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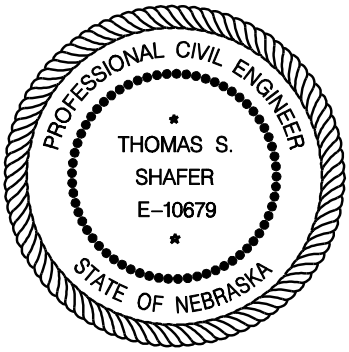
CITY OF LINCOLN
TRANSPORTATION
AND UTILITIES

# CITY OF LINCOLN
# SUPPLEMENTAL SPECIFICATIONS
# and STANDARD PLANS
# for MUNICIPAL CONSTRUCTION
# 2021




Coordinating Professional

Lincoln Transportation and Utilities Department
Lincoln Parks and Recreation Department
Lincoln Electric System

These Supplemental Specifications and Standard Plans are effective on all Construction Projects with Bid Opening on or after May 1, 2021.

**CITY OF LINCOLN, NEBRASKA,**
**SUPPLEMENTAL SPECIFICATIONS AND STANDARD PLANS**
**FOR MUNICIPAL CONSTRUCTION 2021**

**The following ARTICLE and TITLE listings include changes and/or additions to the *City of Lincoln Standard Specifications for Municipal Construction 2020* and shall supersede language as such for all construction projects bid after May 1, 2021.**

J. CLAIMS & DISPUTES (Continued**)**

When the City makes final payment and the Contractor accepts the same, the City and the Contractor thereby waive all claims except those arising from:

1. Unsettled liens, Claims, security interests or encumbrances arising out of the Contract;

2. Failure of the Work to comply with the requirements of the Contract Documents; or

3. Terms of special guarantees required by the Contract Documents.

If either party encounters or discovers (1) subsurface or otherwise concealed physical conditions which differ materially from the Contract Documents or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherently encountered in the Work, then the observing party shall give prompt notice of the condition to the City's Project Manager and the other party by giving a description thereof. The observing party shall give such notice promptly before conditions are disturbed and in no event later than 21 calendar days after first observance of the same.

If the Contractor wishes to make Claim for an increase in the Contract Sum, the Contractor shall provide written notice as provided herein before proceeding to execute the Work. Written notice is not necessary for emergencies endangering life or property. The Contractor may make claims for additional cost for reasons including but not limited to (1) a written opinion from the City's Project Manager, (2) an order by the City to stop the Work where the Contractor was not at fault, (3) a written order for a minor change in the Work issued by the City's Project Manager, (4) failure of payment by the City, (5) termination of the Contract by the City, (6) City's suspension or (7) other reasonable grounds.

If the Contractor wishes to make Claim for an increase in the Contract Time, the Contractor shall give written notice as provided herein. The Contractor's Claim shall include an estimate of cost and delay on the Work, if any. In the case of a continuing delay only one Claim is necessary. The exclusive remedy for claims based on adverse weather conditions shall be additional time. No increase in Contract sum will be granted for claims based on adverse weather. If the Contractor bases a Claim for additional time on adverse weather, the Contractor shall substantiate such Claim with data substantiating that: (1) the adverse weather was abnormal for the period of time, (2) the Contractor could not have reasonably anticipated the adverse weather, and (3) the weather had an adverse effect on the scheduled construction.

If either party to the Contract suffers injury or damage to person or property because of an act or omission of the other party, of any of the other party's employees or agents, or of others for whose acts such party is legally liable, the claimant shall give written notice of such injury or damage (whether or not insured) to the other party within 21 calendar days after first observance. The notice shall provide sufficient detail to enable the other party to investigate the matter. If the claimant asserts additional cost or time related to such injury or damage, the claimant shall file a separate claim for each.

## VIII. GUARANTEE AND PAYMENT (Continued)

### A. GUARANTEE (Continued)

#### 5. Procedure

If at any time within the period of guarantee, any of the Work included in the guarantee shall require any repair or reconstruction, the City's Project Manager shall notify the Contractor to make the repairs required. Upon receipt of such notice, the Contractor shall proceed with such repairs and shall complete the same within a time fixed by the City's Project Manager, all at the Contractor's cost and expense.

If the Contractor shall neglect or fail to proceed with such repairs, then the City shall have the right to cause such repairs to be made in such manner as it deems best and the whole cost thereof shall be paid directly by the Contractor or reimbursed by him to the City; and if the Contractor neglects or refuses to do so, such cost shall be paid by the Contractor's Surety on the performance bond required by the Contract Documents. The liability of such bond shall continue during the full guarantee period.

It shall be the duty of the Contractor to notify the City's Project Manager in writing within 30 calendar days prior to the expiration of the guarantee period to make a final inspection of the Work. If the Contractor does not furnish such notice, the obligation to maintain such Work in proper condition shall continue in force until such notice shall have been issued as above provided. If the end of the guarantee period falls between December 1st and April 30th, then such period may not be considered as expired until May 1st following, and the 30 days' notice must be served upon the City's Project Manager the month preceding that date.

### B. SUBSTANTIAL COMPLETION

When the Contractor considers that the Work (or a portion thereof that the City agrees to accept separately) is substantially complete, the City's Project Manager shall prepare and submit to the Contractor a comprehensive list of items to be completed or corrected. The Contractor shall proceed promptly to complete and correct items on the list. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents. Upon completion of the Contractor's corrective Work, the Contractor shall submit a request to the City's Project Manager for an inspection, and the City's Project Manager shall make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the City's Project Manager's inspection discloses any item that does not comply with the Contract Documents (including any items on the Contractor's list) the Contractor shall complete or correct such item upon the City's Project Manager's written notification. Once corrected or completed, the Contractor may submit a request to the City's Project Manager for another inspection to determine Substantial Completion.

## 1.05 TYPE 'A' SAWING

A. GENERAL

Asphaltic Concrete pavement to be removed shall be isolated from the pavement to remain by cutting a full depth saw cut, using either a wheel saw or diamond blade. If a wheel saw is used, additional sawing shall be required to provide smooth, straight, and vertical faces. After the pavement base has been replaced, a 4" wide strip of the asphaltic concrete surface course shall be sawed and removed to provide a straight, smooth edge where the new asphaltic surfacing adjoins the existing surfacing.

B. BASIS OF PAYMENT

When called for in the proposal, sawing Asphaltic Concrete completed in conformance with these Standard Specifications and accepted by the City's Project Manager shall be measured and paid for at the contract unit price bid per linear foot for TYPE 'A' SAWING. Such payment shall be full compensation for all Work associated with isolating the pavement to be removed and removing the 4" strip of asphalt, including all equipment, tools, labor, and incidentals necessary to complete this type of Work.

## 1.06 TYPE 'B' SAWING

A. GENERAL

Portland Cement Concrete (PCC) pavement to be removed shall be isolated from the paving to remain by cutting a full depth saw cut, using either a wheel saw or diamond blade. If a wheel saw is used, additional sawing shall be required to provide smooth, straight and true vertical faces.

B. CONCRETE SLURRY

The Contractor shall immediately and continuously remove the slurry or residue from the saw cut operation. The Contractor shall not permit slurry to flow across shoulders or lanes occupied by traffic. The Contractor shall not permit slurry or residue into gutters, inlets, or other drainage facilities. The Contractor shall leave slabs clean and dry with no residue remaining upon completion of sawing operations, with the exception of residue or slurry into excavations or subgrade that doesn't drain to gutters, inlets, or other drainage facilities.

C. BASIS OF PAYMENT

When called for in the proposal, sawing Portland Cement Concrete (PCC) pavement, completed in conformance with these Standard Specifications and accepted by the City's Project Manager shall be measured and paid for at the contract unit price bid per linear foot for TYPE 'B' SAWING. Such payment shall be full compensation for all Work associated with isolating the pavement to be removed, cleaning of slabs and removal of slurry or residue, equipment, tools, labor, materials, and incidentals necessary to complete this item of Work.

## 1.17 CONTRACTOR QUALITY CONTROL PROGRAM (CQCP)

### A. GENERAL

Quality is more than test results. Quality is the combination of proper materials, testing, workmanship, equipment, inspection, and documentation of the project. Establishing and maintaining a culture of quality is key to achieving a quality project. The Contractor shall establish, provide, and maintain an effective Contractor Quality Control Program (CQCP) that details the methods and procedures that will be taken to assure that all materials and completed construction required by this contract conform to contract plans, technical specifications and other requirements, whether manufactured by the Contractor, or procured from subcontractors or vendors. Although guidelines are established and certain minimum requirements are specified here and elsewhere in the contract technical specifications, the Contractor shall assume full responsibility for accomplishing the stated purpose.

The Contractor shall establish a CQCP that will:

- Provide qualified personnel to develop and implement the CQCP.
- Provide for the production of acceptable quality materials.
- Provide sufficient information to assure that the specification requirements can be met.
- Document the CQCP process.

The Contractor shall describe the CQCP in a written document that shall be submitted to the City Engineer ***within 30 days after award of the contract*** for review and approval.

The CQCP shall be organized to address, as a minimum, the following:

- QC organization and resumes of key staff
- Project progress schedule
- Submittals schedule
- Inspection requirements
- QC testing plan
- Documentation of QC activities and distribution of QC reports
- Requirements for corrective action when QC and/or QA acceptance criteria are not met
- Material quality and construction means and methods. Address all elements applicable to the project that affect the quality of the pavement structure including subgrade, subbase, base, and surface course. Some elements that must be addressed include, but is not limited to mix design, aggregate grading, stockpile management, mixing and transporting, placing and finishing, quality control testing and inspection, smoothness, laydown plan, equipment, and temperature management plan.

