BID PROPOSAL INSTRUCTIONS

ABOUT IDOT PROPOSALS: All proposals are potential bidding proposals. Each proposal contains all certifications and affidavits, a proposal signature sheet and a proposal bid bond.

PREQUALIFICATION

Any contractor who desires to become pre-qualified to bid on work advertised by IDOT must submit the properly completed pre-qualification forms to the Bureau of Construction no later than 4:30 p.m. prevailing time twenty-one days prior to the letting of interest. This pre-qualification requirement applies to first time contractors, contractors renewing expired ratings, contractors maintaining continuous pre-qualification or contractors requesting revised ratings. To be eligible to bid, existing pre-qualification ratings must be effective through the date of letting.

WHO CAN BID?

Bids will be accepted from only those companies that request and receive written Authorization to Bid from IDOT's Central Bureau of Construction.

REQUESTS FOR AUTHORIZATION TO BID

Contractors wanting to bid on items included in a particular letting must submit the properly completed "Request for Authorization to Bid/or Not For Bid Status" (BDE 124) and the ORIGINAL "Affidavit of Availability" (BC 57) to the proper office no later than 4:30 p.m. prevailing time, three (3) days prior to the letting date.

WHAT CONSTITUTES WRITTEN AUTHORIZATION TO BID?

When a prospective prime bidder submits a "Request for Authorization to Bid/or Not For Bid Status" (BDE 124) he/she must indicate at that time which items are being requested For Bidding purposes. Only those items requested For Bidding will be analyzed. After the request has been analyzed, the bidder will be issued an **Authorization to Bid or Not for Bid Report**, approved by the Central Bureau of Construction and the Chief Procurement Officer that indicates which items have been approved For Bidding. If **Authorization to Bid** cannot be approved, the **Authorization to Bid or Not for Bid Report** will indicate the reason for denial.

ABOUT AUTHORIZATION TO BID

Firms that have not received an Authorization to Bid or Not For Bid Report within a reasonable time of complete and correct original document submittal should contact the Department as to the status. Firms unsure as to authorization status should call the Prequalification Section of the Bureau of Construction at the number listed at the end of these instructions.

ADDENDA AND REVISIONS

It is the bidder's responsibility to determine which, if any, addenda or revisions pertain to any project they may be bidding. Failure to incorporate all relevant addenda or revisions may cause the bid to be declared unacceptable.

Each addendum or revision will be included with the Electronic Plans and Proposals. Addenda and revisions will also be placed on the Addendum/Revision Checklist and each subscription service subscriber will be notified by e-mail of each addendum and revision issued.

The Internet is the Department's primary way of doing business. The subscription service emails are an added courtesy the Department provides. It is suggested that bidders check IDOT's website at http://www.idot.illinois.gov/doing-business/procurements/construction-services/construction-bulletins/transportation-bulletin/index#TransportationBulletin before submitting final bid information.

IDOT IS NOT RESPONSIBLE FOR ANY E-MAIL FAILURES.

Addenda questions may be directed to the Contracts Office at (217)782-7806 or DOT.D&Econtracts@illlinois.gov

Technical questions about downloading these files may be directed to Tim Garman at (217)524-1642 or Timothy.Garman@illinois.gov.

STANDARD GUIDELINES FOR SUBMITTING BIDS

- All pages should be single sided.
- Use the Cover Page that is provided in the Bid Proposal (posted on the IDOT Web Site) as the first page of your submitted bid. It has the item number in large bold type in the upper left-hand corner and lines provided for your company name and address in the upper right-hand corner.
- Do not use report covers, presentation folders or special bindings and do not staple multiple times on left side like a book. Use only 1 staple in the upper left hand corner. Make sure all elements of your bid are stapled together including the bid bond or guaranty check (if required).
- Do not include any certificates of eligibility, your authorization to bid, Addendum Letters or affidavit of availability.
- Do not include the Subcontractor Documentation with your bid (pages i iii and pages a g). This documentation is required only if you are awarded the project.
- Use the envelope cover sheet (provided with the proposal) as the cover for the proposal envelope.
- Do not rely on overnight services to deliver your proposal prior to 10 AM on letting day. It will not be read if it is delivered after 10 AM.
- Do not submit your Substance Abuse Prevention Program (SAPP) with your bid. If you are awarded the contract this form is to be submitted to the district engineer at the pre-construction conference.

BID SUBMITTAL CHECKLIST

| Cover page (the sheet that has the item number on it) – This should be the first page of your bid proposal, followed by your bid (the Schedule of Prices/Pay Items). If you are using special software or CBID to generate your schedule of prices, do not include the blank pages of the schedule of prices that came with the proposal package. |
|---|
| ☐ Page 4 (Item 9) — Check "YES" if you will use a subcontractor(s) with an annual value over \$50,000. Include the subcontractor(s) name, address, general type of work to be performed and the dollar amount. If you will use subcontractor(s) but are uncertain who or the dollar amount; check "YES" but leave the lines blank. |
| ☐ After page 4 – Insert the following documents: Cost Adjustments for Steel, Bituminous and Fuel (if applicable) and the Contractor Letter of Assent (if applicable). The general rule should be, if you don't know where it goes, put it after page 4. |
| ☐ Page 10 (Paragraph J) – Check "YES" or "NO" whether your company has any business in Iran. |
| ☐ Page 10 (Paragraph K) – (Not applicable to federally funded projects) List the name of the apprenticeship and training program sponsor holding the certificate of registration from the US Department of Labor. If no applicable program exists, please indicate the work/job category. Do not include certificates with your bid. Keep the certificates in your office in case they are requested by IDOT. |
| ☐ Page 11 (Paragraph L) – A copy of your State Board of Elections certificate of registration is no longer required with your bid. |
| ☐ Page 11 (Paragraph M) – Indicate if your company has hired a lobbyist in connection with the job for which you are submitting the bid proposal. |
| ☐ Page 12 (Paragraph C) – This is a work sheet to determine if a completed Form A is required. It is not part of the form and you do not need to make copies for each completed Form A. |
| □ Pages 14-17 (Form A) – One Form A (4 pages) is required for each applicable person in your company. Copies of the forms can be used and only need to be changed when the information changes. The certification signature and date must be original for each letting. Do not staple the forms together. If you answered "NO" to all of the questions in Paragraph C (page 12), complete the first section (page 14) with your company information and then sign and date the Not Applicable statement on page 17. |
| Page 18 (Form B) - If you check "YES" to having other current or pending contracts it is acceptable to use the phrase, "See Affidavit of Availability on file". Ownership Certification (at the bottom of the page) - Check N/A if the Form A(s) you submitted accounts for 100 percent of the company ownership. Check YES if any percentage of ownership falls outside of the parameters that require reporting on the Form A. Checking NO indicates that the Form A(s) you submitted is not correct and you will be required to submit a revised Form A. |
| ☐ Page 20 (Workforce Projection) – Be sure to include the Duration of the Project. It is acceptable to use the phrase "Per Contract Specifications". |

| ☐ Proposal Bid Bond – (Insert after the proposal signature page) Submit you using the current Proposal Bid Bond form provided in the proposal package. the Proposal Bid Bond. If you are using an electronic bond, include your bid the Proof of Insurance printed from the Surety's Web Site. | The Power of Attorney page should be stapled to |
|---|--|
| ☐ Disadvantaged Business Utilization Plan and/or Good Faith Effort – T Utilization Plan (SBE 2026), followed by the DBE Participation Statement (SB documentation of a Good Faith Effort, it is to follow the SBE Forms. | |
| The Bid Letting is now available in streaming Audio/Video from the IDOT the main page of the current letting on the day of the Letting. The stream will bids does not begin until approximately 10:30 AM. | T Web Site. A link to the stream will be placed on not begin until 10 AM. The actual reading of the |
| Following the Letting, the As-Read Tabulation of Bids will be posted by the en Web page for the current letting. | nd of the day. You will find the link on the main |
| QUESTIONS: pre-letting up to execution of the contract | |
| Contractor pre-qualification | 217-782-3413 |
| Small Business, Disadvantaged Business Enterprise (DBE) | |
| Contracts, Bids, Letting process or Internet downloads | |
| Estimates Unit | |
| Aeronautics | |
| IDNR (Land Reclamation, Water Resources, Natural Resources) | 217-782-6302 |
| QUESTIONS: following contract execution | |
| Subcontractor documentation, payments | 217-782-3413 |
| Railroad Insurance | 217-785-0275 |
| | |

11

| Proposal Submitted By |
|-----------------------|
| Name |
| Address |
| City |

Letting March 6, 2015

NOTICE TO PROSPECTIVE BIDDERS

This proposal can be used for bidding purposes by only those companies that request and receive written AUTHORIZATION TO BID from IDOT's Central Bureau of Construction.

