-06, nonwoven polypropylene; resistant to chemical attack, rot, and mildew; and specifically designed for paving applications.
  - 1. Weight: ASTM D1910, minimum 4.1 oz/sq. yd.
  - 2. Grab Tensile Strength: ASTM D4632, minimum 101 lbs
  - 3. Asphalt Retention: ASTM 6140, minimum 0.20 gal/sq. yd.
- D. Joint Sealant: ASTM D 6690 or AASHTO M 324 Type II or III, hot-applied, single-component, polymer-modified bituminous sealant.

## 2.4 MIXES

- A. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes designed according to the Illinois Modified Strategic Highway Research Program criteria and the IDOT Special Provision "Superpave Bituminous Concrete Mixtures".
  - 1. Binder Course Mixture N50, IL-19.0, Surface Course Mixture N50, IL-9.5, Mix "D" designed in accordance with Sections 1030 and Sections 406 and 407 of the Standard Specifications for Road and Bridge Construction and the special provision, "Quality Control/Quality Assurance of Bituminous Concrete Mixtures."
  - 2. Provide mixes with a history of satisfactory performance in geographical area where Project is located.
  - 3. All mixes shall be approved by IDOT for use for the current constructions season. Provide verification and approval letter from IDOT for the mixes proposed.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that subgrade is dry and in suitable condition to begin paving.
- B. Proof-roll subgrade below pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding. Do not proof-roll wet or saturated subgrades.
  - 1. Completely proof-roll subgrade in one direction, repeating proof-rolling in direction perpendicular to first direction. Limit vehicle speed to 3 mph.
  - 2. Proof roll with a loaded 10-wheel, tandem-axle dump truck weighing not less than 15 tons.
  - 3. Excavate soft spots, unsatisfactory soils, and areas of excessive pumping or rutting, as determined by Architect, and replace with compacted backfill or fill as directed.

- C. Proceed with paving only after unsatisfactory conditions have been corrected.

### 3.2 SURFACE PREPARATION

- A. General: Immediately before placing asphalt materials, remove loose and deleterious material from substrate surfaces. Ensure that prepared subgrade is ready to receive paving.
- B. Prime Coat: Apply uniformly over surface of compacted unbound-aggregate base course at a rate of 0.15 to 0.50 gal./sq. yd and per Drawings. Apply enough material to penetrate and seal but not flood surface. Allow prime coat to cure.
  1. If prime coat is not entirely absorbed within 24 hours after application, spread sand over surface to blot excess asphalt. Use enough sand to prevent pickup under traffic. Remove loose sand by sweeping before pavement is placed and after volatiles have evaporated.
  2. Protect primed substrate from damage until ready to receive paving.

### 3.3 PAVING GEOTEXTILE INSTALLATION

- A. Apply tack coat uniformly to existing pavement surfaces at a rate of 0.20 to 0.27 gal./sq. yd. and at the rate specified by the manufacturer to meet the asphalt retention properties of the geotextile and the surface being applied to.
- B. Asphalt Binder tack coat shall not exceed 320 deg F. Allow sufficient distance between applicator and fabric installation tractor to achieve temperature specified by the geotextile manufacturer for the application.
- C. Application of tack coat shall be by distributor spray bar. Hand spraying shall be kept to a minimum.
- D. Place paving geotextile promptly according to manufacturer's written instructions. Broom or roll geotextile smooth and free of wrinkles and folds. Overlap longitudinal joints 4 inches and transverse joints 6 inches.
  1. Protect paving geotextile from traffic and other damage and place hot-mix asphalt paving overlay the same day.

### 3.4 HOT-MIX ASPHALT PLACING

- A. Machine place hot-mix asphalt on prepared surface, spread uniformly, and strike off. Place asphalt mix by hand to areas inaccessible to equipment in a manner that prevents segregation of mix. Place each course to required grade, cross section, and thickness when compacted.
  1. Place hot-mix asphalt base course in number of lifts and thicknesses indicated.
  2. Spread mix at minimum temperature of 250 deg F.
  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 wide unless infill edge strips of a lesser width are required.
  1. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Complete a section of asphalt base course before placing asphalt surface course.

- C. Promptly correct surface irregularities in paving course behind paver. Use suitable hand tools to remove excess material forming high spots. Fill depressions with hot-mix asphalt to prevent segregation of mix; use suitable hand tools to smooth surface.

### 3.5 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 and not more than 12 inches.
  3. Offset transverse joints, in successive courses, a minimum of 24 inches.
  4. Construct transverse joints at each point where paver ends a day's work and resumes work at a subsequent time. Construct these joints according to AI MS22, 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.

### 3.6 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 195 deg F.
- B. Breakdown Rolling: Complete breakdown or initial rolling immediately after rolling joints and outside edge. Examine surface immediately after breakdown rolling for indicated crown, grade, and smoothness. Correct laydown and rolling operations to comply with requirements.
- C. Intermediate Rolling: Begin intermediate rolling immediately after breakdown rolling while hot-mix asphalt is still hot enough to achieve specified density. Continue rolling until hot-mix asphalt course has been uniformly compacted to the following density:
  1. Average Density: 94 percent of reference laboratory density based on AASHTO T 209 and Illinois Modified AASHTO T 166 or "In Place Nuclear Method" according to Illinois Modified ASTM D 2950 but not less than 92 percent nor greater than 96 percent.
- D. Finish Rolling: Finish roll paved surfaces to remove roller marks while hot-mix asphalt is still warm.
- E. Edge Shaping: While surface is being compacted and finished, trim edges of pavement to proper alignment. Bevel edges while 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.

### 3.7 INSTALLATION TOLERANCES

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

### 3.8 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.
  
- B. Thickness: In-place compacted thickness of hot-mix asphalt courses will be determined according to ASTM D 3549.
  
- C. 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 AASHTO T 168.
  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. Field density of in-place compacted pavement to be determined by "In Place Nuclear Method" according to Illinois Modified ASTM D 2950 and correlated with ASTM D 1188 or ASTM D 2726.
  3. Average Density: 94 percent of reference laboratory density based on AASHTO T 209 and Illinois Modified AASHTO T 166 or "In Place Nuclear Method" according to Illinois Modified ASTM D 2950 but not less than 92 percent nor greater than 96 percent.
  
- 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.

### 3.9 DISPOSAL

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

END OF SECTION 32 12 16

## SECTION 32 13 13 - CONCRETE PAVING

### PART 1 - GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes exterior cement concrete pavement for the following:
  - 1. Walkways.
  - 2. Concrete Slab
- B. Related Sections include the following:
  - 1. Division 31 Section "Earth Moving" for subgrade preparation, grading, and subbase course.

#### 1.3 DEFINITIONS

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

#### 1.4 SUBMITTALS

- A. Product Data: For each type of manufactured material and product indicated.
- B. Design Mixtures: For each concrete pavement mixture. Include alternate mixture designs when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
- C. Cure and Seal compound
- D. Qualification Data: For testing agency.
- E. Field quality-control test reports.
- F. Testing Agency Qualifications: An independent agency qualified according to ASTM C 1077 and ASTM E 329 for testing indicated, as documented according to ASTM E 548.
  - 1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-01 or an equivalent certification program.
- G. ACI Publications: Comply with ACI 301, "Specification for Structural Concrete," unless modified by requirements in the Contract Documents.
- H. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests and to design concrete mixtures.