The Contractor must add any additional elements to the CQCP that is necessary to adequately control all production and/or construction processes required by this contract.
The Contractor shall not begin any construction or production of materials to be incorporated into the completed work until the CQCP has been reviewed and approved by the City Construction Engineer. No partial payment will be made for materials subject to specific quality control (QC) requirements until the CQCP has been reviewed and approved.
The QC requirements contained in this section and elsewhere in the contract technical specifications are in addition to and separate from the quality assurance (QA) testing requirements. QA testing requirements are the responsibility of the City Project Manager (CPM) or Contractor as specified in the specifications.

## 1.17 CONTRACTOR QUALITY CONTROL PROGRAM (CQCP) (Continued)

### A. GENERAL (Continued)

A Quality Control (QC)/Quality Assurance (QA) meeting with the Engineer, Project Manager (PM), Contractor, subcontractors, testing laboratories, and consultant must be held ***at least 15 business days prior*** to start of construction. ***The QC/QA meeting will be facilitated by the Contractor at the City of Lincoln's Office.*** The Contractor shall coordinate with the with the Engineer and Project Manager on time of the QC/QA meeting. Items to be addressed, at a minimum, will include:

- Review of the CQCP including submittals, QC Testing, Action & Suspension Limits for Production, Corrective Action Plans, Distribution of QC reports, and Control Charts.
- Discussion of the QA program.
- Discussion of the QC and QA Organization and authority including coordination and information exchange between QC and QA.
- Establish regular meetings to discuss control of materials, methods, and testing.
- Establishment of the overall QC culture.

### B. DESCRIPTION OF PROGRAM

The Contractor shall establish a CQCP to perform QC inspection and testing of all items of work required by the technical specifications, including those performed by subcontractors. The CQCP shall ensure conformance to applicable specifications and plans with respect to materials, off-site fabrication, workmanship, construction, finish, and functional performance. The CQCP shall be effective for control of all construction work performed under this Contract and shall specifically include surveillance and tests required by the technical specifications, in addition to other requirements of this section and any other activities deemed necessary by the Contractor to establish an effective level of QC.

### C. CQCP ORGANIZATION

The CQCP shall be implemented by the establishment of a QC organization. An organizational chart shall be developed to show all QC personnel, their authority, and how these personnel integrate with other management/production and construction functions and personnel.

The organizational chart shall identify all QC staff by name and function and shall indicate the total staff required to implement all elements of the CQCP, including inspection and testing for each item of work. If necessary, different technicians can be used for specific inspection and testing functions for different items of work. If an outside organization or independent testing laboratory is used for implementation of all or part of the CQCP, the personnel assigned shall be subject to the qualification requirements of paragraphs below. The organizational chart shall indicate which personnel are Contractor employees and which are provided by an outside organization.

The QC organization shall, as a minimum, consist of the following personnel:

1. Program Administrator. The Contractor Quality Control Program Administrator (CQCPA) must be a full-time employee of the Contractor, or a consultant engaged by the Contractor. The CQCPA must have a minimum of five (5) years of experience in QC construction materials testing and/or five 5 years of experience providing construction project management experience on a project of comparable size and scope as the contract.

C. CQCP ORGANIZATION (Continued)

Included in the five (5) years of experience, the CQCPA must meet at least one of the following requirements:

(a) Professional Engineer with one (1) year of field construction experience.
(b) Engineer-in-training with two (2) years of field experience.
(c) National Institute for Certification in Engineering Technologies (NICET) Civil Engineering Technology Level IV or an equivalent certification with three (3) years of field construction experience.
(d) An individual with four (4) years of field construction experience, with a Bachelor of Science Degree in Civil Engineering, Civil Engineering Technology or Construction.
(e) An individual with eight (8) years of field construction experience.

The CQCPA must have full authority to institute any and all actions necessary for the successful implementation of the CQCP to ensure compliance with the contract plans and technical specifications. The CQCPA authority must include the ability to immediately stop production until materials and/or processes are in compliance with contract specifications. The CQCPA must report directly to a principal officer of the construction firm. The CQCPA may supervise the Quality Control Program on more than one project provided that person can be at the job site within two (2) hours after being notified of a problem.

2. QC Technicians. A sufficient number of QC Technicians necessary to adequately implement the CQCP must be provided. These personnel must be either Engineers, engineering technicians, or experienced craftsman with qualifications in the appropriate field equivalent to NICET Level II in Civil Engineering Technology or higher, and shall have a minimum of two (2) years of field construction experience in their area of expertise.

The QC technicians must report directly to the CQCPA and shall perform the following functions:

(a) Inspection of all materials, construction, plant, and equipment for conformance to the technical specifications, and as required in the following Section – Inspection Requirements.
(b) Performance of all QC tests as required by the technical specifications and in the following Section – QC Testing Requirements.
(c) Performance of tests for the City Project Manager when required by the technical specifications.

Certification at an equivalent level of qualification and experience by a state or nationally recognized organization will be acceptable in lieu of NICET certification.

3. Staffing levels. The Contractor shall provide sufficiently qualified QC personnel to monitor each work activity at all times. Where material is being produced in a plant for incorporation into the work, separate plant and field technicians shall be provided at each plant and field placement location. The scheduling and coordinating of all inspection and testing must match the type and pace of work activity. The CQCP shall state where different technicians will be required for different work elements.

## 1.17 CONTRACTOR QUALITY CONTROL PROGRAM (CQCP) (Continued)

### D. PROJECT PROGRESS SCHEDULE

Critical QC activities must be shown on the project schedule.

### E. SUBMITTALS SCHEDULE

Submittals shall be in accordance with the requirements of the City of Lincoln 2020 Standard Specifications, General Conditions, Section V Control of Work, Item I. Shop Drawing.

### F. INSPECTION REQUIREMENTS

QC inspection functions shall be organized to provide inspections for all definable features of work, as detailed below. All inspections shall be documented by the Contractor as specified in the following Section- Documentation.
Inspections shall be performed as needed to ensure continuing compliance with contract requirements until completion of the particular feature of work. Inspections shall include the following minimum requirements:

1. During plant operations for material production, QC test results and periodic inspections shall be used to ensure the quality of aggregates and other mix components, and to adjust and control mix proportioning to meet the approved mix design and other requirements of the technical specifications. All equipment used in proportioning and mixing shall be inspected to ensure its proper operating condition. The CQCP shall detail how these and other QC functions will be accomplished and used.

2. During field operations, QC test results and periodic inspections shall be used to ensure the quality of all materials and workmanship. All equipment used in placing, finishing, and compacting shall be inspected to ensure its proper operating condition and to ensure that all such operations are in conformance to the technical specifications and are within the plan dimensions, lines, grades, and tolerances specified. The CQCP shall document how these and other QC functions will be accomplished and used.

### G. CONTRACTOR TESTING FACILITY

The Contractor shall ensure facilities, including all necessary equipment, materials, and current reference standards, are provided that meet requirements in the following paragraphs of ASTM D3666, *Standard Specification for Minimum Requirements for Agencies Testing and Inspecting Road and Paving Materials*:

8.1.3 Equipment Calibration and Checks;
8.1.9 Equipment Calibration, Standardization, and Check Records;
8.1.12 Test Methods and Procedures

## 1.17 CONTRACTOR QUALITY CONTROL PROGRAM (CQCP) (Continued)

### H. QC TESTING PLAN

As a part of the overall CQCP, the Contractor shall implement a QC testing plan. The testing plan shall include the minimum tests and test frequencies required by each technical specification Item, as well as any additional QC tests that the Contractor deems necessary to adequately control production and/or construction processes.

The QC testing plan shall, as a minimum, include the following:

1. Specification item number (e.g., City of Lincoln, Nebraska, Standard Specifications, Chapter 6, Section 6.02 C)
2. Test type (e.g., gradation, grade, asphalt content)
3. Test standard (e.g., ASTM or American Association of State Highway and Transportation Officials (AASHTO) test number, as applicable)
4. Test frequency (e.g., as required by technical specifications or minimum frequency when requirements are not stated)
5. Responsibility (e.g., plant technician)
6. Control requirements (e.g., target, permissible deviations)

The QC testing plan shall contain a statistically based procedure of random sampling for acquiring test samples in accordance with ASTM D3665. The City Project Manager shall be provided the opportunity to witness QC sampling and testing.

All QC test results shall be documented by the Contractor as required by Section – Documentation.

### I. DOCUMENTATION

The Contractor shall maintain current QC records of all inspections and tests performed. These records shall include factual evidence that the required QC inspections or tests have been performed, including type and number of inspections or tests involved; results of inspections or tests; nature of defects, deviations, causes for rejection, etc.; proposed remedial action; and corrective actions taken.

These records must cover both conforming and defective or deficient features and must include a statement that all supplies and materials incorporated in the work are in full compliance with the terms of the contract. Legible copies of these records shall be furnished to the RPR daily. The records shall cover all work placed subsequent to the previously furnished records and shall be verified and signed by the CQCPA.

Contractor QC records required for the contract shall include, but are not necessarily limited to, the following records:

1. Daily inspection reports. Each Contractor QC technician shall maintain a daily log of all inspections performed for both Contractor and subcontractor operations. These technician's daily reports shall provide factual evidence that continuous QC inspections have been performed and shall, as a minimum, include the following:
   - (a) Technical specification item number and description
   - (b) Compliance with approved submittals
   - (c) Proper storage of materials and equipment
   - (d) Proper operation of all equipment
   - (e) Adherence to plans and technical specifications
   - (f) Summary of any necessary corrective actions
   - (g) Safety inspection.
   - (h) Photographs

I. DOCUMENTATION (Continued)

The daily inspection reports shall identify all QC inspections and QC tests conducted, results of inspections, location and nature of defects found, causes for rejection, and remedial or corrective actions taken or proposed.

The daily inspection reports shall be signed by the responsible QC technician and the CQCPA. The City Project Manager shall be provided at least one copy of each daily inspection report on the workday following the day of record. When QC inspection and test results are recorded and transmitted electronically, the contractor must retain the test results until the final project payment.