BIDDERS NEED NOT RETURN THE ENTIRE PROPOSAL

Notice to Bidders, Specifications, Proposal, Contract and Contract Bond



Springfield, Illinois 62764

Contract No. 61B01 DUPAGE County Section 12-00048-00-SW (Winfield) Various Routes Project SRTS-4009(129) District 1 Construction Funds

| PLEASE MARK THE APPROPRIATE BOX BELOW: |
|--|
| ☐ A <u>Bid</u> <u>Bond</u> is included. |
| ☐ A <u>Cashier's Check</u> or a <u>Certified Check</u> is included |
| ☐ An Annual Bid Bond is included or is on file with IDOT. |
| |

Prepared by

Checked by

F

(Printed by authority of the State of Illinois)

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PROPOSAL

TO THE DEPARTMENT OF TRANSPORTATION

District 1 Construction Funds

| 1. | Proposal of |
|----|---|
| | Taxpayer Identification Number (Mandatory) |
| | For the improvement identified and advertised for bids in the Invitation for Bids as: Contract No. 61B01 |
| | DUPAGE County Section 12-00048-00-SW (Winfield) Project SRTS-4009(129) Various Routes |

This project consists of the construction of sidewalks, pavement markings for crosswalks and curb and gutter removal and replacement on Park Street from Liberty Street to Washington Avenue; Washington Avenue from Park Street to Winfield Road and Metra Parking Lot from Jewell Road to the Railroad Underpass in the Village of Winfield.

2. The undersigned bidder will furnish all labor, material and equipment to complete the above described project in a good and workmanlike manner as provided in the contract documents provided by the Department of Transportation. This proposal will become part of the contract and the terms and conditions contained in the contract documents will govern performance and payments.

- 3. **ASSURANCE OF EXAMINATION AND INSPECTION/WAIVER.** The undersigned bidder further declares that he/she has carefully examined the proposal, plans, specifications, addenda form of contract and contract bond, and special provisions, and that he/she has inspected in detail the site of the proposed work, and that he/she has familiarized themselves with all of the local conditions affecting the contract and the detailed requirements of construction, and understands that in making this bid proposal he/she waives all right to plead any misunderstanding regarding the same.
- 4. **EXECUTION OF CONTRACT AND CONTRACT BOND.** The undersigned bidder further agrees to execute a contract for this work and present the same to the department within fifteen (15) days after the contract has been mailed to him/her. The undersigned further agrees that he/she and his/her surety will execute and present within fifteen (15) days after the contract has been mailed to him/her contract bond satisfactory to and in the form prescribed by the Department of Transportation, in the penal sum of the full amount of the contract, or as specified in the special provisions, guaranteeing the faithful performance of the work in accordance with the terms of the contract.
- 5. **PROPOSAL GUARANTY.** Accompanying this proposal is either a bid bond on the department form, executed by a corporate surety company satisfactory to the department, or a proposal guaranty check consisting of a bank cashier's check or a properly certified check for not less than 5 per cent of the amount bid or for the amount specified in the following schedule:

| <u>A</u> | mount o | of Bid | Proposal <u>Guaranty</u> | <u>Am</u> | ount c | | roposal luaranty |
|-------------|---------|-------------|-----------------------------|--------------|--------|------------------|---------------------|
| Up to | | \$5,000 | \$150 | \$2,000,000 | to | \$3,000,000\$ | \$100,000 |
| \$5,000 | to | \$10,000 | \$300 | \$3,000,000 | to | \$5,000,000\$ | \$150,000 |
| \$10,000 | to | \$50,000 | \$1,000 | \$5,000,000 | to | \$7,500,000\$ | 250,000 |
| \$50,000 | to | \$100,000 | \$3,000 | \$7,500,000 | to | \$10,000,000\$ | 3400,000 |
| \$100,000 | to | \$150,000 | \$5,000 | \$10,000,000 | to | \$15,000,000\$ | \$500,000 |
| \$150,000 | to | \$250,000 | \$7,500 | \$15,000,000 | to | \$20,000,000\$ | 600,000 |
| \$250,000 | to | \$500,000 | \$12,500 | \$20,000,000 | to | \$25,000,000\$ | \$700,000 |
| \$500,000 | to | \$1,000,000 | \$25,000 | \$25,000,000 | to | \$30,000,000\$ | 000,008 |
| \$1,000,000 | to | \$1,500,000 | \$50,000 | \$30,000,000 | to | \$35,000,000\$ | 3900,000 |
| \$1,500,000 | to | \$2,000,000 | \$75,000 | over | | \$35,000,000 \$1 | ,000,000 |

Bank cashier's checks or properly certified checks accompanying bid proposals will be made payable to the Treasurer, State of Illinois.

If a combination bid is submitted, the proposal guaranties which accompany the individual bid proposals making up the combination will be considered as also covering the combination bid.

| The amount of the proposal guaranty check is | \$(|). If this proposal is accepted |
|---|-----------------------------|--|
| and the undersigned will fail to execute a contract bond as required herein, it is hereby | y agreed that the amount of | the proposal guaranty will become the |
| property of the State of Illinois, and shall be considered as payment of damages due | e to delay and other causes | s suffered by the State because of the |
| failure to execute said contract and contract bond; otherwise, the bid bond will bec | ome void or the proposal | guaranty check will be returned to the |
| undersigned. | | |

| undersigned. | | sine told of the proposal guaranty officer will be foldined to the |
|--|----------------|--|
| Attach Cashier's C | heck or Certif | ied Check Here |
| In the event that one proposal guaranty check is intended to cover two of the proposal guaranties which would be required for each individual proposal, state below where it may be found. | | |
| The proposal guaranty check will be found in the bid proposal for: | Item | |
| | Section No. | |
| | County | |
| | | |

Mark the proposal cover sheet as to the type of proposal guaranty submitted.

| 6. | following combination proportion to the | BIDS. The undersigned bidder further agrees that if awarded the ation, he/she will perform the work in accordance with the requirement bid specified in the schedule below, and that the combination bid bid submitted for the same. If an error is found to exist in the gross in a combination, the combination bid shall be corrected as provide | ents of each individual contract comprisir shall be prorated against each section s sum bid for one or more of the individu |
|-----|--|---|---|
| | | a combination bid is submitted, the schedule below must be coising the combination. | ompleted in each proposal |
| | | nate bids are submitted for one or more of the sections compri nation bid must be submitted for each alternate. | sing the combination, a |
| | | Schedule of Combination Bids | |
| Со | mbination No. | Sections Included in Combination | Combination Bid Dollars Cents |
| | | | |
| | | | |
| | | | |
| | | | |
| 7. | schedule of price all extensions ar schedule are app is an error in the will be made only The scheduled q | PRICES. The undersigned bidder submits herewith, in accordant is for the items of work for which bids are sought. The unit prices and summations have been made. The bidder understands that proximate and are provided for the purpose of obtaining a gross surextension of the unit prices, the unit prices will govern. Payment to actual quantities of work performed and accepted or materials unantities of work to be done and materials to be furnished may be the in the contract. | bid are in U.S. dollars and cents, and the quantities appearing in the bid in for the comparison of bids. If there to the contractor awarded the contract is furnished according to the contract. |
| 8. | 500/20-43) provid | DO BUSINESS IN ILLINOIS. Section 20-43 of the Illinois Produces that a person (other than an individual acting as a sole proprietor or conduct affairs in the State of Illinois prior to submitting the bid. | |
| 9. | Department proc and make payme Purchasing Office Neither the CPO | F CONTRACT: The Department of Transportation will, in accurements, execute the contract and shall be the sole entity having ents under the contract. Execution of the contract by the Chief Proper (SPO) is for approval of the procurement process and execution on the SPO shall be responsible for administration of the coayment there under except as otherwise permitted in the Code. | the authority to accept performance ocurement Officer (CPO) or the State of the contract by the Department. |
| 10. | The services of | a subcontractor will be used. | |
| | Check box Check box | Yes No | |
| | | ubcontractors with subcontracts with an annual value of more than \$ address, general type of work to be performed, and the dollar allocat 0/20-120) | |