#### 1.5 PROJECT CONDITIONS

- A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

## PART 2 - PRODUCTS

### 2.1 FORMS

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

### 2.2 STEEL REINFORCEMENT

- A. Epoxy-Coated Welded Wire Fabric: ASTM A 884, Class A, steel.
- B. Epoxy-Coated Reinforcing Bars: ASTM A 775 or ASTM A 934; with ASTM A 615, Grade 60 deformed bars.
- C. Epoxy-Coated Joint Dowel Bars: ASTM A 775; with ASTM A 615, Grade 60, plain steel bars.
- D. Epoxy Coated Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.
- E. Epoxy-Coated Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete, and as follows:
  - 1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.
  - 2. Use epoxy-coated or other dielectric-polymer-coated wire bar supports.

### 2.3 CONCRETE MATERIALS

- A. Cementitious Material: Use the following cementitious materials, of the same type, brand, and source throughout the Project:
  - 1. Portland Cement: ASTM C 150, Type I, gray, Supplement with the following:
    - a. Fly Ash: ASTM C 618, Class F/C.
- B. Normal-Weight Aggregates: ASTM C 33 Class 4S, coarse aggregate, uniformly graded. Provide aggregates from a single source.
  - 1. Maximum Coarse-Aggregate Size: 1-1/2" nominal.
  - 2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.
- C. Water: ASTM C 94/C 94M.
- D. Air-Entraining Admixture: ASTM C 260.
- E. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.
  - 1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
  - 2. Retarding Admixture: ASTM C 494/C 494M, Type B.



## 2.4 CURING MATERIALS

- A. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.
- C. Water: Potable.
- D. Evaporation Retarder: Waterborne, monomolecular film forming; manufactured for application to fresh concrete.
- E. Clear Waterborne Membrane-Forming Curing and Sealing Compound:
  - 1. ASTM C 309, Type 1, Class A & B.
  - 2. AASHTO M148, Type 1, Class A & B.
  - 3. USDA Compliant

## 2.5 RELATED MATERIALS

- A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

## 2.6 CONCRETE MIXTURES

- A. Prepare design mixtures, proportioned according to ACI 301, for each type and strength of normal-weight concrete determined by either laboratory trial mixes or field experience.
  - 1. Use a qualified independent testing agency for preparing and reporting proposed concrete mixture designs for the trial batch method.
- B. Proportion mixtures to provide normal-weight concrete with the following properties:
  - 1. Minimum Compressive Strength (14 Days): 3500 psi.
  - 2. Water-Cementitious Materials Ratio at Point of Placement: 0.32-0.44.
  - 3. Slump Limit: 3 inches, plus or minus 1 inch.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:
  - 1. Air Content: 5 to 8 percent for 1-inch to 1-1/2-inch nominal maximum aggregate size.
- D. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
- E. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
  - 1. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
- F. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements for concrete exposed to deicing chemicals.
- G. Color Pigment: Add color pigment to concrete mixture according to manufacturer's written instructions and to result in hardened concrete color consistent with approved mockup.

## 2.7 CONCRETE MIXING

- A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C and ASTM C 1116. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 45 minutes.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.
- B. Proof-roll prepared subbase surface below concrete pavements with heavy pneumatic-tired equipment to identify soft pockets and areas of excess yielding.
  1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.
  2. Proof-roll with a loaded 10-wheel tandem-axle dump truck weighing not less than 15 tons.
  3. Subbase with soft spots and areas of pumping or rutting exceeding depth of 1 inch require correction according to requirements in Division 31 Section "Earth Moving."
- C. Proceed with concrete pavement operations only after nonconforming conditions have been corrected and subgrade is ready to receive pavement.

#### 3.2 PREPARATION

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

#### 3.3 EDGE FORMS AND SCREED CONSTRUCTION

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

#### 3.4 STEEL REINFORCEMENT

- A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.
- D. Install welded wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.
- E. Epoxy-Coated Reinforcement: Use epoxy-coated steel wire ties to fasten epoxy-coated reinforcement. Repair cut and damaged epoxy coatings with epoxy repair coating according to ASTM D 3963/D 3963M.

- F. Install fabricated bar mats in lengths as long as practicable. Handle units to keep them flat and free of distortions. Straighten bends, kinks, and other irregularities, or replace units as required before placement. Set mats for a minimum 2-inch overlap of adjacent mats.

### 3.5 JOINTS

- A. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
  1. When joining existing pavement, place transverse joints to align with previously placed joints, unless otherwise indicated.
- B. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.
  1. Continue steel reinforcement across construction joints, unless otherwise indicated. Do not continue reinforcement through sides of pavement strips, unless otherwise indicated.
  2. Provide tie bars at sides of pavement strips where indicated.
  3. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one-half of dowel length to prevent concrete bonding to one side of joint.
- C. Isolation/Expansion Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
  1. Locate expansion joints at intervals of 50 feet, unless otherwise indicated.
  2. Extend joint fillers full width and depth of joint.
  3. Terminate joint filler not less than 1/2 inch or more than 3/4 inch below finished surface if joint sealant is indicated.
  4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.
  5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.
  6. Protect top edge of joint filler during concrete placement with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.
- D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness.
  1. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.
- E. Edging: Tool edges of pavement, gutters, curbs, and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

### 3.6 CONCRETE PLACEMENT

- A. Inspection: Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast in. Notify other trades to permit installation of their work.

- B. Remove snow, ice, or frost from subbase surface and reinforcement before placing concrete. Do not place concrete on frozen surfaces.
- C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.
- D. Comply with ACI 301 requirements for measuring, mixing, transporting, and placing concrete.
- E. Do not add water to concrete during delivery or at Project site.
- F. Do not add water to fresh concrete after testing.
- G. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- H. Consolidate concrete according to ACI 301 by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.
  - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels, and joint devices.
- I. Screed pavement surfaces with a straightedge and strike off.
- J. Commence initial floating using bull floats or darbies to impart an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.
- K. When adjoining pavement lanes are placed in separate pours, do not operate equipment on concrete until pavement has attained 85 percent of its 28-day compressive strength.
- L. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
  - 1. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 75 deg F at point of placement.
  - 2. Do not use frozen materials or materials containing ice or snow.
  - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.
- M. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
  - 1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
  - 2. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
  - 3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

### 3.7 FLOAT FINISHING

- A. General: Do not add water to concrete surfaces during finishing operations.
- B. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.
  - 1. Medium-to-Fine-Textured Broom Finish: Draw a soft bristle broom across float-finished concrete surface perpendicular to line of traffic to provide a uniform, fine-line texture.

### 3.8 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
- B. Comply with ACI 306.1 for cold-weather protection.
- C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
- E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:
  - 1. Moist Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
    - a. Water.
    - b. Continuous water-fog spray.
    - c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch lap over adjacent absorptive covers.
  - 2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  - 3. Curing and Sealing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

### 3.9 PAVEMENT TOLERANCES

- A. Comply with tolerances of ACI 117 and as follows:
  - 1. Elevation: 1/4 inch.
  - 2. Thickness: Plus 3/8 inch, minus 1/4 inch.
  - 3. Surface: Gap below 10-foot-long, unlevelled straightedge not to exceed 1/4 inch.
  - 4. Lateral Alignment and Spacing of Tie Bars and Dowels: 1 inch.
  - 5. Vertical Alignment of Tie Bars and Dowels: 1/4 inch.
  - 6. Alignment of Tie-Bar End Relative to Line Perpendicular to Pavement Edge: 1/2 in.
  - 7. Alignment of Dowel-Bar End Relative to Line Perpendicular to Pavement Edge: Length of dowel 1/4 inch per 12 inches.