2. Daily test reports. The Contractor shall be responsible for establishing a system that will record all QC test results. Daily test reports shall document the following information:

(a) Technical specification item number and description
(b) Test designation
(c) Location
(d) Date of test
(e) Control requirements
(f) Test results
(g) Causes for rejection
(h) Recommended remedial actions
(i) Retests

Test results from each day's work period shall be submitted to the CPM prior to the start of the next day's work period. When QC daily test results are recorded and transmitted electronically, the contractor must retain the test results until the final project payment.

J. CORRECTIVE ACTION REQUIREMENTS

The CQCP shall indicate the appropriate action to be taken when a process is deemed, or believed, to be out of control (out of tolerance) and detail what action will be taken to bring the process into control. The requirements for corrective action shall include both general requirements for operation of the CQCP as a whole, and for individual items of work contained in the technical specifications.

The CQCP shall detail how the results of QC inspections and tests will be used for determining the need for corrective action and shall contain clear rules to gauge when a process is out of control and the type of correction to be taken to regain process control.

When applicable, the Contractor may establish and use statistical QC charts for individual QC tests. The requirements for corrective action shall be linked to the control charts.

K. INSPECTION BY THE CITY PROJECT MANAGER

Inspections by City Project Manager (CPM) or other public authorities having jurisdiction shall inspect work in accordance with City of Lincoln Standard Specifications. Inspection by the CPM does not relieve the Contractor of performing QC inspections of either on-site or off-site Contractor's or subcontractor's work.

## 1.17 CONTRACTOR QUALITY CONTROL PROGRAM (CQCP) (Continued)

### L. NONCOMPLIANCE

1. The City Project Manager (CPM) will provide written notice to the Contractor of any noncompliance with their CQCP. After receipt of such notice, the Contractor must take corrective action.

2. When QC activities do not comply with either the CQCP or the contract provisions or when the Contractor fails to properly operate and maintain an effective CQCP, and no effective corrective actions have been taken after notification of non-compliance, the CPM will recommend the following actions:

   (a) Order the Contractor to replace ineffective or unqualified QC personnel or subcontractors and/or

   (b) Order the Contractor to stop operations until appropriate corrective actions are taken.

### M. BASIS OF PAYMENT

Contractor Quality Control Program (CQCP) is for the personnel, tests, facilities and documentation required to implement the CQCP. The CQCP will be paid as a lump sum with the following schedule of partial payments:

1. With the first pay estimate, 25% with approval of CQCP and completion of the Quality Control (QC)/Quality Assurance (QA) meeting.
2. When 25% or more of the value of Work has been completed, an additional 25%.
3. When 50% or more of the value of Work has been completed, an additional 20%.
4. When 75% or more of the value of Work has been completed, an additional 20%
5. After final inspection and acceptance of the Work per City of Lincoln Standard Specifications for Municipal Construction Section VIII.C, the final 10%.

D. DOWELED PORTLAND CEMENT CONCRETE (DPCC) PAVEMENT

Doweled concrete pavement of the dimensions and thickness called for on the plans, constructed in conformance with the Lincoln Standard Specifications and accepted by the City's Project Manager, shall be measured and paid for at the contract unit price bid per square yard for DOWELED PORTLAND CEMENT CONCRETE (DPCC) PAVEMENT, ___". The final measure shall be for pavement only, excluding curb and gutter.
No additional payment over the unit Contract Bid price will be made for any pavement which has an average thickness in excess of that shown on the Plans.

E. DOWELED PORTLAND CEMENT CONCRETE (DPCC) PAVEMENT with INTEGRAL CURB

Doweled concrete pavement of the dimensions and thickness called for on the plans, constructed in conformance with the Lincoln Standard Specifications and accepted by the City's Project Manager, shall be measured and paid for at the contract unit price per square yard for DOWELED PORTLAND CEMENT CONCRETE (DPCC) PAVEMENT with INTEGRAL CURB, ___". The final measure shall be for pavement with integral curb and measured from back of curb to back of curb.

No additional payment over the unit Contract Bid price will be made for any pavement which has an average thickness in excess of that shown on the Plans.

F. REINFORCED PORTLAND CEMENT CONCRETE (RPCC) PAVEMENT

Reinforced concrete pavement of the various thicknesses called for in the proposal, constructed in conformance with these Standard Specifications and accepted by the City's Project Manager, shall be measured and paid for at the contract unit price bid per square yard for REINFORCED PORTLAND CEMENT CONCRETE (RPCC) PAVEMENT, ___".

No additional payment over the unit Contract Bid price will be made for any pavement which has an average thickness in excess of that shown on the Plans.

G. CONCRETE SIDEWALK; CONCRETE DRIVEWAY; CONCRETE BIKEWAY

CONCRETE SIDEWALK, ___" THICK; CONCRETE DRIVEWAY, ___" THICK; CONCRETE BIKEWAY, ___ " THICK, that has been completed in conformance with the Plans and Standard Specifications and accepted by the City's Project Manager shall be measured and paid for at the contract unit price bid per square foot. Sidewalks or bikeways constructed through future driveway locations shall be constructed to the minimum driveway thickness, and shall be measured and paid for at the appropriate unit price bid for Concrete Driveway.

H. COMBINED CURB AND GUTTER, CONCRETE BARRIER CURB, or CONCRETE MEDIAN CURB

COMBINED CURB AND GUTTER, CONCRETE BARRIER CURB, or CONCRETE MEDIAN CURB, completed in conformance with the plans and Standard Specifications and accepted by the City's Project Manager, shall be measured along the face of the curb through all inlets.

Payment shall be made at the contract unit price bid per linear foot for each type and size constructed.

P. HYDRANT DRAIN MATERIAL (Continued)

**TABLE 23.03 C – HYDRANT DRAIN MATERIAL GRADATIONS**

| Sieve Size | % Passing | Tolerance |
|---|---|---|
| 3/4" | 100 | 0 |
| 3/8" | 95 | +/- 5 |
| #4 | 78 | +/- 4 |
| #10 | 16 | +/- 13 |
| #200 | 3 | +/- 3 |

Q. AIR RELIEF VALVES

Air relief valves shall be provided by the Contractor to conform to the size, type and configuration shown on the plans.

R. TRACER WIRE

All PVC water mains owned by the City of Lincoln shall be installed with a locator wire attached. The wire shall be direct bury 12 AWG solid steel core, copper clad wire with 30 mil, blue, HDPE insulator. Wire shall have a 30-volt rating with a minimum tensile break force of 380 pounds.

Approved manufacturer shall be Copperhead Industries, Pro-Line Pro-Trace, or equal. The wire shall be installed with as few splices as possible. Splices shall utilize end to end 3M DBR connectors, sealed with silicone sealant, aqua seal, or equal and covered with Scotch #33 electrical tape.

Tracer wire must be properly grounded at all dead-end mains. Grounding of tracer wire shall be achieved by using a 1.5-lb drive-in magnesium ground rod with a minimum 20-feet of #12 high strength copper-clad steel wire coated with red 30 mil HDPE insulation connected to the rod, specifically manufactured for this purpose. Where the anode wire will be ran into the top of a valve box, a minimum of 18 inches of excess/slack wire is required after meeting final elevation.

Subject to meeting the requirements of this Specification, acceptable manufacturer's products which may be incorporated into the work include Copperhead Ground Rod (ANO-12), Pro-Trace (PTANODE12) *or an approved equal*.

S. GEOTEXTILE FILTER FABRIC

Geotextile Filter Fabric, for water main construction, shall be Mirafi 500X, Synthetic Industries 200ST, or approved equal and shall be supplied and constructed in conformance to the applicable Lincoln Standard Plans or contract Special Provisions. Geotextile Filter Fabric shall be considered subsidiary to Water Main construction and are not measured or paid for as a separate item for purposes of this chapter.

F. TRACER WIRE

The Contractor shall install tracer wire (as per 23.03 P) directly to the top of the pipe between the 10 o'clock and 2 o'clock positions, with non-conductive pipe only. Tracer wire shall be secured to the main every 5' with tape patches and shall be secured so that some slack can be taken out of the wire for valve and tap installations. Tracer wire shall be extended to the ground surface and terminated in conformance with the Standard Plans using a coil of excess wire at least 18" in length inside the valve box. For line valves and hydrant branch valves (branch less than 10') the tracer wire shall be attached to the exterior of the valve box and inserted into the valve box 8" from the top of the box through a field drilled 1/2" hole. Tracer wire shall be installed with as few splices as possible. No bare wire shall be exposed, with the exception of 1" of wire to be stripped at the access loop for contact with tracing equipment. The two ends of the wire shall be knotted to prevent strain on the splice. Branch connections shall be made without cutting the main wire utilizing a connection clip and sealing the joint the same as splices. All new tracer wire installations shall be located using typical low frequency (512Hz) line tracing equipment, witnessed by the contractor, inspector and LWS representative, prior to acceptance of ownership. Any deviations from the 512Hz frequency shall be discussed with the LWS representative during the testing, deviations from the 512Hz frequency shall only be approved by LWS. All wires failing to provide successful testing for signal transmission shall be repaired or replaced at the Contractor's expense. Continuity testing in lieu of actual line tracing shall not be accepted. After testing the ends, all tracer wires shall be sealed with heat shrink tape. Installation and testing of tracer wire shall be considered subsidiary to the installation of non-conductive pipe.

All water main reconstructions (loops for conflicting utilities) as shown on LSP 301 shall have tracer installed when using PVC pipe. When reconstruction is performed on ductile iron pipe or cast-iron pipe, tracer wire shall be terminated on both ends of the loop directly to the existing pipe using an exothermic welded connection, or a stainless steel Cathodi-Clamp™. Polyethylene encasement shall be (re)installed over the areas of the existing pipe where the tracer is terminated extending from a minimum of 2' past the connection point of the new PVC pipe to a minimum of 2' past the wire termination point on the existing water main.