ECMS002 DTGECM03 ECMR003 PAGE RUN DATE - 01/16/15 RUN TIME - 220036 ILLINOIS DEPARTMENT OF TRANSPORTATION SCHEDULE OF PRICES CONTRACT NUMBER - 61B01 STATE JOB #- C-91-411-12 PPS NBR -

| S-4009/129/000 ROUTE VARIOUS | UNIT PRICE TOTAL PRICE DOLLARS CTS | - 11 - 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | - II - | | - II - I | | | II III | | - II - I | - No. 10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 | - II - II - II II II II II II II II II I | - II - I | | | |
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| N NUMBER WINFIELD) SRI | UNIT OF QUANTITY | SQ FT 20.000 | Q FT 12 | F00T 20.00 | SQ FT 8.00 | SQ FT 10.0 | F00T 90.0 | SQ FT 240.00 | F00T 20.0 | EACH 3.00 | SQ FT 100.00 | F00T 100.00 | EACH 16.00 | EACH 16.00 | EACH 2.00 | EACH 18.000 |
| NAME CODE DIST SECTION SECTION 12-00048-00-SW (W | PAY ITEM DESCRIPTION | CONCRETE STEPS | BRICK PAVER REMOVAL | FLAGSTONE WALL REM | REM/REP EX STONE WALL | REM & REP EX BL WALL | WOODEN FENCE REMOV | REM & REIN BRIC PAVER | PIPE HANDRAIL SPL TY1 | SANITARY MANHOLE ADJ | SEGMENT CONC BLK WALL | TEMPORARY FENCE | TREE TRUNK PROTECTION | TREE ROOT PRUNING | TREE PRUN 1-10 | TREE PRUN OVER 10 |
| COUNTY | ITEM | X000300 | X001621 | X002030 | X005951 | 5790 | 1266 | 7611 | 0101 | 50 | 3302 | 1000 | 1100 | 1200 | 300 | 20101350 |

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ECMS002 DTGECM03 ECMR003 PAGE RUN DATE - 01/16/15 RUN TIME - 220036 ILLINOIS DEPARTMENT OF TRANSPORTATION SCHEDULE OF PRICES CONTRACT NUMBER. - 61801 VARIOUS 12-00048-00-SW (WINFIELD) DUPAGE

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| QUANTITY | 20.000 X | 20.000 | ,330.0 | 0.00 | 242.00 | 73.000 | 200.000 | 1.000 | 94,000 | 6.00 | 000. | 000. | 1.00 | 00 | 0 |
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| PAY ITEM DESCRIPTION | HMA SC "D" N50 | PCC DRIVEWAY PAVT 6 | PC CONC SIDEWALK 5 | DETECTABLE WARNINGS | DRIVE PAVEMENT REM | COMB CURB GUTTER REM | SIDEWALK REM | PIPE CULVERT REMOV | REINFORCEMENT BARS | EXPAN BOLTS 1/2 | P CUL CL D 1 12 | PRC FLAR END SEC 12 | MET END SEC 12 | STORM SEW CL A 1 12 | PE DRAINS 4 |
| I TEM NUMBER | 0603335 | 2300200 | 400200 | 2400800 | 4000200 | 4000500 | 4000600 | 220 | 0800105 | 4002010 | 42D0217 | 4213657 | 4215547 | 50A0050 | 0905 |

ILLINOIS DEPARTMENT OF TRANSPORTATION SCHEDULE OF PRICES CONTRACT NUMBER - 61B01 VARIOUS 12-00048-00-SW (WINFIELD) DUPAGE

ECMS002 DTGECM03 ECMR003 PAGE RUN DATE - 01/16/15 RUN TIME - 220036

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| ITEM | PAY ITEM DESCRIPTION | UNIT OF MEASURE | QUANTITY | UNIT PRICE TOTAL PRICE DOLLARS CTS |
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| 60255500 | ADJUST | EACH | X 000 : 8 | |
| 60603800 | COMB CC&G TB6.12 | FOOT | 10.000 X | - 11 — 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| 60605000 | | FOOT | 23.000 x | |
| 67100100 | MOBILIZATION | WNS 7 | | 1 t t t t t t t t t t t t t t t t t t t |
| 70102620 | । ०४ | WNS 7 | 1.000 X | |
| 70102640 | TR CONT & P | WINS T | | |
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| 000 | THPL PV | FOOT | 220.000 X | 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 |
| 78300100 | PAVT MARKING REMOVAL | SQ FT | 1,080.000 X | - 11 |
| | | The state of the s | | TOTAL \$ |

VOTE:

- 1. EACH PAY ITEM SHOULD HAVE A UNIT PRICE AND A TOTAL PRICE.
- THE UNIT PRICE SHALL GOVERN IF NO TOTAL PRICE IS SHOWN OR IF THERE IS A DISCREPANCY BETWEEN THE PRODUCT OF THE UNIT PRICE MULTIPLIED BY THE QUANTITY. ς.
- IF A UNIT PRICE IS OMITTED, THE TOTAL PRICE WILL BE DIVIDED BY THE QUANTITY IN ORDER TO ESTABLISH A UNIT PRICE. .
- 4. A BID MAY BE DECLARED UNACCEPTABLE IF NEITHER A UNIT PRICE NOR A TOTAL PRICE IS SHOWN.

STATE REQUIRED ETHICAL STANDARDS GOVERNING CONTRACT PROCUREMENT: ASSURANCES, CERTIFICATIONS AND DISCLOSURES

I. GENERAL

- **A.** Article 50 of the Code establishes the duty of all State CPOs, SPOs, and their designees to maximize the value of the expenditure of public moneys in procuring goods, services, and contracts for the State of Illinois and to act in a manner that maintains the integrity and public trust of State government. In discharging this duty, they are charged by law to use all available information, reasonable efforts, and reasonable actions to protect, safeguard, and maintain the procurement process of the State of Illinois.
- **B.** In order to comply with the provisions of Article 50 and to carry out the duty established therein, all bidders are to adhere to ethical standards established for the procurement process, and to make such assurances, disclosures and certifications required by law. Except as otherwise required in subsection III, paragraphs J-M, by execution of the Proposal Signature Sheet, the bidder indicates that each of the mandated assurances have been read and understood, that each certification is made and understood, and that each disclosure requirement has been understood and completed.
- **C.** In addition to all other remedies provided by law, failure to comply with any assurance, failure to make any disclosure or the making of a false certification shall be grounds for the CPO to void the contract, and may result in the suspension or debarment of the bidder or subcontractor. If a false certification is made by a subcontractor the contractor's submitted bid and the executed contract may not be declared void unless the contractor refuses to terminate the subcontract upon the State's request after a finding that the subcontractor's certification was false.

| | I acknowledge. | understand and | accept these | terms and | conditions. |
|--|----------------|----------------|--------------|-----------|-------------|
|--|----------------|----------------|--------------|-----------|-------------|

II. ASSURANCES

The assurances hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder.

A. Conflicts of Interest

Section 50-13. Conflicts of Interest.