8. Joint Spacing: 3 inches.
9. Contraction Joint Depth: Plus 1/4 inch, no minus.
10. Joint Width: Plus 1/8 inch, no minus.

### 3.10 FIELD QUALITY CONTROL

- A. Testing Agency: Owner will engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.
- B. Testing Services: Testing of composite samples of fresh concrete obtained according to ASTM C 172 shall be performed according to the following requirements:
  1. Testing Frequency: Obtain at least 1 composite sample for each **100 cu. Yd.** or fraction thereof of each concrete mix placed each day.
    - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
  2. Slump: ASTM C 143; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
  3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
  4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
  5. Compression Test Specimens: ASTM C 31; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
  6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
    - a. A compressive-strength test shall be the average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.
- C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 300 psi.
- D. Test results shall be reported in writing to Owner, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
- E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Owner but will not be used as sole basis for approval or rejection of concrete.
- F. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Owner.
- G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.
- H. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

### 3.11 REPAIRS AND PROTECTION

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

END OF SECTION 32 13 13

## SECTION 32 18 23.53 – TENNIS COURT SURFACING

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. Contractor shall provide all equipment and materials and do all work necessary to construct the tennis courts including all pavement, color-coat surfacing and tennis court equipment.

## 1.2 SUBMITTALS

- A. Certificates: Submit copies of material's certificates signed by the material producer and the contractor certifying that each item complies with or exceeds specified requirements.
- B. Submit 2 sets of tennis court acrylic coating color samples to the Owner for color evaluation.

## 1.3 QUALITY ASSURANCE

- A. Installer must regularly engage in applications of colored acrylic athlete surfaces. Documented experience must be provided. Minimum of 10 projects similar in complexity.
- B. Standards of Manufacture: Work shall be in accordance with the applicable sections of the State of Illinois, Department of Transportation, Standard Specifications for Road and Bridge Construction, current edition; the United States Tennis Court and Track Builders Association; and the United States Tennis Association.
- C. Surfacing shall conform to the guidelines of the ASBA, (American Sports Builder Association).
- D. Allowable tolerances per Section 32 12 16.

## 1.4 WARRANTY

- A. Provide a Contractor's warranty covering a period of two (2) years after completion and final acceptance of the Work.
  - 1. Contractor shall warrant the Work against defects due to faulty materials or workmanship, and shall agree to repair or replace defective work, during the warranty period, without cost to the Owner.
  - 2.

## 1.5 SUBMITTALS

- A. Product Data: For the following:
  - 1. Sport coating system.
  - 2. Acrylic resurfacer.
  - 3. Line paint.

## 1.6 PROJECT CONDITIONS

- A. Weather Limitations
  - 1. Do not install when raining or rain is imminent.
  - 2. Do not install if surface is wet or damp.
  - 3. Do not apply unless surface and air temperatures are 50°F and rising.



4. Do not apply if surface temperature is more than 140°F.

B. Asphalt Conditions

1. New asphalt or concrete must cure for a minimum of 14 days.
2. Asphalt must be free of moisture (surface and/or percolating)

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Aggregate Base Course, Bituminous Concrete Binder Course and Bituminous Concrete Surface Course per Section 32 12 16 with the following exceptions:
1. Bituminous Concrete Surface Course Shall Be Mixture N30, IL-9.5, PG58-28. No recycled materials shall be permitted.
  2. Bituminous Concrete Binder Course Shall Be Mixture N50, IL-19.0, PG58-28. No recycled materials shall be permitted.
- B. Acrylic Surface Coating System: 100% Acrylic Latex Resurfacer, Product Acrylic Resurfacer 920-29 by California Products Corporation, 150 Dascomb Road Andover, MA, 800-332-6178, or approved equal.
1. Elite Acrylic Filler Coats (Resurfacer), a product of Elite Sport Coating System, is considered an approved equal for this project.
  2. Resurfacer, Decorative coating, and Striping Paint materials shall be from same manufacturer to ensure compatibility.
- C. Decorative Coating: 2 coats sand-based DECO COLOR Multi-purpose acrylic latex coating 920-27 (colors as indicated on Drawings) by Deco Surfacing Systems, 150 Dascomb Road, Andover, MA, 800-332-6178, or approved equal.
1. Elite Color Concentrate, a product of Elite Sport Coating System, is considered an approved equal for this project.
  2. Resurfacer, Decorative coating, and Striping Paint materials shall be from same manufacturer to ensure compatibility.
- D. Striping Paint: Textured, white striping paint 920-22 by Deco Surfacing Systems or approved equal.
1. Elite Line Paint, a product of Elite Sport Coating System, is considered an approved equal for this project.
    - a. Textured line paint.
  2. Resurfacer and Decorative coating, and Striping Paint materials shall be from same manufacturer to ensure compatibility.
- E. Concrete footings for tennis net posts shall be Class SI per IDOT Standard Specs, Section 501.13.

PART 3 - EXECUTION

3.1 GENERAL

- A. Preparation of subgrade, construction of base course and bituminous concrete per Section 31 20 00 and Section 32 12 16.

### 3.2 SURFACE CLEANING

- A. Surface shall be thoroughly cleaned. Free of any dirt, debris, or stains.
- B. Power washing may be required if embedded dirt, or cement can not be completely removed with blowers or brooms.
- C. Oil based materials spills must be treated with detergent and rinsed.

### 3.3 COURT DEPRESSIONS "BIRDBATHS"

- A. Testing: Surface shall be flooded with water by rain or manually with clean water. Surface shall be allowed to drain for 45-60 minutes in sunlight at 70°F. Remaining depressions holding enough water to cover five cent piece (American Nickel) shall be marked.
- B. Apply acrylic patch binder mix to depressions and strike off with a straight edge. Before the product begins to dry, feather edges using a trowel, putty knife, or similar method.
- C. Repeat testing and acrylic patch binder applications as need to eliminate or reduce depressions to within tolerance.
- D. Sand and pre-coat as need to assure repairs are not visible following surface applications.
- E. Strictly follow manufacturers mixture guidelines and weather limitations.

### 3.4 PLACEMENT OF ACRYLIC FILLER COATS (RESURFACER)

- A. Allow bituminous concrete surface to cure for 2 weeks before resurfacer placement. Before resurfacer is applied, thoroughly wash asphalt surface to remove all excess oils, dirt and debris. Remove all broken raveling stones. Flood asphalt surface again to determine minor depressions or "bird bath" areas which necessitate leveling with asphalt resurfacer.
- B. Apply resurfacer per manufacturer's rates and procedures to level minor depressions (less than 1/8") on the tennis court surface. Fill depressions with resurfacer per manufacturer instructions and strike off with a straight edge. Care should be taken to blend the outside edge of the area leveled into the existing surface so as to avoid unsightly ridges or shadows. Apply a minimum of two coats of resurfacer to tennis surface. However, do not exceed the maximum depth of the resurfacer material recommended by the manufacturer.
  - 1. Two (2) coats of properly textured acrylic resurfacer shall be applied to entire surface. Special care shall be taken to keep a wet edge and remain consistent.
  - 2. When surface is completely dry, surface shall be inspected for ridges, bumps and debris. Any inconsistencies shall be corrected prior to color coat applications.
  - 3. Strictly follow manufactures mixture guidelines and weather limitations.