G. JOINTING PIPES

1. General

All bells, gaskets, lubricants and appurtenances shall be kept clean. Gaskets shall be of the proper style for the pipe being laid. Joints shall be deflected after assembly.

2. Ductile Iron Pipe

Bell ends shall be protected during joining by approved methods.
Maximum pipe joint deflections for push-on and mechanical jointed pipe shall conform to TABLE 23.07 A – MAXIMUM JOINT DEFLECTIONS.

3. PVC Pipe

PVC pipe shall be joined by inserting the spigot end of the pipe into the bell no further than marked by the manufacturer. Insertion on the PVC pipe further than the manufacturer's mark shall require reassembly. Bell ends shall be protected during joining by approved methods. Maximum pipe joint deflections for PVC pipe shall confirm to the manufacturers recommended standards for the brand of pipe being installed.

A. GENERAL (Continued)

The Contractor shall check the installation of all butterfly valves to be certain that the valve can be operated throughout its entire range of operation, and that it does not have contact with the inside edges of the pipe when operating.

Where tapping sleeves and valves are to be installed, the Contractor shall make all excavations to the dimensions required and provide all necessary trench protection. The Contractor shall provide precast concrete pads and other stabilizing materials under the tapping valves necessary to prevent rotation of the tapping sleeve on the main.

The Contractor shall provide and install a valve box over every valve operator. The valve box shall be installed plumb and centered over the operating nut and with the bottom of the box sufficiently lower than the operating nut to prevent the entry of soil. The top of the box shall be set flush with the final grade or paved surface. Valve box adjusting rings shall not be used to adjust valve boxes to grade. Valve boxes shall be stabilized to prevent out of alignment during compaction. Misaligned valve boxes shall be replaced during the warranty period. Only one valve box extension can be used at each location. Valves installed at a depth of 7' or greater will require a 6" diameter Sch. 80 PVC pipe used to reach grade with Sch 40 coupler mounted just below surface level to attach ring and lid. Upon final construction, the valve box ring and lid should be set flush with grade.

Hydrants shall be set plumb, resting on precast concrete pads, 4" thick and 16" square. The support pads shall rest against undisturbed earth. The top of the flange on the hydrant shall be set to the grade shown on the plans. A hydrant of the length shown on the plans shall be used to attain this elevation. The Contractor shall make appropriate deflections or rotations in the tee and anchoring elbow, or use an anchoring offset, to meet this grade.

Fire hydrant barrel lengths shown on the plans are estimated and may not be sufficient dimensions for actual field conditions due to conflicting utilities and field modifications of water main profile. Contractors shall confirm actual hydrant barrel length required prior to construction so that hydrants are constructed in accordance to the LSP. This work shall be subsidiary to the water main construction.

Where a hydrant extension is necessary to meet the required grade, the hydrant extension shall be installed only by Lincoln Water System. Only one extension will be permitted on a hydrant. The Contractor shall remove and reset all hydrants which cannot be adjusted to grade with one extension. The Contractor shall notify the City's Project Manager or that person's representative when hydrant extensions are required.

The Contractor shall place a minimum of 0.75 cubic yards of hydrant drain material (as per 23.03 N) around the base of the hydrant to allow free ready drainage of the barrel. Polyethylene wrap shall be placed on top of the drainage gravel prior to the commencement of backfilling. Hydrant drain holes shall be kept open and clean at all times. Care should be exercised as to not block the drain holes with polyethylene wrap or concrete from backing blocks.

When obtaining hydrants from the Lincoln Water System, the Contractor shall determine and select the hydrant shoe configuration that best suits proper orientation of the steamer (large) nozzle perpendicular to the curb line. When required, adjustments to the final hydrant nozzle orientation shall be made by the Lincoln Water System with all applicable costs and fees assessed to the Contractor. These fees shall be considered subsidiary to the cost of installing the water main and shall not be cause for additional compensation by the Contractor.

## 23.10 TEMPORARY HYDRANTS AND BLOW-OFF FOR FLUSHING AND DISINFECTION

A. GENERAL

Temporary hydrants and blow-offs shall be provided as shown on the plans or as determined by the Lincoln Water System to provide adequate discharge of water for preliminary and final flushing of the water main(s) in conformance to AWWA C651. The installation of temporary hydrants and blow-offs shall include any necessary protection of surrounding areas from damage caused by water erosion and any other provisions necessary for the conveyance of discharge water to protect downstream facilities or property.

B. BASIS OF PAYMENT

When called for in the proposal, payment for temporary hydrants and blow offs used in conformance with these Specifications and accepted by the City's Project Manager shall be made at the contract unit price bid per each for TEMPORARY HYDRANT AND BLOW-OFF. The Such payment shall be full compensation for installation of temporary hydrant and blow-off, necessary erosion protection, discharge water conveyance and downstream protection, removal of temporary hydrant and blow-off and any materials, equipment, tools, labor, or incidentals necessary to complete the work in conformance with the plans.

## 23.11 WATER SERVICE CONSTRUCTION OR RECONSTRUCTION

A. GENERAL

For the purpose of constructing or reconstructing all water supply and service lines, the Contractor shall comply with the provisions of Title 17 of the Lincoln Municipal Code. The Contractor shall cause all Work to be performed by a licensed plumber. All water services that are uncovered in the course of construction shall be inspected by the Lincoln Water System to assess their integrity and recommend replacement to customers when found to be in unsatisfactory condition. All water services that are reconstructed shall be inspected by the Lincoln Water System.

All water supply or service lines which are to be looped or reconstructed shall be constructed of Type "K" seamless soft-drawn copper tubing or ductile iron pipe.

The Contractor shall place all reconstructed water services or looped water services so as to provide a minimum cover of 4'. Minimum lateral clearance from structures open to the weather, such as storm sewer inlets, shall be 3'.
All other clearance shall be a minimum of 6".

Looping a water service shall consist of the reconstruction of a water service across the width of the excavation for the facility being built or within 5' of said excavation. When the break in the service line is within 5' of either the tap or the curb stop, the Contractor shall loop the service pipe from the tap or curb stop to the opposite side of the excavation and only 1 joint will be allowed. When the break in the service line is beyond 5' from the tap or curb stop, the Contractor shall loop only that portion of service within the excavation and 2 joints will be allowed. All joints shall be located at or near the edges of the excavation and in no case shall the joints be positioned beneath other pipes or structures. Unless specifically approved by LWS due to conflicts with driveway pavement, sidewalk pavement, landscaping or trees, replacement taps will have no joints in the supply pipe if the excavation is located within 5 ft. of the curb stop.

When a service constructed of lead, galvanized steel, pitted copper, or other material considered unacceptable according to Title 17 of the Lincoln Municipal Code requires looping or reconstruction, the entire service from tap to curb stop shall be replaced.

## 23.11 WATER SERVICE CONSTRUCTION OR RECONSTRUCTION (Continued)

A. GENERAL (Continued)

When a water service which does not conflict with the Work is damaged by the Contractor, it must be repaired or replaced at the expense of the Contractor to the City's Project Manager's satisfaction. Copper service pipe in good condition may be repaired, all other unacceptable service materials shall be replaced from tap to curb stop, except for water services that contain or may have previously contained lead materials or lead contaminated materials, which require full replacement from tap to meter.

When a service is replaced to the corporation tap, a new tap may be required. No tap shall be allowed to remain which is smaller than 3/4".

New curb stops and boxes may be required when the service is reconstructed to the curb stop. Such curb stop may be ordered to be replaced if inoperable or obsolete. All curb stops and boxes shall be supplied by the Lincoln Water System at no cost to the Contractor.

All corporation taps, labor and equipment required to replace taps will be supplied by the Lincoln Water System to the Contractor at no cost. The Contractor shall be responsible for all excavation, boring, backfilling, installation of curb stops and boxes, sod, pavement, and other incidentals necessary to complete the looping or reconstruction.

All water services crossing or paralleling a new main shall be transferred to the new main if the main is 16" or smaller.

Any tap removed from service shall be immediately abandoned at the main by the Lincoln Water System at no cost to the Contractor, unless the main is to be abandoned as part of the Work of the contract. The Contractor shall be responsible for excavation, backfill, sod, pavement and other incidentals necessary to complete the abandonment.

Whenever a water service is reconstructed that provides fire protection (fire service), the Contractor shall obtain the necessary Underground Fire Sprinkler Permit through the City's Building and Safety Department, Bureau of Fire Prevention. The Contractor shall comply with the requirements of the permit and anticipate and arrange any necessary inspections of the fire service reconstruction.

# CHAPTER 32

# EROSION AND SEDIMENT CONTROL

## 32.00 GENERAL

This Work shall consist of constructing, maintaining, and removing erosion control measures that are used to minimize erosion and sedimentation during construction. This Work shall be performed at locations shown on the plans or as directed by the City's Project Manager.