- (a) Prohibition. It is unlawful for any person holding an elective office in this State, holding a seat in the General Assembly, or appointed to or employed in any of the offices or agencies of state government and who receives compensation for such employment in excess of 60% of the salary of the Governor of the State of Illinois, or who is an officer or employee of the Capital Development Board or the Illinois State Toll Highway Authority, or who is the spouse or minor child of any such person to have or acquire any contract, or any direct pecuniary interest in any contract therein, whether for stationery, printing, paper, or any services, materials, or supplies, that will be wholly or partially satisfied by the payment of funds appropriated by the General Assembly of the State of Illinois or in any contract of the Capital Development Board or the Illinois State Toll Highway Authority.
- (b) Interests. It is unlawful for any firm, partnership, association or corporation, in which any person listed in subsection (a) is entitled to receive (i) more than 7 1/2% of the total distributable income or (ii) an amount in excess of the salary of the Governor, to have or acquire any such contract or direct pecuniary interest therein.
- (c) Combined interests. It is unlawful for any firm, partnership, association, or corporation, in which any person listed in subsection (a) together with his or her spouse or minor children is entitled to receive (i) more than 15%, in the aggregate, of the total distributable income or (ii) an amount in excess of 2 times the salary of the Governor, to have or acquire any such contract or direct pecuniary interest therein.
- (d) Securities. Nothing in this Section invalidates the provisions of any bond or other security previously offered or to be offered for sale or sold by or for the State of Illinois.
- (e) Prior interests. This Section does not affect the validity of any contract made between the State and an officer or employee of the State or member of the General Assembly, his or her spouse, minor child or any combination of those persons if that contract was in existence before his or her election or employment as an officer, member, or employee. The contract is voidable, however, if it cannot be completed within 365 calendar days after the officer, member, or employee takes office or is employed. The current salary of the Governor is \$177,412.00. Sixty percent of the salary is \$106,447.20.

The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-13, or that an effective exemption has been issued by the Board of Ethics to any individual subject to the Section 50-13 prohibitions pursuant to the provisions of Section 50-20 of the Code. Information concerning the exemption process is available from the Department upon request.

B. Negotiations

Section 50-15. Negotiations.

It is unlawful for any person employed in or on a continual contractual relationship with any of the offices or agencies of State government to participate in contract negotiations on behalf of that office or agency with any firm, partnership, association, or corporation with whom that person has a contract for future employment or is negotiating concerning possible future employment.

The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-15, and that the bidder has no knowledge of any facts relevant to the kinds of acts prohibited therein.

C. Inducements

Section 50-25. Inducement.

Any person who offers or pays any money or other valuable thing to any person to induce him or her not to provide a submission to a vendor portal or to bid for a State contract or as recompense for not having bid on a State contract is guilty of a Class 4 felony. Any person who accepts any money or other valuable thing for not bidding for a State contract, not making a submission to a vendor portal, or who withholds a bid or submission to a vendor portal in consideration of the promise for the payment of money or other valuable thing is guilty of a Class 4 felony.

The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-25, and that the bidder has no knowledge of any facts relevant to the kinds of acts prohibited therein.

D. Revolving Door Prohibition

Section 50-30. Revolving door prohibition.

CPOs, SPOs, procurement compliance monitors, their designees whose principal duties are directly related to State procurement, and executive officers confirmed by the Senate are expressly prohibited for a period of 2 years after terminating an affected position from engaging in any procurement activity relating to the State agency most recently employing them in an affected position for a period of at least 6 months. The prohibition includes, but is not limited to: lobbying the procurement process; specifying; bidding; proposing bid, proposal, or contract documents; on their own behalf or on behalf of any firm, partnership, association, or corporation. This Section applies only to persons who terminate an affected position on or after January 15, 1999.

The bidder assures the Department that the award and execution of the contract would not cause a violation of Section 50-30, and that the bidder has no knowledge of any facts relevant to the kinds of acts prohibited therein.

E. Reporting Anticompetitive Practices

Section 50-40. Reporting anticompetitive practices.

When, for any reason, any vendor, bidder, contractor, CPO, SPO, designee, elected official, or State employee suspects collusion or other anticompetitive practice among any bidders, offerors, contractors, proposers, or employees of the State, a notice of the relevant facts shall be transmitted to the Attorney General and the CPO.

The bidder assures the Department that it has not failed to report any relevant facts concerning the practices addressed in Section 50-40 which may involve the contract for which the bid or submission to a vendor portal is submitted.

F. Confidentiality

Section 50-45. Confidentiality.

Any CPO, SPO, designee, or executive officer who willfully uses or allows the use of specifications, competitive bid documents, proprietary competitive information, proposals, contracts, or selection information to compromise the fairness or integrity of the procurement, bidding, or contract process shall be subject to immediate dismissal, regardless of the Personnel code, any contract, or any collective bargaining agreement, and may in addition be subject to criminal prosecution.

The bidder assures the Department that it has no knowledge of any fact relevant to the practices addressed in Section 50-45 which may involve the contract for which the bid is submitted.

G. Insider Information

Section 50-50. Insider information.

It is unlawful for any current or former elected or appointed State official or State employee to knowingly use confidential information available only by virtue of that office or employment for actual or anticipated gain for themselves or another person.

The bidder assures the Department that it has no knowledge of any facts relevant to the practices addressed in Section 50-50 which may involve the contract for which the bid is submitted.

☐ I acknowledge, understand and accept these terms and conditions for the above assurances.

III. CERTIFICATIONS

The certifications hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder. Section 50-2 of the Code provides that every person that has entered into a multi-year contract and every subcontractor with a multi-year subcontract shall certify, by July 1 of each fiscal year covered by the contract after the initial fiscal year, to the responsible CPO whether it continues to satisfy the requirements of Article 50 pertaining to the eligibility for a contract award. If a contractor or subcontractor is not able to truthfully certify that it continues to meet all requirements, it shall provide with its certification a detailed explanation of the circumstances leading to the change in certification status. A contractor or subcontractor that makes a false statement material to any given certification required under Article 50 is, in addition to any other penalties or consequences prescribed by law, subject to liability under the Whistleblower Reward and Protection Act for submission of a false claim.

A. Bribery

Section 50-5. Bribery.

- (a) Prohibition. No person or business shall be awarded a contract or subcontract under this Code who:
 - (1) has been convicted under the laws of Illinois or any other state of bribery or attempting to bribe an officer or employee of the State of Illinois or any other state in that officer's or employee's official capacity; or
 - (2) has made an admission of guilt of that conduct that is a matter of record but has not been prosecuted for that conduct.
- (b) Businesses. No business shall be barred from contracting with any unit of State or local government, or subcontracting under such a contract, as a result of a conviction under this Section of any employee or agent of the business if the employee or agent is no longer employed by the business and:
 - (1) the business has been finally adjudicated not guilty; or
 - (2) the business demonstrates to the governmental entity with which it seeks to contract, or which is signatory to the contract which the subcontract relates, and that entity finds that the commission of the offense was not authorized, requested, commanded, or performed by a director, officer, or high managerial agent on behalf of the business as provided in paragraph (2) of subsection (a) of Section 5-4 of the Criminal Code of 2012.
- (c) Conduct on behalf of business. For purposes of this Section, when an official, agent, or employee of a business committed the bribery or attempted bribery on behalf of the business and in accordance with the direction or authorization of a responsible official of the business, the business shall be chargeable with the conduct.
- (d) Certification. Every bid submitted to and contract executed by the State, and every subcontract subject to Section 20-120 of the Code shall contain a certification by the contractor or the subcontractor, respectively, that the contractor or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the CPO may declare the related contract void if any certifications required by this Section are false. A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

The contractor or subcontractor certifies that it is not barred from being awarded a contract under Section 50-5.

B. Felons

Section 50-10. Felons.