### 3.5 PLACEMENT OF COLOR COATING

- A. Complete through inspection. Asphalt surface shall be well cured, clean and free of dust, dirt and debris. Clean with power vacuum, compressed air and/or water. Remove all raveling or broken asphalt, stones and dirt.
- B. Measure and delineate colored court areas per drawings.
  - 1. If the surface is to receive multiple colors, apply chalk lines to distinguish the court area from the perimeter area. Follow USTA guidelines for court dimensions.

- C. Placement of multi-purpose DECO COLOR Decorative Coating system (acrylic texture course) coating 920-27 (color-coated border and color-coated playing surface, with colors as indicated on Drawings) shall be prepared and used in accordance with the manufacturer's recommendations.
1. Elite Color Concentrate, a product of Elite Sport Coating System, is considered an approved equal for this project.
    - a. Complete through inspection. Asphalt surface shall be well cured, clean and free of dust, dirt and debris. Clean with power vacuum, compressed air and/or water. Remove all raveling or broken asphalt, stones and dirt.
    - b. After acrylic texture course has dried to a firm set, apply one coat of texture acrylic color surface course per manufacturer's rates and procedures.
    - c. Texture acrylic color surface course shall be applied in two (2) applications with a 50-durometer rubber squeegee.
      - 1) Apply one coat of acrylic texture course per manufacturer's rates and procedures (see drawings for limits of colored court areas).
      - 2) No application should be made until the previous application is dry.
      - 3) After first coat has dried, apply second coat at a 90 degree angle to the first application per manufacturer's rates and procedures.
  2. Acrylic finish course shall include 2 parts multi-purpose decorative coating 920-27, and one-part cool, clean soft water.

### 3.6 PLACEMENT OF LINE PAINT

- A. To well cured, clean and dry tennis court pavement surface, apply white striping paint per manufacturer's rates and procedures, per specifications of the United States Tennis Court & Track Builders Association and as indicated in the drawings. All dimensions indicated on the drawings are to the outside of the lines, except the center lines, which are equally divided between right and left service courts.
1. Lines shall be carefully laid out in accordance with the ASBA guidelines.
  2. Masking tape shall be applied and rolled to result in a two inch (2") wide width unless otherwise stated.
    - a. All lines shall be straight, well defined with no bleeding.
  3. Masked lines shall be primed with acrylic line primer to seal the void between the textured surface and masking tape edge.
    - a. If masking tape is used, it should be removed immediately after line paint has dried.
  4. One (1) coat of textured white line paint shall be applied by brush or roller. No Spray Applications Permitted.

### 3.7 PROTECTION

- A. No material or equipment shall be stored on site unless it is fully secured.
- B. Erect temporary barriers to protect coatings during drying and curing.
- C. Lock gates to prevent use for 48 hours or until accepted by owner. Whichever is longer.

### 3.8 CLEAN UP

- A. Site shall be cleared of all construction debris, all was shall be disposed of offsite in accordance with local, state and federal regulations.
1. 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.

B. Remove all barriers and locks.

END OF SECTION 32 18.23.53

## SECTION 32 35 50 – ARMOR CRACK REPAIR SYSTEM FOR TENNIS COURTS

### PART 1 - GENERAL

#### 1.1 SUMMARY

- A. Section Includes:
  - 1. Filler material for cracks
  - 2. Armor crack repair system

#### 1.2 SUBMITTALS

- A. Submit the manufacturer's certification that the court patch binder meets the specifications for the Armor Crack Repair System.
- B. Submit the manufacturer's certification that the acrylic resurfacer meets the specifications for the Armor Crack Repair System.
- C. Alternate Systems – Any alternate system has to be approved by the Engineer before bidding the project. The request is to be made in writing for approval. Any alternate systems will have to be in use for at least 10 years and have references with phone numbers of installations at least 10 years old.

#### 1.3 QUALITY ASSURANCE

- A. Crack repairs and installation of the Armor Crack Repair System shall be applied only by an installer that has a minimum of 2 years experience and a minimum of 5 references of projects that have been completed.
- B. If a Contractor does not have the experience or references, then an employee of A.S.T., LLC is to be on-site during the crack repair and Armor installation. A.S.T., LLC is then to verify in writing that the installation has been done per their specifications. The cost of having someone from A.S.T., LLC on site shall be entirely paid for by the Contractor.
- C. Quality assurance personnel will perform intermittent inspections during the crack repair procedure

### PART 2 - PRODUCTS

#### 2.1 COURT PATCH BINDER

- A. A high strength acrylic latex bonding liquid designed to mix with Silica Sand and Portland cement.

#### 2.2 ARMOR CRACK REPAIR SYSTEM

- A. The Armor crack repair system is a patented system designed to cover bituminous pavement structural cracks by applying successive layers of an elastomeric membrane and attaching the outer membrane surfaces to the tennis court pavement with a bonding material.

### PART 3 - EXECUTION

### 3.1 ARMOR CRACK REPAIR SYSTEM

#### A. Surface Preparation

1. Thoroughly clean the surface to receive the Armor Crack Repair System by pressure washing to remove undesirable debris. The repair area surface shall not contain contaminants that would hinder the bonding ability of the built-up membrane to the existing bituminous pavement or color coat system. On courts where asphalt emulsion may have been used, the coatings will need to be removed to the asphalt surface.
2. Remove all previous crack repair materials that are loose or not well bonded to the court, including all existing rubberized crack filler material.
3. Flood the courts and locate any depressions that are ponding water. Fill with court patch binder until level. Re-flood the courts to ensure no water is standing on the pavement. Repeat as necessary until low area is removed.
4. For all cracks less than 3/4", rout, sterilize and fill cracks from the bottom of the asphalt with Court Patch binder", specifically designed for applications on tennis courts. The filler material shall be level with the adjacent surfaces and shall be sanded smooth.
5. For all cracks 3/4" or wider, rout, sterilize and fill cracks from the bottom of the asphalt with cement to within 1/16" of the top. Allow to cure and then top off flush with the pavement with Court Patch binder. Sand smooth as necessary.
6. The filling of the cracks and leveling is to be approved by the Engineer before any of the Armor System is installed. Any product installed before approval of the Engineer will be removed for inspection and replaced by the Contractor at the Contractor's expense.

#### B. Installation

1. Apply in accordance with Armor System specifications.
2. Do not use any flexible materials to bond Armor to surface.
3. Apply one (1) coat of black acrylic resurfacer over the Armor System and extending at least 1' outside of the material.
4. Apply a minimum of two (2) coats of black acrylic resurfacer over the entire court surface followed by two (2) coats of acrylic color.
5. Items 3 & 4 to be done with flexible material only.