## 32.01 EROSION AND SEDIMENT CONTROL PERMITS

### A. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

#### 1. GENERAL

- The Contractor shall understand the terms and conditions of the general National Pollutant Discharge Elimination System (NPDES) permit that authorizes the stormwater discharges associated with the industrial activity from the construction site. For reference the general permit is posted on the City's web site, www.lincoln.ne.gov; keyword: NPDES.
- Additionally, the Contractor, as evidenced by their signature on this proposal, agree and understand that they assume the role as Certifying Official, and, if awarded the contract on this project, he/she:
- Shall obtain authorization from an approved Construction Stormwater (CSW) permit from the Nebraska Department of Environment and Energy (NDEE) for any project that disturbs one or more acres of land. The CSW permit will need to be obtained from NDEE via the online Stormwater Portal prior to commencement of construction operations. For more details on how to obtain the CSW permit go to: https://www.lincoln.ne.gov/files/sharedassets/public/ltu/utilities/watershed-management/requirements-and-procedures/noi-guide.pdf; and
- Shall submit the CSW permit application to NDEE providing the contractor's company name and contact information and designate them as the Certifying Official. The contractor will receive a DocuSign email from the State's system requesting an electronic signature for the permit. The contractor will need to create an account if they do not already have one on the NDEE Construction Stormwater portal; and
- is legally bound to comply with the Clean Water Act to ensure compliance with the terms and conditions of the stormwater pollution prevention plan as developed under the NPDES permit and the terms of the NPDES permit; and
- will hold owners harmless for damages and fines arising as a result of noncompliance with the terms of the stormwater permits and authorizations associated with the work on this project; and
- shall be responsible for any fees and/or fines related to any NPDES violations associated with the work on this project; and
- shall be responsible for the maintenance of the sediment control measures until permanent stabilization and cover crop is established; and

A. NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) PERMIT

1. GENERAL (Continued)

- shall be required to conduct erosion and sediment control inspections for the life the of the project and submit to the NDEE Stormwater Portal once every 14 calendar days or after a rain event of one-half inch (0.5") or greater in a 24-hour period. Any necessary repairs or cleanup to maintain the effectiveness of the best management practices shall be made by the contractor immediately. Before the contractor receives final payment, the contractor shall be required to notify the City stating all erosion and sediment control CSW Permit requirements have been met.

- shall complete permanent or temporary stabilization within 7 calendar days of soil disturbance to the surface of all perimeter controls, topsoil stockpiles, and any other disturbed or graded areas on the project site which are not being used for material storage, or on which actual earth moving activities are not being performed; and

- shall update the approved Stormwater Pollution Prevention Plan (SWPPP), which is a component of the CSW permit, immediately following any changes or additions to the plan. Copies of all inspection forms and modifications to the SWPPP plan should be made available online at https://ecmp.nebraska.gov/DEQ-CSW/Account/Login?ReturnUrl=%2fDEQ-CSW within 48 hours of inspection.

- shall complete a Notice of Termination (NOT) via the Stormwater Portal upon completion of all construction activities and final site stabilization requirements. Final stabilization shall be defined as 70% native background perennial vegetation on the entire project and all temporary sediment and erosion control Best Management Practices (BMP's) have been removed. Only after LTU Construction Management has received an approved NOT for the project will the contractor be able to receive their final payment.

2. BASIS OF PAYMENT

Payment for obtaining an authorized CSW permit, updating the approved SWPPP, performing the required inspections, maintaining the appropriate documentation, and closing out the permit property through a NOT shall be paid for at the contract unit price bid per lump sum (LS), per occurrence for CSW PERMIT AUTHORIZATION. This price shall be full compensation for any and all labor, tools, equipment, inspections, documentation, and incidentals necessary to obtain the authorization and to properly close out the permit.

Payment for maintenance of the sediment and erosion control devices will be as given below in the individual sections.

**CITY OF LINCOLN, NEBRASKA, STANDARD SPECIFICATIONS**

**APPENDIX A**

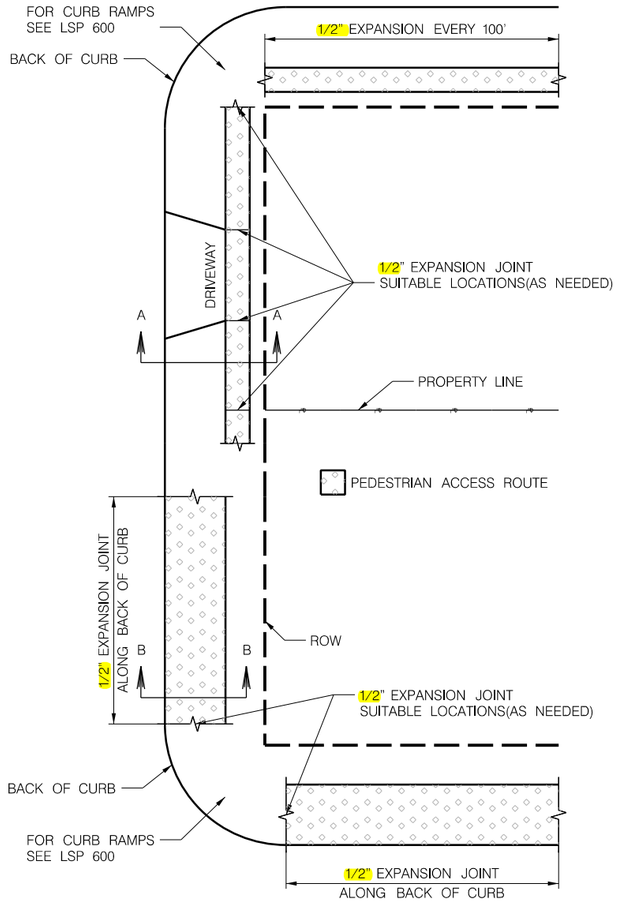
**PAY ITEM LIST**

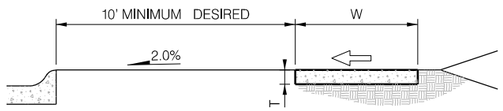
| Standard Item No. | Standard Item Description | Section | Unit |
|---|---|---|---|
| 01.00001 | Mobilization | GENERAL | LS |
| 01.01001 | Const Staking | GENERAL | LS |
| 01.02001 | Survey Monument and Box | GENERAL | EA |
| 01.03001 | Property Pin Establishment | GENERAL | EA |
| 01.04001 | Pavt & Sidewalk Rem | GENERAL | CY |
| 01.05001 | Sawing, Type “A” | GENERAL | LF |
| 01.06001 | Sawing, Type “B” | GENERAL | LF |
| 01.07001 | Sawing, Type “C” | GENERAL | LF |
| 01.08001 | Sawing, Type “D” | GENERAL | LF |
| 01.09001 | Wheel Sawing | GENERAL | LF |
| 01.11001 | Adj MH to Grade | GENERAL | EA |
| 01.12001 | Adj Inlet to Grade | GENERAL | EA |
| 01.12002 | Adj Grate Inlet to Grade | GENERAL | EA |
| 01.13001 | Adj Water Valve Box to Grade | GENERAL | EA |
| 01.13002 | Adj Water Stop Box to Grade | GENERAL | EA |
| 01.17000 | Contractor Quality Control Program (CQCP) | GENERAL | LS |
| 02.01001 | Gen Clearing & Grubbing | EARTHWORK | LS |
| 02.02012 | Tree Rem (12" to 23") | EARTHWORK | EA |
| 02.02024 | Tree Rem (24" to 35") | EARTHWORK | EA |
| 02.02036 | Tree Rem (36" & Over) | EARTHWORK | EA |
| 02.02112 | Stump Rem (12" to 23") | EARTHWORK | EA |
| 02.02124 | Stump Rem (24" to 35") | EARTHWORK | EA |
| 02.02136 | Stump Rem (36" & Over) | EARTHWORK | EA |
| 02.03001 | Transplant Tree (Saplings to 6") | EARTHWORK | EA |
| 02.04001 | Rem & Reset Fence | EARTHWORK | LF |
| 02.05001 | Excavation | EARTHWORK | CY |
| 02.05002 | Over-Excavation | EARTHWORK | CY |
| 02.05003 | Excavation - Borrow | EARTHWORK | CY |
| 02.06001 | Excavation - Disposal | EARTHWORK | CY |
| 02.08001 | Earthwork Measured in Embankment | EARTHWORK | CY |
| 02.09001 | Parking Space Finish | EARTHWORK | SY |
| 02.10001 | Subgrade Stabilization | EARTHWORK | SY |
| 03.06001 | Flowable Fill | PAVING | CY |
| 04.09006 | PCC Pavt, 6" | PAVING | SY |
| 04.09007 | PCC Pavt, 7" | PAVING | SY |
| 04.09008 | PCC Pavt, 8" | PAVING | SY |
| 04.09009 | PCC Pavt, 9" | PAVING | SY |
| 04.09010 | PCC Pavt, 10" | PAVING | SY |
| 04.09106 | PCC Pavt w/Int Curb, 6" | PAVING | SY |
| 04.09107 | PCC Pavt w/Int Curb, 7" | PAVING | SY |