- (a) Unless otherwise provided, no person or business convicted of a felony shall do business with the State of Illinois or any State agency, or enter into a subcontract, from the date of conviction until 5 years after the date of completion of the sentence for that felony, unless no person held responsible by a prosecutorial office for the facts upon which the conviction was based continues to have any involvement with the business.
- (b) Certification. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Code and every vendor's submission to a vendor portal shall contain a certification by the bidder or contractor or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the CPO may declare the related contract void if any of the certifications required by this Section are false.

C. Debt Delinquency

Section 50-11 and 50-12. Debt Delinquency.

The contractor or bidder or subcontractor, respectively, certifies that it, or any affiliate, is not barred from being awarded a contract or subcontract under the Code. Section 50-11 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it knows or should know that it, or any affiliate, is delinquent in the payment of any debt to the State as defined by the Debt Collection Board. Section 50-12 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it, or any affiliate, has failed to collect and remit Illinois Use Tax on all sales of tangible personal property into the State of Illinois in accordance with the provisions of the Illinois Use Tax Act. The bidder or contractor or subcontractor, respectively, further acknowledges that the CPO may declare the related contract void if this certification is false or if the bidder, contractor, or subcontractor, or any affiliate, is determined to be delinquent in the payment of any debt to the State during the term of the contract.

D. Prohibited Bidders, Contractors and Subcontractors

Section 50-10.5 and 50-60(c). Prohibited bidders, contractors and subcontractors.

The bidder or contractor or subcontractor, respectively, certifies in accordance with Section 50-10.5 that no officer, director, partner or other managerial agent of the contracting business has been convicted of a felony under the Sarbanes-Oxley Act of 2002 or a Class 3 or Class 2 felony under the Illinois Securities Law of 1953 or if in violation of Subsection (c) for a period of five years from the date of conviction. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Code shall contain a certification by the bidder, contractor, or subcontractor, respectively, that the bidder, contractor, or subcontract under this Section and acknowledges that the CPO shall declare the related contract void if any of the certifications completed pursuant to this Section are false.

E. Section 42 of the Environmental Protection Act

Section 50-14 Environmental Protection Act violations.

The bidder or contractor or subcontractor, respectively, certifies in accordance with Section 50-14 that the bidder, contractor, or subcontractor, is not barred from being awarded a contract or entering into a subcontract under this Section which prohibits the bidding on or entering into contracts with the State of Illinois or a State agency, or entering into any subcontract, that is subject to the Code by a person or business found by a court or the Pollution Control Board to have committed a willful or knowing violation of Section 42 of the Environmental Protection Act for a period of five years from the date of the order. The bidder or contractor or subcontractor, respectively, acknowledges that the CPO may declare the contract void if this certification is false.

F. Educational Loan

Section 3 of the Educational Loan Default Act, 5 ILCS 385/3.

Pursuant to the Educational Loan Default Act no State agency shall contract with an individual for goods or services if that individual is in default on an educational loan.

The bidder, if an individual as opposed to a corporation, partnership or other form of business organization, certifies that the bidder is not in default on an educational loan as provided in Section 3 of the Act.

G. Bid-Rigging/Bid Rotating

Section 33E-11 of the Criminal Code of 2012, 720 ILCS 5/3BE-11.

- (a) Every bid submitted to and public contract executed pursuant to such bid by the State or a unit of local government shall contain a certification by the prime contractor that the prime contractor is not barred from contracting with any unit of State or local government as a result of a violation of either Section 33E-3 or 33E-4 of this Article.
- (b) A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

A violation of Section 33E-3 would be represented by a conviction of the crime of bid-rigging which, in addition to Class 3 felony sentencing, provides that any person convicted of this offense or any similar offense of any state or the United States which contains the same elements as this offense shall be barred for 5 years from the date of conviction from contracting with any unit of State or local government. No corporation shall be barred from contracting with any unit of State or local government as a result of a conviction under this Section of any employee or agent of such corporation if the employee so convicted is no longer employed by the corporation and: (1) it has been finally adjudicated not guilty or (2) if it demonstrates to the governmental entity with which it seeks to contract and that entity finds that the commission of the offense was neither authorized, requested, commanded, nor performed by a director, officer or a high managerial agent in behalf of the corporation.

The bidder certifies that it is not barred from contracting with the Department by reason of a violation of either Section 33E-3 or Section 33E-4.

H. International Anti-Boycott

Section 5 of the International Anti-Boycott Certification Act provides every contract entered into by the State of Illinois for the manufacture, furnishing, or purchasing of supplies, material, or equipment or for the furnishing of work, labor, or services, in an amount exceeding the threshold for small purchases according to the purchasing laws of this State or \$10,000.00, whichever is less, shall contain certification, as a material condition of the contract, by which the contractor agrees that neither the 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.

The bidder makes the certification set forth in Section 5 of the Act.

I. Drug Free Workplace

The Illinois "Drug Free Workplace Act" applies to this contract and it is necessary to comply with the provisions of the "Act" if the contractor is a corporation, partnership, or other entity (including a sole proprietorship) which has 25 or more employees.

The bidder certifies that if awarded a contract in excess of \$5,000 it will provide a drug free workplace in compliance with the provisions of the Act.

J. Disclosure of Business Operations in Iran

Section 50-36 of the Code provides that each bid, offer, or proposal submitted for a State contract shall include a disclosure of whether or not the Company acting as the bidder, offeror, or proposing entity, or any of its corporate parents or subsidiaries, within the 24 months before submission of the bid, offer, or proposal had business operations that involved contracts with or provision of supplies or services to the Government of Iran, companies in which the Government of Iran has any direct or indirect equity share, consortiums or projects commissioned by the Government of Iran, or companies involved in consortiums or projects commissioned by the Government of Iran and either of the following conditions apply:

- (1) More than 10% of the Company's revenues produced in or assets located in Iran involve oil-related activities or mineral-extraction activities; less than 75% of the Company's revenues produced in or assets located in Iran involve contracts with or provision of oil-related or mineral-extraction products or services to the Government of Iran or a project or consortium created exclusively by that government; and the Company has failed to take substantial action.
- (2) The Company has, on or after August 5, 1996, made an investment of \$20 million or more, or any combination of investments of at least \$10 million each that in the aggregate equals or exceeds \$20 million in any 12-month period, which directly or significantly contributes to the enhancement of Iran's ability to develop petroleum resources of Iran.

The terms "Business operations", "Company", "Mineral-extraction activities", "Oil-related activities", "Petroleum resources", and "Substantial action" are all defined in the Code.

Failure to make the disclosure required by the Code may cause the bid, offer or proposal to be considered not responsive. The disclosure will be considered when evaluating the bid or awarding the contract. The name of each Company disclosed as doing business or having done business in Iran will be provided to the State Comptroller.

| Check the appro | priate statement: |
|-----------------|--|
| // | Company has no business operations in Iran to disclose. |
| // | Company has business operations in Iran as disclosed on the attached document. |

K. Apprenticeship and Training Certification (Does not apply to federal aid projects)

In accordance with the provisions of Section 30-22 (6) of the Code, the bidder certifies that it is a participant, either as an individual or as part of a group program, in the approved apprenticeship and training programs applicable to each type of work or craft that the bidder will perform with its own forces. The bidder further certifies for work that will be performed by subcontract that each of its subcontractors submitted for approval either (a) is, at the time of such bid, participating in an approved, applicable apprenticeship and training program; or (b) will, prior to commencement of performance of work pursuant to this contract, begin participation in an approved apprenticeship and training program applicable to the work of the subcontract. The Department, at any time before or after award, may require the production of a copy of each applicable Certificate of Registration issued by the United States Department of Labor evidencing such participation by the contractor and any or all of its subcontractors. Applicable apprenticeship and training programs are those that have been approved and registered with the United States Department of Labor. The bidder shall list in the space below, the official name of the program sponsor holding the Certificate of Registration for all of the types of work or crafts in which the bidder is a participant and that will be performed with the bidder's forces. Types of work or craft work that will be subcontracted shall be included and listed as subcontract work. The list shall also indicate any type of work or craft job category that does not have an applicable apprenticeship or training program. The bidder is responsible for making a complete report and shall make certain that each type of work or craft job category that will be utilized on the project as reported on the Construction Employee Workforce Projection (Form BC-1256) and returned with the bid is accounted for and listed.