#### C. ***"Approved Equal" products:***

1. ***The following manufacturers are approved for this project as an "Approved Equal" to the Armor Crack Repair product specific herewith; any other manufacturers need written approval by the Engineer before bidding.***
  - a. ***RiteWay Systems***

END OF SECTION 32 35 50

## SECTION 32 36 75 – LINE PRIMER

## PART 1 - GENERAL

## 1.1 SUMMARY

- A. General Description: Line Primer is a 100% acrylic clear drying emulsion primer that is applied prior to White Line Paint. The use of Line Primer assures crisp, sharp lines and a professional quality finish to the court surface. Line Prime does not contain any asbestos, Lead, or Mercury.
  - 1. Basic Uses: Designed to fill the minor voids between the tape and the court surface.
- B. Safety Guidelines: Always wear the recommended personal protective equipment. Avoid contact with eyes, skin, and clothing.
- C. Storage and Packaging Line Prime should be kept dry and cool. Storage temperature should be between 10°C (50°F) and 38°C (100°F). Do not store in direct sunlight.
  - 1. Packaging: 2 gallon unit (2 gallon units are packaged in jugs at 1 gallon each).
- D. Coverage Depending on the surface porosity and texture the consumption rate is 500 - 600 feet of 2" line per gallon. One set of tennis court lines typically requires 1-gallon of Line Primer.
- E. Installation Guidelines Apply Line Primer undiluted with a paintbrush or roller after masking tape is put down. Line Primer dries within 10 to 15 minutes in good weather conditions. Do not apply masking tape and Line Primer if rain is imminent. Once Line Primer is dry, White Line Paint may be applied. Remove masking tape immediately after playing lines are dry.
- F. Limitations Rev 1 WB 12.16.15 Line Primer
  - 1. Minimum surface and application temperature: 10°C (50°F)
  - 2. Maximum surface and application temperature : 54°C (130°F)
  - 3. Do not allow product to freeze.
  - 4. Do not dilute with water.
  - 5. Do not apply when rain is imminent.
  - 6. Completed projects should be allowed a minimum for 48 hours drying time before releasing for play.

## 1.2 SUBMITTALS

- A. Submit line primer material product data and specification information provided by the manufacturer.
- B. Furnish the manufacturer's material product data and specification information stating the color finish system is especially made for use on tennis courts.

## 1.3 QUALITY ASSURANCE

- A. Quality assurance personnel will perform intermittent inspections during the filling and color finish system operations.
- B. The Contractor is to supply the barrel or tote product and manufacturing production numbers for each barrel or tote of acrylic resurfacer or color product used on this project before any application of products.

## PART 2 - PRODUCTS

## A. Application:

1. Apply the line striping paint according to the U. S. Tennis Association and ITF Specifications. Do not apply the line striping paint in windy conditions. Lines that are found to be crooked, wavy or out of line shall be colored out and restriped at no additional cost to the Owner. Lines shall be masked. Line dimensions shall meet or exceed the following ITF tolerances.
2. If line corrections need to be made, it is at the sole discretion of the Engineer if the playing surface needs to be repainted. Any cost for such work shall be paid for by the Contractor.

## B. Acceptable products:

1. The following manufacturers are approved for this project, any other manufacturers need written approval by the Engineer before bidding.
  - a. Laykold
  - b. Decoturf/California Sports Surfaces
  - c. ***Elite Sport Coating System***
  - d. ***SportMaster Color Coating System***

END OF SECTION 32 36 75



## SECTION 329100 - SOIL PREPARATION

### PART 1 - GENERAL

#### 1.1 WORK INCLUDES

##### A. Base Bid:

##### 1. General Contractor:

- a. This section specifies all soil materials designated as "Topsoil" or "(Amended) Planting Soil" on the Drawings or in the specifications. Building construction portion of site is at subgrade or 6" below final grade. Minimal amounts of topsoil are available on site. Supply majority of topsoil for landscape work from off-site sources.

#### 1.2 RELATED SECTIONS

1. Section 31 20 00.
2. Section 32 92 00.

#### 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.

#### 1.4 SUBMITTALS

##### A. Source Quality Control:

1. Material Test Reports: Conduct Topsoil testing for existing on-site surface topsoil.
2. Sample: Provide 1 quart samples for each topsoil test unit (including source).
3. Conduct all topsoil sampling and testing prior to stripping and stockpiling from on-site sources.

##### B. Field Quality Control:

1. Submit field test reports as listed in Article 3.1.

#### 1.5 QUALITY ASSURANCE

##### A. Qualifications:

1. Soil-Testing Laboratory Qualifications: The contractor shall engage an independent laboratory or university laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

## PART 2 - PRODUCTS

### 2.1 MATERIALS

#### A. Topsoil:

1. Topsoil for landscape work shall be a fertile, friable, silty clay surface soil without admixture of subsoil screened to be free of stones, stumps, root, trash, debris, and other materials deleterious to plant growth. Topsoil to be locally sourced topsoil, screened and pulverized from Midwest Trading or approved equal.

2. Particle Size Distribution of Topsoil:

<u>Sieve Designation</u>	<u>Percent Passing</u>
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

3. Percentages shall be based on dry weight of the sample.
4. The pH range shall be 6.5 to 7.6. Topsoil that does not meet this pH range shall not be approved by the Using Agency.
5. Organic content shall not be less than 4 percent and not greater than 20%.

#### B. (Amended) Planting Soils:

1. Formulated as described in the Drawings.
  - a. Planting Beds to be amended with Midwest Trading 'One Step Soil Conditioner' or approved equal. Soil amendment is to be installed at a depth of 4", rototilled 12" in depth into all proposed planting bed/areas.

### 2.2 SOURCE QUALITY CONTROL:

#### A. Laboratory Test Reports:

1. Conduct topsoil testing for each soil test unit as follows:
2. Existing off-site location(s): 1 sample per acre of site to be excavated.
3. Existing on-site areas prior to stripping topsoil: 1 sample per acre of site to be excavated and/or each sub-area delineated by pavements, building and other site features that fragment the site into testing units less than 1 acre but larger than 0.25 acres in size.
4. Submit all test reports for Using Agency approval. Topsoil units that do not meet the soil requirements specified under this section will not be permitted for use as Topsoil.
5. Fertility: For each unamended soil type, test topsoil for organic materials, pH, phosphate, potash content, calcium, magnesium, zinc, iron, and manganese.
6. Physical Properties: Determine percent sand, silt and clay and textural classification (USDA) by hydrometer method. Identify all foreign materials such as rock, roots, and vegetation.
7. Supplemental Testing: Report presence of problem salts, minerals, or heavy metals, including aluminum, arsenic, barium, cadmium, chromium, cobalt, lead, lithium, and vanadium. If such problem materials are present, provide additional

recommendations for corrective action. If any heavy metal exceeds state listed background levels for human contact, soils will not be approved for use on site.

8. Recommendations: Based on the test results, the independent testing laboratory shall state recommendations for soil treatments and soil amendments to be incorporated. List recommendations in weight per 1000 square feet for turf area and volume per cubic yard of planting mix. Recommendations shall include; nitrogen, phosphorus, and potash nutrients and all soil amendments to be added to produce the specified topsoil material satisfactory for the long-term growth of the specified plants and turf.

### PART 3 - EXECUTION

#### 3.1 FIELD QUALITY CONTROL

- A. Sampling: Each sample 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 Using Agency.
- 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.

END OF SECTION 32 91 00

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## SECTION 32 92 00 - TURF AND GRASSES

### 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. Turf renovation.
  - 4. Erosion-control material(s).
  
- B. Related Sections:
  - 1. Division 31 Section "Site Clearing" for topsoil stripping and stockpiling.
  - 2. Division 31 Section "Earth Moving" for excavation, filling and backfilling, and rough grading.
  - 3. Division 32 Section "Porous Unit Paving" for concrete grid-type pavers shaped to provide open areas between units, planted with grass or other plants.
  - 4. Division 33 Section "Subdrainage" for subsurface drainage.