| Standard Item No. | Standard Item Description | Section | Unit |
|---|---|---|---|
| 04.09108 | PCC Pavt w/Int Curb, 8" | PAVING | SY |
| 04.09109 | PCC Pavt w/ Int Curb, 9" | PAVING | SY |
| 04.09110 | PCC Pavt w/Int Curb, 10" | PAVING | SY |
| 04.09158 | DPCC Pavt, 8" | PAVING | SY |
| 04.09159 | DPCC Pavt, 9" | PAVING | SY |
| 04.09160 | DPCC Pavt, 10" | PAVING | SY |
| 04.09178 | DPCC Pavt w/Int Curb, 8" | PAVING | SY |
| 04.09179 | DPCC Pavt w/Int Curb, 9" | PAVING | SY |
| 04.09180 | DPCC Pavt w/Int Curb, 10" | PAVING | SY |
| 04.09206 | RPCC Pavt, 6" | PAVING | SY |
| 04.09207 | RPCC Pavt, 7" | PAVING | SY |
| 04.09208 | RPCC Pavt, 8" | PAVING | SY |
| 04.09209 | RPCC Pavt, 9" | PAVING | SY |
| 04.09210 | RPCC Pavt, 10" | PAVING | SY |
| 04.09304 | Conc Sidewalk, 4" | PAVING | SF |
| 04.09305 | Conc Sidewalk, 5" | PAVING | SF |
| 04.09306 | Conc Sidewalk, 6" | PAVING | SF |
| 04.09307 | Conc Sidewalk, 7" | PAVING | SF |
| 04.09308 | Conc Sidewalk, 8" | PAVING | SF |
| 04.09309 | Conc Sidewalk, 9" | PAVING | SF |
| 04.09310 | Conc Sidewalk, 10" | PAVING | SF |
| 04.09405 | Conc Driveway, 5" | PAVING | SF |
| 04.09406 | Conc Driveway, 6" | PAVING | SF |
| 04.09505 | Conc Bikeway, 5" | PAVING | SF |
| 04.09506 | Conc Bikeway, 6" | PAVING | SF |
| 04.09507 | Conc Bikeway, 7" | PAVING | SF |
| 04.09508 | Conc Bikeway, 8" | PAVING | SF |
| 04.09509 | Conc Bikeway, 9" | PAVING | SF |
| 04.09510 | Conc Bikeway, 10" | PAVING | SF |
| 04.09601 | Combined Curb & Gutter | PAVING | LF |
| 04.09602 | Conc Barrier Curb (9" X 20") | PAVING | LF |
| 04.09604 | Conc Median Curb | PAVING | LF |
| 04.09700 | Remove Conc Header | PAVING | LF |
| 04.09701 | Install Conc Header | PAVING | LF |
| 04.09800 | Conc Median Nose | PAVING | EA |
| 04.09804 | Conc Median Surfacing, 4" | PAVING | SF |
| 04.09806 | Tack-on Conc Median, 6" | PAVING | SF |
| 04.10006 | PCC Alley Pavt, 6" | PAVING | SY |
| 04.10007 | PCC Alley Pavt, 7" | PAVING | SY |
| 04.10008 | PCC Alley Pavt, 8" | PAVING | SY |
| 04.11001 | Detectable Warning Panels | PAVING | SF |
| 04.12001 | Conc Pavt Repair, Ty A, Partial Depth, FPMC | PAVING | CY |
| 04.12002 | Conc Pavt Repair, Ty B, Partial Depth, FPMC | PAVING | CY |
| 04.12301 | Conc Pavt Repair, Ty A, Partial Depth Asphalt, Ty 3 | PAVING | CY |
| 04.12350 | Conc Pavt Joint Repair, L3500, PCC | PAVING | CY |
| 04.12351 | Conc Pavt Repair, Ty A, Full Depth, L3500, PCC | PAVING | CY |

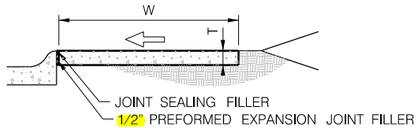
| Standard Item No. | Standard Item Description | Section | Unit |
|---|---|---|---|
| 30.07008 | Seeding, Ty “H” | SEEDING & SODDING | AC |
| 30.07009 | Seeding, Ty “I” | SEEDING & SODDING | AC |
| 30.07010 | Seeding, Ty “J” | SEEDING & SODDING | AC |
| 30.08001 | Sodding | SEEDING & SODDING | SF |
| 30.09001 | Plugging | SEEDING & SODDING | SF |
| 31.03001 | Select Topsoil | LANDSCAPE | CY |
| 32.01001 | CSW Permit Authorization | EROSION & SEDIMENT CTRL | LS |
| 32.02001 | Synthetic Fabric Silt Fence Inst | EROSION & SEDIMENT CTRL | LF |
| 32.02002 | Synthetic Fabric Silt Fence Maint | EROSION & SEDIMENT CTRL | LF |
| 32.02003 | Synthetic Fabric Silt Fence Rem | EROSION & SEDIMENT CTRL | LF |
| 32.03001 | Construction Entrance Surfacing | EROSION & SEDIMENT CTRL | TON |
| 32.04001 | Curb Inlet Protection Inst | EROSION & SEDIMENT CTRL | EA |
| 32.04002 | Curb Inlet Protection Maint | EROSION & SEDIMENT CTRL | EA |
| 32.04003 | Curb Inlet Protection Rem | EROSION & SEDIMENT CTRL | EA |
| 32.05001 | ECB, Type I | EROSION & SEDIMENT CTRL | SY |
| 32.05002 | ECB, Type II | EROSION & SEDIMENT CTRL | SY |
| 32.05101 | BD ECB, Type I | EROSION & SEDIMENT CTRL | SY |
| 32.05102 | BD ECB, Type II | EROSION & SEDIMENT CTRL | SY |
| 32.06001 | TRM, Type I | EROSION & SEDIMENT CTRL | SY |
| 32.06002 | TRM, Type II | EROSION & SEDIMENT CTRL | SY |
| 32.07001 | Triangular Sediment Barrier Inst | EROSION & SEDIMENT CTRL | LF |
| 32.07002 | Triangular Sediment Barrier Maint | EROSION & SEDIMENT CTRL | LF |
| 32.07003 | Triangular Sediment Barrier Rem | EROSION & SEDIMENT CTRL | LF |
| 32.07004 | Permeable A-Shaped Sediment Barrier Inst | EROSION & SEDIMENT CTRL | LF |
| 32.07005 | Permeable A-Shaped Sediment Barrier Maint | EROSION & SEDIMENT CTRL | LF |
| 32.07006 | Permeable A-Shaped Sediment Barrier Rem | EROSION & SEDIMENT CTRL | LF |
| 32.07007 | Temporary Earth/Soil Berm Inst | EROSION & SEDIMENT CTRL | LF |
| 32.07008 | Temporary Earth/Soil Berm Maint | EROSION & SEDIMENT CTRL | LF |
| 32.07009 | Temporary Earth/Soil Berm Rem | EROSION & SEDIMENT CTRL | LF |
| 32.07010 | Earth-Slash Mulch Check Inst | EROSION & SEDIMENT CTRL | LF |
| 32.07011 | Earth-Slash Mulch Check Maint | EROSION & SEDIMENT CTRL | LF |
| 32.07012 | Earth-Slash Mulch Check Rem | EROSION & SEDIMENT CTRL | LF |
| 32.08001 | Rock Ditch Check Inst | EROSION & SEDIMENT CTRL | LF |
| 32.08002 | Rock Ditch Check Maint | EROSION & SEDIMENT CTRL | LF |
| 32.08003 | Rock Ditch Check Rem | EROSION & SEDIMENT CTRL | LF |
| 32.09001 | Compost Filter Sock Inst | EROSION & SEDIMENT CTRL | LF |
| 32.09002 | Compost Filter Sock Maint | EROSION & SEDIMENT CTRL | LF |
| 32.09003 | Compost Filter Sock Rem | EROSION & SEDIMENT CTRL | LF |
| 32.10001 | Biodegradable Log Ditch Check Inst | EROSION & SEDIMENT CTRL | LF |
| 32.10002 | Biodegradable Log Ditch Check Maint | EROSION & SEDIMENT CTRL | LF |
| 32.10003 | Biodegradable Log Ditch Check Rem | EROSION & SEDIMENT CTRL | LF |
| 32.12001 | Coir Fiber Log | EROSION & SEDIMENT CTRL | LF |
| 32.12002 | Coir Fiber Log Maint | EROSION & SEDIMENT CTRL | LF |
| 32.13001 | SWPPP Sign Inst | EROSION & SEDIMENT CTRL | LF |
| 32.13002 | SWPPP Sign Maint | EROSION & SEDIMENT CTRL | LF |
| 32.13003 | SWPPP Sign Rem | EROSION & SEDIMENT CTRL | LF |

| LTU | PLAN NO. | SHEET NO. |
|---|---|---|
| | 605 | 1 |
| Date: 1/2/2021 | Drawn: TLB | |
| Horz. Scale: N.T.S. | Checked: | |
| | Approved: | |

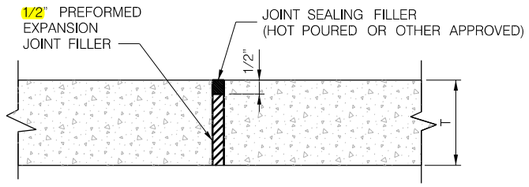



**TYPICAL SECTION A-A**



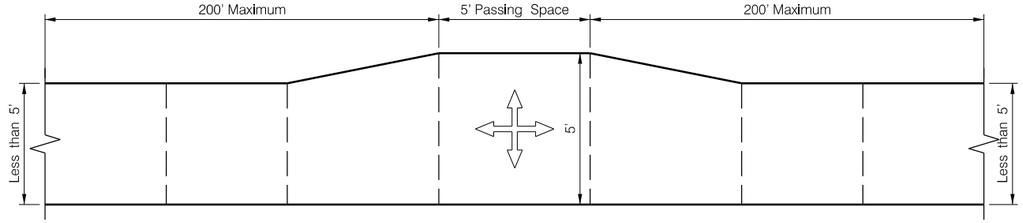

**TYPICAL SECTION B-B**




**EXPANSION JOINT DETAIL**

EXPANSION JOINTS SHALL BE PLACED AT 100' INTERVALS OR AT COLD JOINT(S) AS APPROVED BY THE PROJECT MANAGER.

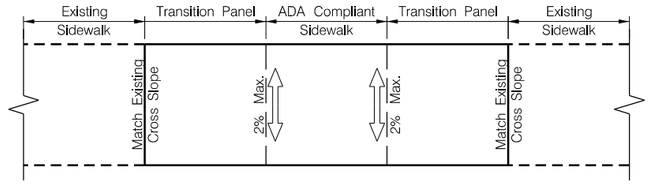
A LONGITUDINAL EXPANSION JOINT SHALL BE PLACED AT THE BACK OF CURB WHEN THE ROUTE ABUTS THE CURB EXCEPT FOR WHERE A CURB RAMP IS TIED TO THE CURB WITH REBAR(PER LSP600).




**PASSING SPACE DETAIL**

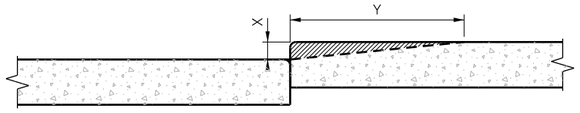
WHERE THE CLEAR WIDTH OF THE PEDESTRIAN ACCESS ROUTE IS LESS THAN 5', A PASSING SPACE MEASURING 5'x5' MINIMUM SHALL BE PROVIDED EVERY 200'.