Addtionally, Section 30-22 of the Code requires that the bidder certify that an Illinois office be maintained as the primary place of employment for persons employed for this contract.

| NA-FEDERAL_ | |
|-------------|--|
| | |
| | |
| | |

The requirements of these certifications and disclosures are a material part of the contract, and the contractor shall require these certification provisions to be included in all approved subcontracts. In order to fulfill this requirement, it shall not be necessary that an applicable program sponsor be currently taking, or that it will take applications for apprenticeship, training or employment during the performance of the work of this contract.

L. Political Contributions and Registration with the State Board of Elections

Sections 20-160 and 50-37 of the Code regulate political contributions from business entities and any affiliated entities or affiliated persons bidding on or contracting with the state. Generally under Section 50-37, any business entity, and any affiliated entity or affiliated person of the business entity, whose current year contracts with all state agencies exceed an awarded value of \$50,000, are prohibited from making any contributions to any political committees established to promote the candidacy of the officeholder responsible for the awarding of the contracts or any other declared candidate for that office for the duration of the term of office of the incumbent officeholder or a period 2 years after the termination of the contract, whichever is longer. Any business entity and affiliated entities or affiliated persons whose state contracts in the current year do not exceed an awarded value of \$50,000, but whose aggregate pending bids and proposals on state contracts exceed \$50,000, either alone or in combination with contracts not exceeding \$50,000, are prohibited from making any political contributions to any political committee established to promote the candidacy of the officeholder responsible for awarding the pending contract during the period beginning on the date the invitation for bids or request for proposals or any other procurement opportunity is issued and ending on the day after the date of award or selection if the entity was not awarded or selected. Section 20-160 requires certification of registration of affected business entities in accordance with procedures found in Section 9-35 of The Election Code.

By submission of a bid, the contractor business entity acknowledges and agrees that it has read and understands Sections 20-160 and 50-37 of the Code, and that it makes the following certification:

The undersigned bidder certifies that it has registered as a business with the State Board of Elections and acknowledges a continuing duty to update the registration in accordance with the above referenced statutes. If the business entity is required to register, the CPO shall verify that it is in compliance on the date the bid or proposal is due. The CPO shall not accept a bid or proposal if the business entity is not in compliance with the registration requirements.

These requirements and compliance with the above referenced statutory sections are a material part of the contract, and any breach thereof shall be cause to void the contract under Section 50-60 of the Code. This provision does not apply to Federal-aid contracts.

M. Lobbyist Disclosure

Section 50-38 of the Code requires that any bidder or offeror on a State contract that hires a person required to register under the Lobbyist Registration Act to assist in obtaining a contract shall:

- (i) Disclose all costs, fees, compensation, reimbursements, and other remunerations paid or to be paid to the lobbyist related to the contract,
- (ii) Not bill or otherwise cause the State of Illinois to pay for any of the lobbyist's costs, fees, compensation, reimbursements, or other remuneration, and
- (iii) Sign a verification certifying that none of the lobbyist's costs, fees, compensation, reimbursements, or other remuneration were billed to the State.

This information, along with all supporting documents, shall be filed with the agency awarding the contract and with the Secretary of State. The CPO shall post this information, together with the contract award notice, in the online Procurement Bulletin.

Pursuant to Subsection (c) of this Section, no person or entity shall retain a person or entity to attempt to influence the outcome of a procurement decision made under the Code for compensation contingent in whole or in part upon the decision or procurement. Any person who violates this subsection is guilty of a business offense and shall be fined not more than \$10,000.

Bidder acknowledges that it is required to disclose the hiring of any person required to register pursuant to the Illinois Lobbyist Registration Act (25 ILCS 170) in connection with this contract.

| | Bidder has not hired any person required to register pursuant to the Illinois Lobbyist Registration Act in connection with this contract. |
|---------|---|
| Or | |
| | Bidder has hired the following persons required to register pursuant to the Illinois Lobbyist Registration Act in connection with the contract: |
| | l address of person:ees, compensation, reimbursements and other remuneration paid to said person: |
| | |
| ☐ Lackn | owledge, understand and accept these terms and conditions for the above certifications. |

IV. DISCLOSURES

A. The disclosures hereinafter made by the bidder are each a material representation of fact upon which reliance is placed should the Department enter into the contract with the bidder. The bidder further certifies that the Department has received the disclosure forms for each bid.

The CPO may void the bid, or contract, respectively, if it is later determined that the bidder or subcontractor rendered a false or erroneous disclosure. A contractor or subcontractor may be suspended or debarred for violations of the Code. Furthermore, the CPO may void the contract and the surety providing the performance bond shall be responsible for completion of the contract.

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Code provides that all bids of more than \$50,000 and all submissions to a vendor portal shall be accompanied by disclosure of the financial interests of the bidder. This disclosed information for the successful bidder, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act, filed with the Procurement Policy Board, and shall be incorporated as a material term of the contract. Furthermore, pursuant to Section 5-5, the Procurement Policy Board may review a proposal, bid, or contract and issue a recommendation to void a contract or reject a proposal or bid based on any violation of the Code or the existence of a conflict of interest as provided in subsections (b) and (d) of Section 50-35.

The financial interests to be disclosed shall include ownership or distributive income share that is in excess of 5%, or an amount greater than 60% of the annual salary of the Governor, of the bidding entity or its parent entity, whichever is less, unless the contractor or bidder is a publicly traded entity subject to Federal 10K reporting, in which case it may submit its 10K disclosure in place of the prescribed disclosure. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each individual making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each individual making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.

The current annual salary of the Governor is \$177,412.00.

In addition, all disclosures shall indicate any other current or pending contracts, proposals, leases, or other ongoing procurement relationships the bidding entity has with any other unit of state government and shall clearly identify the unit and the contract, proposal, lease, or other relationship.

2. <u>Disclosure Forms</u>. Disclosure Form A is attached for use concerning the individuals meeting the above ownership or distributive share requirements. A separate Disclosure Form A must be submitted with the bid for each individual meeting the above requirements. In addition, a second form (Disclosure Form B) provides for the disclosure of current or pending procurement relationships with other (non-IDOT) state agencies and a total ownership certification. **The forms must be included with each bid.**

C. <u>Disclosure Form Instructions</u>

Form A Instructions for Financial Information & Potential Conflicts of Interest

If the bidder is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a bidder is a privately held entity that is exempt from Federal 10K reporting, but has more than 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual or entity holding any ownership share that is in excess of 5%. If a bidder is not subject to Federal 10K reporting, the bidder must determine if any individuals are required by law to complete a financial disclosure form. To do this, the bidder should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on Form A must be signed and dated by an individual that is authorized to execute contracts for the bidding company. Note: These questions are for assistance only and are not required to be completed.

| 1. | Does anyone in your organization have a direct or beneficial ownership share of greater than 5% of the bidding entity or parent entity? YES NO |
|----|--|
| 2. | Does anyone in your organization have a direct or beneficial ownership share of less than 5%, but which has a value greater than 60% of the annual salary of the Governor? YES NO |
| 3. | Does anyone in your organization receive more than 60% of the annual salary of the Governor of the bidding entity's or parent entity's distributive income? YES NO |
| 4. | Does anyone in your organization receive greater than 5% of the bidding entity's or parent entity's total distributive income, but which is less than 60% of the annual salary of the Governor? YES NO |
| | (Note: Only one set of forms needs to be completed <u>per individual per bid</u> even if a specific individual would require a yes answer to more than one question.) |
| | |

A "YES" answer to any of these questions requires the completion of Form A. The bidder must determine each individual in the bidding entity or the bidding entity's parent company that would cause the questions to be answered "Yes". Each form must be signed and dated by an individual that is authorized to execute contracts for your organization. The individual signing can be, but does not have to be, the individual for which the form is being completed. The bidder is responsible for the accuracy of any information provided.