#### 1.3 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. This includes insecticides, miticides, herbicides, fungicides, rodenticides, and molluscicides. It also includes 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 plants, animals, or people. These include insects, mites, grubs, mollusks (snails and slugs), rodents (gophers, moles, and mice), unwanted plants (weeds), fungi, bacteria, and viruses.
  
- D. Planting Soil: Standardized topsoil; existing, native surface topsoil; existing, in-place surface soil; imported topsoil; or manufactured topsoil that is modified with soil amendments and perhaps fertilizers to produce a soil mixture best for plant growth.
  
- E. Subgrade: Surface or elevation of subsoil remaining after excavation is complete, or top surface of a fill or backfill before planting soil is placed.

- F. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- G. Surface Soil: Soil that is present at the top layer of the existing soil profile at the Project site. In undisturbed areas, the surface soil is typically topsoil, but in disturbed areas such as urban environments, the surface soil can be subsoil.

#### 1.4 SUBMITTALS

- A. Product Data: For each type of product indicated.
  1. Pesticides and Herbicides: Include product label and manufacturer's application instructions specific to this Project.
- B. Certification of Grass Seed: From seed vendor 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, germination, and weed seed. Include the year of production and date of packaging.
  1. Certification of each seed mixture for turfgrass sod. Include identification of source and name and telephone number of supplier.
- C. Qualification Data: For qualified landscape Installer.
- D. Maintenance Instructions: Provide documentation of recommended procedures for maintenance of prairie grasses during first two calendar years from qualified landscape installer. Submit before expiration of required initial maintenance periods.

#### 1.5 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape Installer whose work has resulted in successful turf and prairie establishment.
  1. Professional Membership: Installer shall be a member in good standing of either the Professional Landcare Network or the American Nursery and Landscape Association.
  2. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
  3. Pesticide Applicator: State licensed, commercial.
- B. Preinstallation Conference: Conduct conference at Project site.

#### 1.6 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 conformance with state and federal laws, as applicable.
- 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 fertilizers and soil amendments with appropriate certificates.

## 1.7 PROJECT CONDITIONS

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of planting completion.
  1. Spring Planting: Early spring (as soon as the soil is free of frost and in a workable condition but no later than June 30.
  2. Fall Planting: No earlier than September 1.
- B. 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.

## 1.8 MAINTENANCE SERVICE

- A. Initial Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable turf is established but for not less than the following periods:
  1. Seeded Turf: 60 days from date of planting completion.
    - a. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established including dormant season, continue maintenance during next planting season.
- B. Initial Prairie Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable meadow is established, but for not less than 60 days from date of planting completion.
- C. Continuing Maintenance Proposal: From Installer to Owner, in the form of a standard yearly (or other period) maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

## PART 2 - PRODUCTS

### 2.1 SEED

- A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.
- B. Seed Species: State-certified seed of grass species as listed in IDOT Standard Specifications and as follows:
  1. Class 1, Lawn Mixture
  2. Class 1B, Low Maintenance Lawn Mixture
  3. Class 2, Roadside Mixture

4. Class 2A: Salt Tolerant Roadside Mixture
  5. Class 3: Northern Illinois Slope Mixture
  6. Class 7: Temporary Turf cover Mixture
- C. Seed Species: Seed of grass species as follows, with not less than 98 percent germination, not less than 88 percent pure seed, and not more than 0.5 percent weed seed:
1. Shade: Proportioned by weight as follows:
    - a. 50 percent chewings red fescue (*Festuca rubra* variety).
    - b. 35 percent rough bluegrass (*Poa trivialis*).
    - c. 15 percent redtop (*Agrostis alba*).

## 2.2 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural liming material containing a minimum of 80 percent calcium carbonate equivalent and as follows:
  1. Class: T, with a minimum of 99 percent passing through No.8 sieve and a minimum of 75 percent passing through No. 60 sieve
  2. Class: O, with a minimum of 95 percent passing through No.8 sieve and a minimum of 55 percent passing through No.60 sieve.
  3. Provide lime in form of ground dolomitic limestone.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, and with a minimum of 99 percent passing through No.6 sieve and a maximum of 10 percent passing through No.40 sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Minimum 90 percent calcium sulfate, finely ground with 90 percent passing through No.50 sieve.
- G. Sand: Clean, washed, natural or manufactured, and free of toxic materials.
- H. Diatomaceous Earth: Calcined, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

## 2.3 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
  1. Organic Matter Content: 50 to 60 percent of dry weight.



- B. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

## 2.4 FERTILIZERS

- A. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
  1. Composition: 270 lbs/acre. Applied at a 1:1:1 ratio of nitrogen, phosphorous, and potassium, by weight as follows:
    - a. Nitrogen Fertilizer Nutrients: 90 lbs/acre
    - b. Phosphorous Nutrients: 90 lbs/acre
    - c. Potassium Fertilizer Nutrients: 90 lbs/acre
  2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing laboratory.

## 2.5 TOPSOIL

- A. Refer to Division 312000 Section "Earth Moving" for description of topsoil.
  1. Supplement with topsoil when quantities are insufficient.
  2. Imported topsoil or manufactured topsoil from off-site sources. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 6 inches deep; do not obtain from bogs or marshes.

## 2.6 MULCHES

- A. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic and free of plant-growth or germination inhibitors; with a maximum moisture content of 15 percent and a pH range of 4.5 to 6.5.
  1. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.
  2. Asphalt Emulsion: ASTM D 977, Grade SS-1; nontoxic and free of plant-growth or germination inhibitors.
- B. Compost Mulch: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 1-inch sieve; soluble salt content of 2 to 5 decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
  1. Organic Matter Content: 50 to 60 percent of dry weight.
- C. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

## 2.7 PESTICIDES

- A. General: Pesticide, registered and approved by 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 unless authorized in writing by authorities having jurisdiction.

- B. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Examine areas to be planted for compliance with requirements and other conditions affecting performance.
  1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
  2. Do not mix or place soils and soil amendments in frozen, wet, or muddy conditions.
  3. Suspend soil spreading, grading, and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
  4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.
- C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

### 3.2 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
  1. Protect adjacent and adjoining areas from hydroseeding and hydromulching overspray.
  2. Protect grade stakes set by others until directed to remove them.

### 3.3 TURF AREA PREPARATION

- A. Limit turf subgrade preparation to areas to be planted.
- B. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.
  1. Apply fertilizer directly to subgrade before loosening.
    - a. Delay mixing fertilizer with planting soil if planting will not proceed within a few days.

2. Spread topsoil to a depth of 6 inches but not less than required to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
  - a. Reduce elevation of planting soil to allow for soil thickness of sod.
- C. Finish Grading: Grade planting areas to a smooth, uniform surface plane with loose, uniformly fine texture. Grade to within plus or minus 1 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit finish grading to areas that can be planted in the immediate future.
- D. Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.
- E. Before planting, obtain Architect's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

### 3.4 SEEDING

- A. Sow seed with spreader or seeding machine. Do not broadcast or drop seed when wind velocity exceeds 5 mph. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
- B. Sow seed at a total rate of 5 to 6 lb/1000 sq. ft.
- C. Rake seed lightly into top 1/8 inch of soil, roll lightly, and water with fine spray.
- D. Protect seeded areas with erosion-control mats where shown on Drawings; install and anchor according to manufacturer's written instructions.