CURB RAMP TURNING SPACES, DRIVEWAYS, APPROACHES, OR ANY PART OF THE PEDESTRIAN ACCESS ROUTE MAY BE USED AS THE PASSING SPACE IF IT MEETS THE DIMENSIONING AND SLOPE REQUIREMENTS.




**SIDEWALK REPAIR TRANSITION**

FOR SIDEWALK REPAIRS REQUIRING REPLACEMENT OF 3 OR MORE SIDEWALK PANELS, A TRANSITION PANEL SHALL BE INSTALLED ON EACH END OF THE REPAIR TO ACCOUNT FOR VARIATIONS IN CROSS SLOPE OF THE EXISTING SIDEWALK NOT TO BE REPAIRED.




**SAWING/GRINDING SIDEWALK DETAIL**

SIDEWALK TRIP HAZARDS THAT MEASURE LESS THAN 2" VERTICALLY MAY BE REMOVED BY SAWING/GRINDING IF APPROVED BY THE PROJECT MANAGER.

FOR EVERY 1/2" OF VERTICAL SEPARATION, THE REMOVAL AREA SHALL MEASURE A MINIMUM OF 5" HORIZONTALLY. SEE TABLE.

THE FINISHED SURFACE OF THE REPAIR AREA SHALL BE A FLAT, SMOOTH SURFACE.

| X | Y |
|---|---|
| 0.5" | 5" |
| 1" | 10" |
| 1.5" | 15" |
| 2" | 20" |

NOTES:

PEDESTRIAN ACCESS ROUTE SLOPE REQUIREMENTS:

NEW CONSTRUCTION: CROSS SLOPE SHALL BE 2% OR LESS SLOPING TOWARDS THE STREET UNLESS OTHERWISE NOTED. ANY PORTION THAT EXCEEDS 2% CROSS SLOPE WHEN CONSTRUCTED SHALL BE REMOVED AND RECONSTRUCTED AT NO COST TO THE CITY OF LINCOLN.

RETROFIT/REPAIR CONSTRUCTION: CROSS SLOPE SHALL BE RECONSTRUCTED TO HAVE A 2% MAXIMUM CROSS SLOPE IF THE EXISTING CONDITIONS ALLOW. SEE TRANSITION PANEL DETAIL FOR LOCATIONS WHEN MATCHING EXISTING SIDEWALK.

PEDESTRIAN ACCESS ROUTE DESIGN:

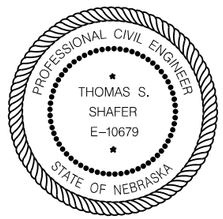
SEE TABLE FOR TYPICAL PEDESTRIAN ACCESS ROUTE CONCRETE THICKNESS AND WIDTH

| TYPE OF PEDESTRIAN ACCESS ROUTE | MINIMUM THICKNESS (T) | TYPICAL WIDTH (W) |
|---|---|---|
| EXISTING SIDEWALK | 4" | VARIES |
| NEW CONSTRUCTION | 4" | 4' |
| RESIDENTIAL DRIVEWAY | 5" | 4' |
| COMMERCIAL DRIVEWAY | 6" | 4' |
| BIKE TRAIL | 5" | 10' |

| | |
|---|---|
| ⇦ | 1.5% DESIRABLE MAXIMUM (2.0% ABSOLUTE MAXIMUM) SLOPE |
| ⬅ | 7.3% DESIRABLE MAXIMUM (8.3% ABSOLUTE MAXIMUM) SLOPE |
| ⇦ | 9.0% DESIRABLE MAXIMUM (10.0% ABSOLUTE MAXIMUM) SLOPE |

SLOPES MAY BE LESS THAN THE DESIRABLE MAXIMUM, BUT SHALL NOT EXCEED THE ABSOLUTE MAXIMUM. THE CONTRACTOR SHOULD ACCOUNT FOR CONSTRUCTION TOLERANCES TO PREVENT EXCEEDING THE MAXIMUM SLOPES. ANY SLOPES EXCEEDING THE ABSOLUTE MAXIMUMS SHALL NOT BE ACCEPTED WITHOUT PRIOR APPROVAL FROM THE PROJECT MANAGER. JUSTIFICATION FOR INABILITY TO MEET SLOPE REQUIREMENTS SHALL BE DETERMINED BY REFERENCING PROWAG R202.3.1

**SLOPE LEGEND**



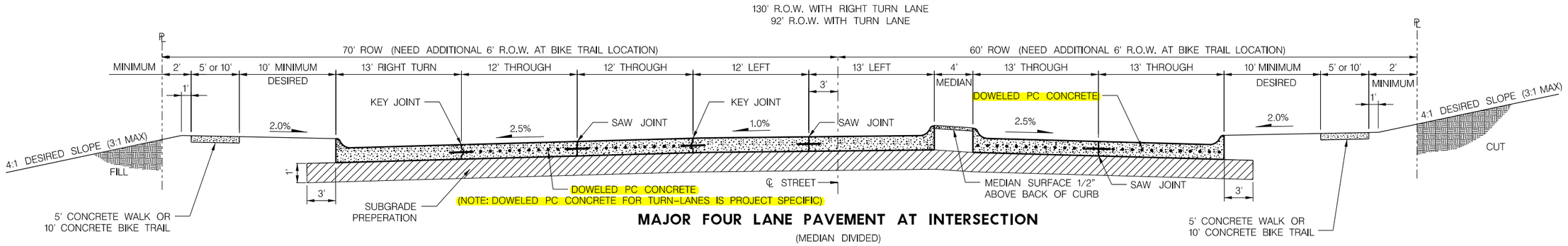

**PEDESTRIAN ACCESS ROUTE**

LSP 605

PROJ: ...cfg
PEN: ...\tables\pen\BW_PENTABLE.tbl
USER: slc/rd
DATE: 2/11/2021
DGN: ...\2021 DGN Files\LSP_640ld2.dgn

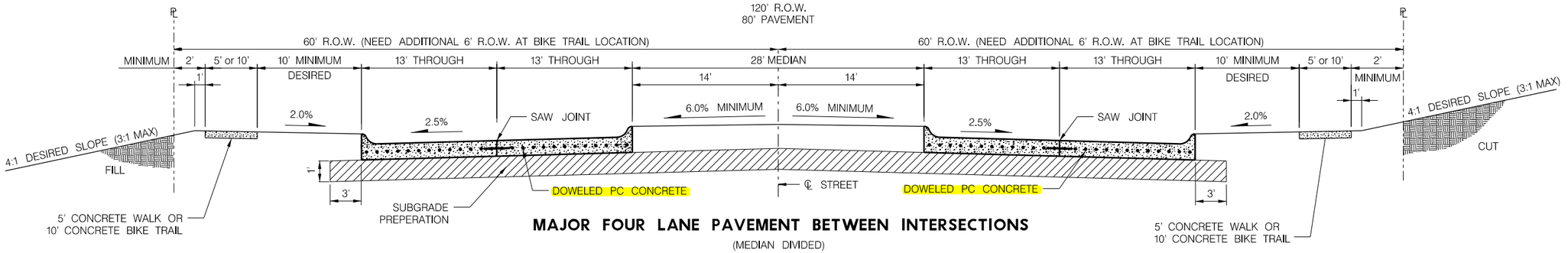
LTU

| PLAN NO. | SHEET NO. |
|---|---|
| 640 | 2 |
| Date: 1/2/2021 | Drawn: CAW |
| Horz. Scale: N.T.S. | Checked: |
| | Approved: |



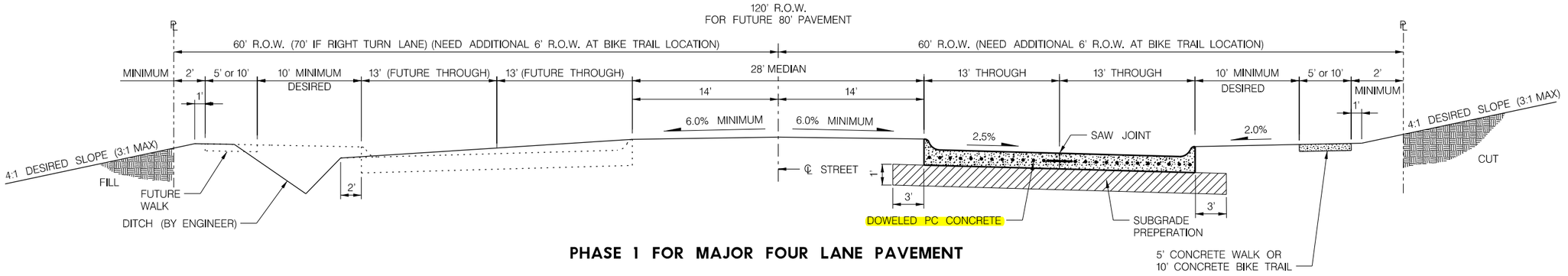

## MAJOR FOUR LANE PAVEMENT AT INTERSECTION

(MEDIAN DIVIDED)

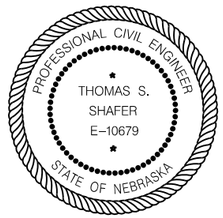



## MAJOR FOUR LANE PAVEMENT BETWEEN INTERSECTIONS

(MEDIAN DIVIDED)