If the answer to each of the above questions is "NO", then the <u>NOT APPLICABLE STATEMENT</u> of Form A must be signed and dated by an individual that is authorized to execute contracts for your company.

Form B: Instructions for Identifying Other Contracts & Procurement Related Information

Disclosure Form B must be completed for each bid submitted by the bidding entity. Note: Checking the <u>NOT APPLICABLE STATEMENT</u> on Form A <u>does not</u> allow the bidder to ignore Form B. Form B must be completed, checked, and dated or the bidder may be considered nonresponsive and the bid will not be accepted.

The Bidder shall identify, by checking Yes or No on Form B, whether it has any pending contracts (including leases), bids, proposals, or other ongoing procurement relationship with any other (non-IDOT) State of Illinois agency. If "No" is checked, the bidder only needs to complete the check box on the bottom of Form B. If "Yes" is checked, the bidder must do one of the following:

Option I: If the bidder did not submit an Affidavit of Availability to obtain authorization to bid, the bidder must list all non-IDOT State of Illinois agency pending contracts, leases, bids, proposals, and other ongoing procurement relationships. These items may be listed on Form B or on an attached sheet(s). Do not include IDOT contracts. Contracts with cities, counties, villages, etc. are not considered State of Illinois agency contracts and are not to be included. Contracts with other State of Illinois agencies such as the Department of Natural Resources or the Capital Development Board must be included. Bidders who submit Affidavits of Availability are suggested to use Option II.

Option II: If the bidder is required and has submitted an Affidavit of Availability in order to obtain authorization to bid, the bidder may write or type "See Affidavit of Availability" which indicates that the Affidavit of Availability is incorporated by reference and includes all non-IDOT State of Illinois agency pending contracts, leases, bids, proposals, and other ongoing procurement relationships. For any contracts that are not covered by the Affidavit of Availability, the bidder must identify them on Form B or on an attached sheet(s). These might be such things as leases.

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A Financial Information & Potential Conflicts of Interest Disclosure

| Contractor Name | | |
|------------------|---------------|---------------------------|
| Legal Address | | |
| O'the Otate 7's | | |
| City, State, Zip | | |
| Telephone Number | Email Address | Fax Number (if available) |
| | | |

Disclosure of the information contained in this Form is required by Section 50-35 of the Code (30 ILCS 500). Vendors desiring to enter into a contract with the State of Illinois must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form. This information shall become part of the publicly available contract file. This Form A must be completed for bids in excess of \$50,000, and for all open-ended contracts. A publicly traded company may submit a 10K disclosure (or equivalent if applicable) in satisfaction of the requirements set forth in Form A. See Disclosure Form Instructions.

The current annual salary of the Governor is \$177,412.00.

DISCLOSURE OF FINANCIAL INFORMATION

 Disclosure of Financial Information. The individual named below has an interest in the BIDDER (or its parent) in terms of ownership or distributive income share in excess of 5%, or an interest which has a value of more than 60% of the annual salary of the Governor. (Make copies of this form as necessary and attach a separate Disclosure Form A for each individual meeting these requirements)

| FOR INDIVIDUAL (| (type or print information) | | |
|------------------|------------------------------------|-------------|-------------------------------------|
| NAME: | | | |
| ADDRESS | | | |
| | | | |
| Type of owner | rship/distributable income share | 9 : | |
| stock | sole proprietorship | Partnership | other: (explain on separate sheet): |
| % or \$ value of | f ownership/distributable income s | hare: | |

- 2. Disclosure of Potential Conflicts of Interest. Check "Yes" or "No" to indicate which, if any, of the following potential conflict of interest relationships apply. If the answer to any question is "Yes", please attach additional pages and describe.
 - (a) State employment, currently or in the previous 3 years, including contractual employment of services. Yes No

If your answer is yes, please answer each of the following questions.

- Are you currently an officer or employee of either the Capitol Development Board or the Illinois State Toll Highway Authority?
 Yes ___No __
- Are you currently appointed to or employed by any agency of the State of Illinois? If you are currently appointed to or employed by any agency of the State of Illinois, and your annual salary exceeds 60% of the annual salary of the Governor provide the name the State agency for which you are employed and your annual salary.

| 3. | If you are currently appointed to or employed by any agency of the Salary exceeds 60% of the annual salary of the Governor, are you e (i) more than 7 1/2% of the total distributable income of your firm corporation, or (ii) an amount in excess of 100% of the annual salary | ntitled to receive n, partnership, association or |
|-----------------|--|---|
| 4. | If you are currently appointed to or employed by any agency of the Salary exceeds 60% of the annual salary of the Governor, are you a or minor children entitled to receive (i) more than 15% in aggregate of your firm, partnership, association or corporation, or (ii) an amount salary of the Governor? | nd your spouse of the total distributable income |
| | employment of spouse, father, mother, son, or daughter, including con previous 2 years. | |
| If your | answer is yes, please answer each of the following questions. | YesNo |
| 1. | Is your spouse or any minor children currently an officer or employee Board or the Illinois State Toll Highway Authority? | of the Capitol Development YesNo |
| 2. | Is your spouse or any minor children currently appointed to or employ of Illinois? If your spouse or minor children is/are currently appointed agency of the State of Illinois, and his/her annual salary exceeds 60 annual salary of the Governor, provide the name of the spouse and/of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the State agency for which he/she is employed and his/her annual salary of the salary of the State agency for which he/she is employed and his/her annual salary of the sal | d to or employed by any 0% of the or minor children, the name |
| 3. | If your spouse or any minor children is/are currently appointed to or estate of Illinois, and his/her annual salary exceeds 60% of the annual are you entitled to receive (i) more than 71/2% of the total distributable firm, partnership, association or corporation, or (ii) an amount in excannual salary of the Governor? | I salary of the Governor, e income of your |
| 4. | If your spouse or any minor children are currently appointed to or er State of Illinois, and his/her annual salary exceeds 60% of the annual and your spouse or any minor children entitled to receive (i) more that aggregate of the total distributable income from your firm, partnership (ii) an amount in excess of two times the salary of the Governor? | salary of the Governor, are you an 15% in the |
| | | Yes No |
| unit of | e status; the holding of elective office of the State of Illinois, the governocal government authorized by the Constitution of the State of Illinoicurrently or in the previous 3 years. | |
| | nship to anyone holding elective office currently or in the previous 2 yedaughter. | ears; spouse, father, mother, YesNo |
| Americ of the S | tive office; the holding of any appointive government office of the State a, or any unit of local government authorized by the Constitution of the State of Illinois, which office entitles the holder to compensation in exceptage of that office currently or in the previous 3 years. | State of Illinois or the statues |
| | nship to anyone holding appointive office currently or in the previous 2 daughter. | years; spouse, father, mother, YesNo |
| (g) Employ | ment, currently or in the previous 3 years, as or by any registered lob | byist of the State government. YesNo |

| e previous 2 years; spouse, father, mother, YesNo |
|---|
| s, by any registered election or reelection clerk of the State of Illinois, or any political the Federal Board of Elections. YesNo |
| er; who was a compensated employee in the registered with the Secretary of State or any littee registered with either the Secretary of |
| Yes No |
| |
| |
| t of the bidder or offeror who is not identified ng, or may communicate with any State officer continuing obligation and must be promp nout the term of the contract. If no person |
| |

4. Debarment Disclosure. For each of the persons identified under Sections 2 and 3 of this form, disclose whether any of the following has occurred within the previous 10 years: debarment from contracting with any governmental entity; professional licensure discipline; bankruptcies; adverse civil judgments and administrative findings; and criminal felony convictions. This disclosure is a continuing obligation and must be promptly supplemented for accuracy throughout the procurement process and term of the contract. If no person is identified, enter "None" on the line below:

| Name of person(s): | |
|--|------|
| Nature of disclosure: | |
| Track of displace of the second of the secon | |
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| | |
| | |
| ADDU LOADUE OTATEMENT | |
| APPLICABLE STATEMENT This Disclosure Form A is submitted on behalf of the INDIVIDUAL named on previous page. Und | lor |
| penalty of perjury, I certify the contents of this disclosure to be true and accurate to the best of knowledge. | |
| Completed by: | |
| Signature of Individual or Authorized Representative Date | _ |
| NOT APPLICABLE STATEMENT | |
| Under penalty of perjury, I have determined that no individuals associated with this organization the criteria that would require the completion of this Form A. | meet |
| This Disclosure Form A is submitted on behalf of the CONTRACTOR listed on the previous page | |
| | |
| Signature of Authorized Representative Date | _ |
| | |

The bidder has a continuing obligation to supplement these disclosures under Sec. 50-35 of the Code.