### 3.5 HYDROSEEDING

- A. Hydroseeding: Mix specified seed, fertilizer, and fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
  1. Mix slurry with fiber-mulch or manufacturer's recommended tackifier.
  2. Apply slurry uniformly to all areas to be seeded in a one-step process. Apply slurry at a rate so that mulch component is deposited at not less than 1500-lb/acre dry weight, and seed component is deposited at not less than the specified seed-sowing rate.

### 3.6 TURF RENOVATION

- A. Renovate existing turf damaged by Contractor's operations, such as storage of materials or equipment and movement of vehicles.
  1. Reestablish turf where settlement or washouts occur or where minor regrading is required.
  2. Install new planting soil as required.
- B. Remove sod and vegetation from diseased or unsatisfactory turf areas; do not bury in soil.

- C. Remove topsoil containing foreign materials such as oil drippings, fuel spills, stones, gravel, and other construction materials resulting from Contractor's operations, and replace with new planting soil.
- D. Mow, dethatch, core aerate, and rake existing turf.
- E. Remove weeds before seeding. Where weeds are extensive, apply selective herbicides as required. Do not use pre-emergence herbicides.
- F. Remove waste and foreign materials, including weeds, soil cores, grass, vegetation, and turf, and legally dispose of them off Owner's property.
- G. Till stripped, bare, and compacted areas thoroughly to a soil depth of 6 inches.
- H. Apply soil amendments and initial fertilizers required for establishing new turf and mix thoroughly into top 4 inches of existing soil. Install new planting soil to fill low spots and meet finish grades.
- I. Apply seed and protect with straw mulch / sod as required for new turf.
- J. Water newly planted areas and keep moist until new turf is established.

### 3.7 TURF MAINTENANCE

- A. Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.
  - 1. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.
  - 2. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.
  - 3. 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.
- B. Watering: Install and maintain temporary piping, hoses, and turf-watering equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches.
  - 1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
  - 2. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.
- C. Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 1/3 of grass height. Remove no more than 1/3 of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

- D. Turf Postfertilization: Apply fertilizer after initial mowing and when grass is dry.
  1. Use fertilizer that will provide actual nitrogen of at least **2 lb/1000 sq. ft.** to turf area.

### 3.8 SATISFACTORY TURF

- A. Turf installations shall meet the following criteria as determined by Architect:
  1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 95 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.
  2. Satisfactory Sodded Turf: At end of maintenance period, a healthy, well-rooted, even-colored, viable turf has been established, free of weeds, open joints, bare areas, and surface irregularities.
- B. Use specified materials to reestablish turf that does not comply with requirements and continue maintenance until turf is satisfactory.

### 3.9 PESTICIDE APPLICATION

- A. Apply pesticides and other chemical products and biological control agents in accordance with 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 Non-Selective): Apply only as necessary to treat already-germinated weeds and in accordance with manufacturer's written recommendations.

### 3.10 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. 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.
- C. Remove nondegradable temporary erosion-control measures after grass establishment period.

END OF SECTION 32 92 00

## SECTION 33 41 00 - STORM UTILITY DRAINAGE PIPING

## PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

## 1.2 SUMMARY

- A. This Section includes gravity-flow, non-pressure storm drainage outside the building.
- B. Related Sections include the following:
  - 1. Division 23 Sections.

## 1.3 DEFINITIONS

- A. PVC: Polyvinyl chloride plastic
- B. HDPE: High Density Polyethylene.

## 1.4 PERFORMANCE REQUIREMENTS

- A. Gravity-Flow, Nonpressure, Drainage-Piping Pressure Ratings: At least equal to system test pressure.

## 1.5 SUBMITTALS

- A. Product Data: For the following:
  - 1. Piping materials.
- B. Field Test Reports: Indicate and interpret test results for compliance with performance requirements.

## 1.6 DELIVERY, STORAGE, AND HANDLING

- A. Do not store plastic structures, pipe, and fittings in direct sunlight.
- B. Protect pipe, pipe fittings, and seals from dirt and damage.
- C. Handle precast concrete manholes and other structures according to manufacturer's written rigging instructions.

## 1.7 PROJECT CONDITIONS

- A. Site Information: Perform site survey and verify existing utility locations.
- B. Locate existing structures and piping to be closed and abandoned.
- C. Existing Storm Drainage Service: 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 no fewer than two days in advance of proposed interruption of service.
2. Do not proceed with utility interruptions without Architect's written permission.

## PART 2 - PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with the requirements of the Drawings and Authorities Having Jurisdiction.

### 2.2 PIPES AND FITTINGS

- A. Corrugated HDPE Drainage Tubing and Fittings: AASHTO M 252, Type S, with smooth waterway for coupling joints.
  1. Soiltight Couplings
- B. PVC Sewer Pipe and Fittings:
  1. PVC Sewer Pipe and Fittings, 15" and Smaller: ASTM D 3034, SDR 26, gasketed joints.
    - a. Gaskets: ASTM F 477, elastomeric seals.

### 2.3 PERFORATED-WALL PIPES AND FITTINGS

- A. Perforated PVC Sewer Pipe and Fittings: AASHTO M 278, bell-and-spigot ends.
  1. 6-inch and Smaller: ASTM F 405 or AASHTO M 252, Type CP; corrugated, for coupled joints.

### 2.4 SPECIAL PIPE COUPLINGS AND FITTINGS

- A. Comply with ASTM C 1173, elastomeric, sleeve-type, reducing or transition coupling, for joining underground nonpressure piping. Include ends of same sizes as piping to be joined, and corrosion-resistant-metal tension band and tightening mechanism on each end.
- B. Sleeve Materials: ASTM C 1173, rubber or elastomeric sleeve and band assembly fabricated to mate with OD of pipes to be joined, for nonpressure joints.
  1. Sleeve Material for Plastic Pipe: ASTM F 477, elastomeric seal.
  2. Sleeve Material for Dissimilar Pipe: Compatible with pipe materials being joined.
- C. Shielded Couplings: ASTM C 1277 assembly of metal shield or housing, corrosion-resistant fasteners, and rubber sleeve with integral, center pipe stop.
  1. Heavy-Duty, Shielded, Stainless-Steel Couplings, 10-inch and Smaller: With ASTM A 666, Type 301 or Type 304, stainless-steel shield; 2 or more stainless-steel bands and tightening devices; and ASTM C 564, rubber sleeve.
- D. Unshielded Flexible Couplings: Elastomeric sleeve with stainless steel tension band and tightening mechanism on each end.

### 2.5 CATCH BASINS

- A. Normal-Traffic, Precast Concrete Catch Basins: ASTM C 478, precast, reinforced concrete, of depth indicated, with provision for rubber gasketed joints.
  1. Gaskets: ASTM C 443, rubber.
- B. Steps: Steel Reinforced Plastic or Cast Iron individual steps. Wide enough to allow worker to place both feet on one step and is designed to prevent lateral slippage off step. Cast or anchor

steps into sidewalls at 12- to 16-inch intervals. Omit steps if total depth from invert to finished grade is less than 60 inches

- C. Frames and Covers: ASTM A 48, Class 35 gray iron castings designed for heavy-duty service.
- D. Pipe Connectors: ASTM C 923, resilient, of size required, for each pipe connecting to base section.
- E. Adjusting Rings: Interlocking rings with level or sloped edge in thickness and diameter matching manhole frame and cover. Include sealant recommended by ring manufacturer.