## PHASE 1 FOR MAJOR FOUR LANE PAVEMENT



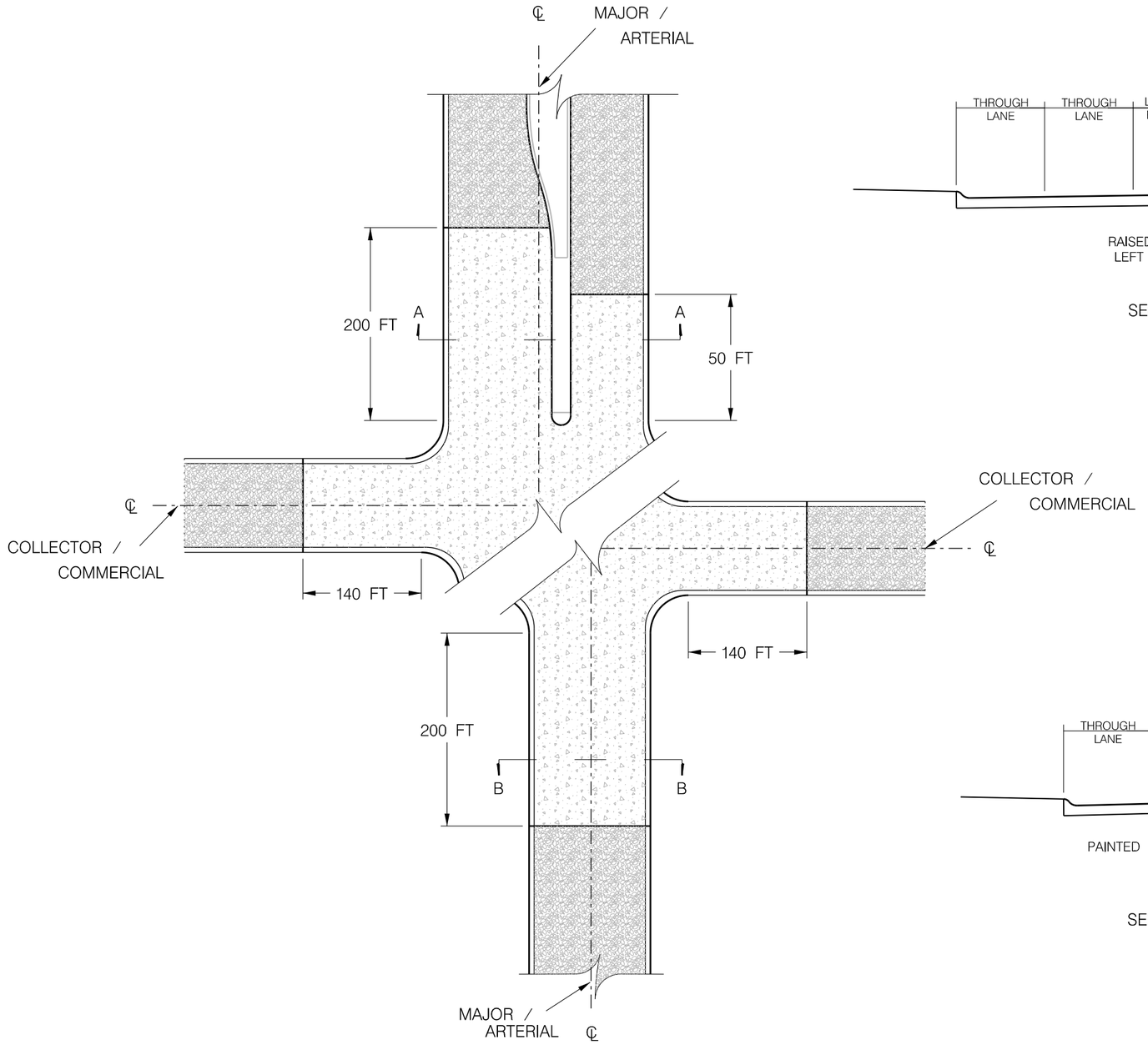

## PAVEMENT SECTIONS

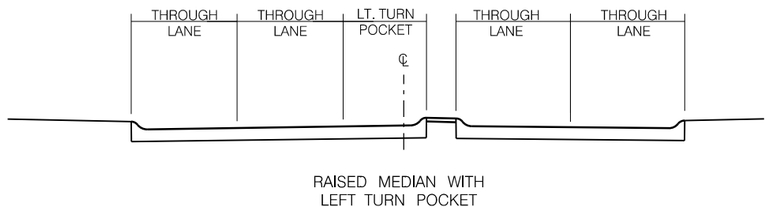
LSP 640

PROJ: ..cfg
PEN: ...\tables\pen\BW_PENTABLE.tbl
USER: slc/rd
DATE: 2/11/2021
DGN: ...\2021 DGN Files\LSP_641.dgn

LTU

| PLAN NO. | SHEET NO. |
|---|---|
| 641 | 1 |
| Date: 1/2/2021 | Drawn: BPP |
| Horz. Scale: N.T.S. | Checked: |
| | Approved: |



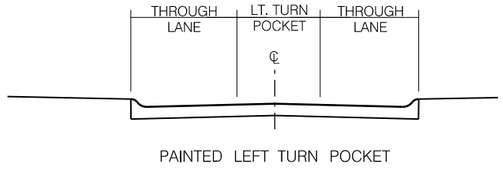

RAISED MEDIAN WITH LEFT TURN POCKET

SECTION A–A

LEGEND

– P.C. CONCRETE PAVEMENT

– ASPHALTIC PAVEMENT

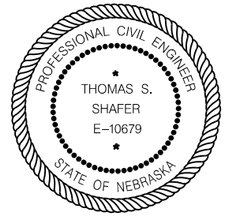



PAINTED LEFT TURN POCKET

SECTION B–B

# INTERSECTION OF COLLECTOR/COMMERCIAL WITH MAJOR/ARTERIAL

** ALL DIMENSIONS ARE FROM END OF RADIUS

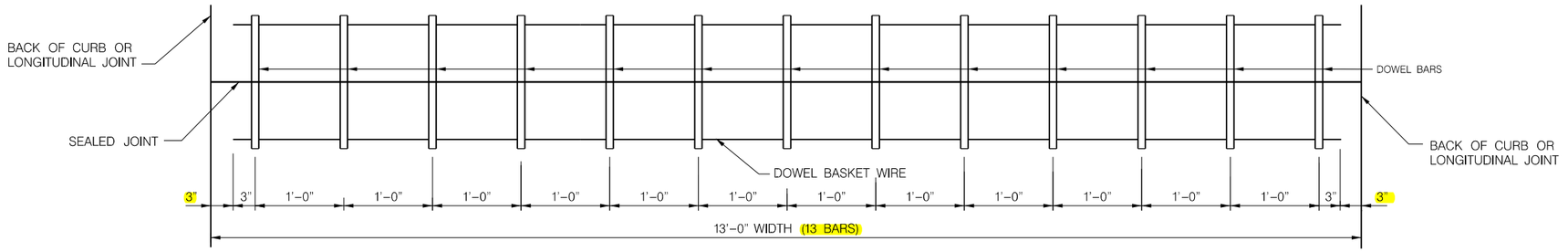



**P.C. CONCRETE INTERSECTION**

LSP 641

PROJ: ..cfg
PEN: ...\tables\pen\BW_PENTABLE.tbl
USER: slojrd
DATE: 2/11/2021
DGN: ...\2021 DGN Files\LSP_660x2.dgn

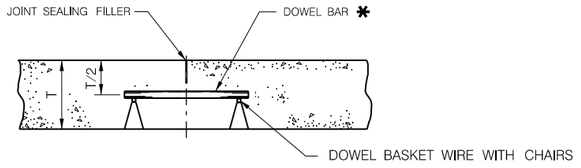
LTU
PLAN NO. 660 | SHEET NO. 2
Date: 1/2/2021 | Drawn: CAW
Horz. Scale: N.T.S. | Checked:
Approved:




## ASSEMBLY PLAN

* 

| DOWEL BAR HEIGHT AND DIAMETER | | | |
|---|---|---|---|
| PAVEMENT THICKNESS (T) | MINIMUM BAR DIA. | DOWEL BAR HEIGHT (T/2) | SKEW TOLERANCE |
| LESS THAN 10" | 1¼" | T/2 ± ½" | 1/4" |
| 10" OR MORE | 1½" | T/2 ± ½" | 1/4" |




## CONTRACTION JOINT
## DOWELED PORTLAND CEMENT CONCRETE (DPCC) PAVEMENT

NOTE:

THE CONTRACTOR MAY SUBSTITUTE OTHER DESIGNS FOR EXPANSION AND CONTRACTION JOINT SUPPORTS IN LIEU OF THE TYPE SHOWN WITH PRIOR WRITTEN APPROVAL BY THE ENGINEER.

DOWEL BARS SHALL BE SUFFICIENTLY ANCHORED TO ENSURE THAT THE DOWELS MAINTAIN THEIR POSITION AND ELEVATION THROUGH THE PAVING PROCESS.

DOWEL BARS SHALL BE EPOXY COATED AND A MINIMUM OF 18" IN LENGTH.

TIE BARS SHALL BE DEFORMED BARS AND ALL OTHERS SHALL BE SMOOTH.

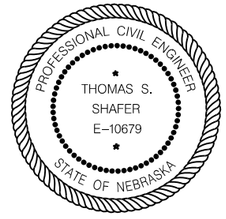
FOR LOAD TRANSFER DEVICES IN LANES OTHER THAN THE 13' LANES SHOWN, MAINTAIN THE SPACING OF THE 18" DOWEL BARS AT 1' INTERVALS.

THE ENDS OF THE DOWEL BASKET WIRE SHALL NOT BE LESS THAN 3" FROM THE EDGES OF THE PAVEMENT OR THE LONGITUDINAL JOINT.

KEY TYPE LONGITUDINAL JOINTS AND TRANSVERSE CONSTRUCTION JOINTS SHALL BE EDGED WITH 1/4" RADIUS AT TIME OF CONCRETE PLACEMENT.

EXPANSION JOINTS SHALL NOT BE SKEWED.

T = PAVEMENT THICKNESS




## CONCRETE PAVEMENT JOINT DETAILS

LSP 660