## 2.6 CONCRETE

- A. General: Cast-in-place concrete according to ACI 318, ACI 350R, and the following:
  1. Cement: ASTM C 150, Type II.
  2. Fine Aggregate: ASTM C 33, sand.
  3. Coarse Aggregate: ASTM C 33, crushed gravel.
  4. Water: Potable.
- B. Portland Cement Design Mix: 4000 psi minimum, with 0.45 maximum water-cementitious ratio.
  1. Reinforcement Fabric: ASTM A 185, steel, welded wire fabric, plain.
  2. Reinforcement Bars: ASTM A 615/A 615M, Grade 60, deformed steel.

## 2.7 CLEANOUTS

- A. PVC Cleanouts: PVC body with PVC threaded plug. Include PVC sewer pipe fitting and riser to cleanout of same material as sewer piping.
  1. Light Duty: In earth or grass foot-traffic areas.
  2. Medium Duty: In paved foot-traffic areas.
  3. Heavy Duty: In vehicle-traffic service areas.
  4. Extra-Heavy Duty: In roads.

## 2.8 AREA DRAINS

- A. Drain Basins and inline Drains: PVC Subsurface inlet per ASTM D2321 guidelines, Nyloplast or approved Equal.
  1. H-20 rated installation in paved areas.
  2. H-10 rated installation in pedestrian areas.
  3. Frame and Grate Shall Be Ductile Iron ASTM A536 grade 70-50-05.
  4. Lids shall be bolted.

## PART 3 - EXECUTION

### 3.1 EARTHWORK

- A. Excavating, trenching, and backfilling are specified in Division 2 Section "Earthwork."

### 3.2 PIPING APPLICATIONS

- A. Refer to Part 2 of this Section for detailed specifications for pipe and fitting products listed below. Use pipe, fittings, and joining methods according to applications indicated.

### 3.3 INSTALLATION, GENERAL



- A. General Locations and Arrangements: Drawing plans and details indicate general location and arrangement of underground storm drainage piping. Location and arrangement of piping layout take design considerations into account. Install piping as indicated, to extent practical.
- B. Install piping beginning at low point, true to grades and alignment indicated with unbroken continuity of invert. Place bell ends of piping facing upstream. Install gaskets, seals, sleeves, and couplings according to manufacturer's written instructions for use of lubricants, cements, and other installation requirements. Maintain swab or drag in line, and pull past each joint as it is completed.
- C. Use manholes for changes in direction, unless fittings are indicated. Use fittings for branch connections, unless direct tap into existing sewer is indicated.
- D. Use proper size increasers, reducers, and couplings where different sizes or materials of pipes and fittings are connected. Reducing size of piping in direction of flow is prohibited.
- E. Install gravity-flow piping and connect to building's storm drains, of sizes and in locations indicated. Terminate piping as indicated.
- F. Extend storm drainage piping and connect to building's storm drains, of sizes and in locations indicated. Terminate piping as indicated.

#### 3.4 PIPE JOINT CONSTRUCTION AND INSTALLATION

- A. General: Join and install pipe and fittings according to installations indicated.
- B. PVC Sewer Pipe and Fittings:
  - 1. Join pipe and gasketed fittings with gaskets according to ASTM D 2321.
- C. Join piping made of different materials or dimensions with couplings made for this application. Use couplings that are compatible with and that fit both systems' materials and dimensions.

#### 3.5 CATCH-BASIN INSTALLATION

- A. Construct catch basins to sizes and shapes indicated.
- B. Set frames and grates to elevations indicated.

#### 3.6 CLEANOUT INSTALLATION

- A. Install cleanouts and riser extension from sewer pipe to cleanout at grade. Use fittings to match the sewer pipe at branches and riser extensions to cleanouts. Install piping so cleanouts open in direction of flow in sewer pipe.
- B. Set with tops maximum 1 inch above surrounding earth grade or flush with pavement grade

#### 3.7 AREA DRAIN INSTALLATION

- A. Install per manufacturer's recommendations.
- B. Install type of drains in locations indicated.
- C. Set drain frames and covers with tops flush with pavement surface.

- D. Provide concrete ring around and beneath grate and frame per manufacturer's recommendations.

### 3.8 TAP CONNECTIONS

- A. Make connections to existing piping and underground structures so finished Work complies as nearly as practical with requirements specified for new Work.
- B. Use commercially manufactured wye fittings for piping branch connections. Remove section of existing pipe; install wye fitting into existing piping; and encase entire wye fitting, plus 6-inch overlap, with not less than 6 inches of concrete with 28-day compressive strength of 3000 psi.
- C. Make branch connections from side into existing piping, 21-inch or larger, or to underground structures by cutting opening into existing unit large enough to allow 3 inches of concrete to be packed around entering connection. Cut end of connection pipe passing through pipe or structure wall to conform to shape of and be flush with inside wall, unless otherwise indicated. On outside of pipe or structure wall, encase entering connection in 12 inches of concrete for minimum length of 12 inches to provide additional support of collar from connection to undisturbed ground.
  - 1. Use concrete that will attain minimum 28-day compressive strength of 3000 psi, unless otherwise indicated.
- D. Protect existing piping and structures to prevent concrete or debris from entering while making tap connections. Remove debris or other extraneous material that may accumulate.

### 3.9 FIELD QUALITY CONTROL

- A. Clear interior of piping and structures of dirt and superfluous material as work progresses. Maintain swab or drag in piping, and pull past each joint as it is completed.
  - 1. In large, accessible piping, brushes and brooms may be used for cleaning.
  - 2. Place plug in end of incomplete piping at end of day and when work stops.
  - 3. Flush piping between manholes and other structures to remove collected debris, if required by authorities having jurisdiction.
- B. Inspect interior of piping to determine whether line displacement or other damage has occurred. Inspect after approximately 24 inches of backfill is in place, and again at completion of Project.
  - 1. Submit separate reports for each system inspection.
  - 2. Defects requiring correction include the following:
    - a. Alignment: Less than full diameter of inside of pipe is visible between structures.
    - b. Deflection: Flexible piping with deflection that prevents passage of ball or cylinder of size not less than 92.5 percent of piping diameter.
    - c. Crushed, broken, cracked, or otherwise damaged piping.
    - d. Infiltration: Water leakage into piping.
    - e. Exfiltration: Water leakage from or around piping.
  - 3. Replace defective piping using new materials, and repeat inspections until defects are within allowances specified.
  - 4. Reinspect and repeat procedure until results are satisfactory.
- C. Test new piping systems, and parts of existing systems that have been altered, extended, or repaired, for leaks and defects.
  - 1. Do not enclose, cover, or put into service before inspection and approval.
  - 2. Test completed piping systems according to authorities having jurisdiction.
  - 3. Schedule tests and inspections by authorities having jurisdiction with at least 24 hours' advance notice.
  - 4. Submit separate reports for each test.

5. Replace leaking piping using new materials and repeat testing until leakage is within allowances specified.

3.10 CLEANING

- A. Clean interior of piping of dirt and superfluous materials.

END OF SECTION 33 41 00