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B Other Contracts & Financial Related Information Disclosure

| Contractor Na | ıme | | | |
|----------------------------|---|----------------------------|---|---|
| Legal Address | 3 | | | |
| City, State, Zi | p | | | |
| Telephone Nu | ımber | | Email Address | Fax Number (if available) |
| | | | l s Form is required by Section 50-3 dicly available contract file. This Fo | 5 of the Code (30 ILCS 500). orm B must be completed for all bids. |
| | DISCLOSURE (| OF OTHER (| CONTRACTS AND PROCUREME | NT RELATED INFORMATION |
| has any per any other S | nding contracts (inc state of Illinois agend | luding leases cy: Yes _ | ement Related Information. The Es), bids, proposals, or other ongoin No to complete the signature box on the | g procurement relationship with |
| | such as bid or proje | | relationship by showing State of III attach additional pages as necessa | inois agency name and other descriptive ary). SEE DISCLOSURE FORM |
| | | | | |
| | | | | |
| | | THE FOL | LOWING STATEMENT MUST BE | CHECKED |
| | | | | |
| | | | | |
| | | | Signature of Authorized Representative | Date |
| | | | | |
| | | | | |
| | | | | |
| | | | OWNERSHIP CERTIFICATI | <u>ON</u> |
| | e certify that the foll of ownership. | owing stater | nent is true if the individuals for al | submitted Form A disclosures do not t |
| | | | erest is held by individuals receiv butive income or holding less than | ring less than \$106,447.20 of the bidd a 5% ownership interest. |
| | ☐ Yes ☐ No | □ N/A (I) | Form A disclosure(s) established 1 | 00% ownership) |

SPECIAL NOTICE TO CONTRACTORS

The following requirements of the Illinois Department of Human Rights Act are applicable to bidders on all construction contracts advertised by the Illinois Department of Transportation:

CONSTRUCTION EMPLOYEE UTILIZATION PROJECTION

- (a) All bidders on construction contracts shall complete and submit, along with and as part of their bids, a Bidder's Employee Utilization Form (Form BC-1256) setting forth a projection and breakdown of the total workforce intended to be hired and/or allocated to such contract work by the bidder including a projection of minority and female employee utilization in all job classifications on the contract project.
- (b) The Department of Transportation shall review the Employee Utilization Form, and workforce projections contained therein, of the contract awardee to determine if such projections reflect an underutilization of minority persons and/or women in any job classification in accordance with the Equal Employment Opportunity Clause and Title 44, Illinois Administrative Code, Section 750.120. If it is determined that the contract awardee's projections reflect an underutilization of minority persons and/or women in any job classification, it shall be advised in writing of the manner in which it is underutilizing and such awardee shall be considered to be in breach of the contract unless, prior to commencement of work on the contract project, it submits revised satisfactory projections or an acceptable written affirmative action plan to correct such underutilization including a specific timetable geared to the completion stages of the contract.
- (c) The Department of Transportation shall provide to the Department of Human Rights a copy of the contract awardee's Employee Utilization Form, a copy of any required written affirmative action plan, and any written correspondence related thereto. The Department of Human Rights may review and revise any action taken by the Department of Transportation with respect to these requirements.



PART I. IDENTIFICATION

Contract No. 61B01 DUPAGE County Section 12-00048-00-SW (Winfield) Project SRTS-4009(129) Various Routes District 1 Construction Funds

| Dept. of Human Rig | hts # | | | | | | [| Duratio | n of P | roject: | | | | | | | |
|--|----------------------|------------------------|------------------|--------------------|-----------|------------|----------|----------|----------|---------|--------|----------------------------|-----------|----------------|------------|--|-----------|
| Name of Bidder: | | | | | | | | | | | | | | | | | |
| PART II. WORKFO A. The undersigned which this contract work projection including a projecti | bidder hark is to be | as analyz e perform | ed mir ed, an | d for th d fema | ne locati | ons fror | n whic | h the b | idder re | cruits | employ | ees, and her | reby subm | nits the follo | wing ontra | workfo | |
| | | TOTA | AL Wo | rkforce | Projec | tion for (| Contra | ct | | | | | (| CURRENT | | | S |
| | | | | MINORITY EMPLOYEES | | | | | TRAINEES | | | TO BE ASSIGNED TO CONTRACT | | | | | |
| JOB | | TAL | | | | | *OTI | | APPI | REN- | ON T | HE JOB | | OTAL | | MINO | |
| CATEGORIES | EMPL(| OYEES F | BL/ M | ACK F | HISP. | ANIC F | MIN M | OR. F | TIC M | ES F | TR/ | AINEES F | EMPL M | OYEES | E | MPLC M | YEES F |
| OFFICIALS (MANAGERS) | IVI | | IVI | | IVI | Г | IVI | Г | IVI | Г | IVI | Г | IVI | <u> </u> | | IVI | |
| SUPERVISORS | | | | | | | | | | | | | | | | | |
| FOREMEN | | | | | | | | | | | | | | | | | |
| CLERICAL | | | | | | | | | | | | | | | | | |
| EQUIPMENT OPERATORS | | | | | | | | | | | | | | | | | |
| MECHANICS | | | | | | | | | | | | | | | | | |
| TRUCK DRIVERS | | | | | | | | | | | | | | | | | |
| IRONWORKERS | | | | | | | | | | | | | | | | | |
| CARPENTERS | | | | | | | | | | | | | | | | | |
| CEMENT MASONS | | | | | | | | | | | | | | | | | |
| ELECTRICIANS | | | | | | | | | | | | | | | | | |
| PIPEFITTERS, PLUMBERS | | | | | | | | | | | | | | | | | |
| PAINTERS | | | | | | | | | | | | | | | | | |
| LABORERS, SEMI-SKILLED | | | | | | | | | | | | | | | | | |
| LABORERS, UNSKILLED | | | | | | | | | | | | | | | | | |
| TOTAL | | | | | | | | | | | | | | | | | |
| | | BLE C | | | \t t | | | | 7 | | | FOR [| DEPARTI | MENT USE | ONLY | , | |
| EMPLOYEES | OTAL Tra | aining Pro TAL | ojectio | n for C | ontract | | *01 | HER | 1 | | | | | | | | |
| IN | 1 | OYEES | BLA | ACK | HISP | ANIC | _ | NOR. | | | | | | | | | |
| TRAINING | М | F | М | F | М | F | М | F | | | | | | | | | |
| APPRENTICES | | | | | | | | | | | | | | | | | |
| ON THE JOB | | | | | | | | | 1 | | | | | | | | |

Note: See instructions on page 2

BC 1256 (Rev. 12/11/07)

*Other minorities are defined as Asians (A) or Native Americans (N).
Please specify race of each employee shown in Other Minorities column.

Contract No. 61B01 DUPAGE County Section 12-00048-00-SW (Winfield) Project SRTS-4009(129) Various Routes District 1 Construction Funds

PART II. WORKFORCE PROJECTION - continued

| В. | | led in "Total Employees" under Table A is the tot the undersigned bidder is awarded this contract | | be employed in the |
|----------|--|--|--|---|
| | The u | ndersigned bidder projects that: (number) | | new hires would be |
| | recrui | ndersigned bidder projects that: (number)ted from the area in which the contract project is | located; and/or (number) | |
| | office | or base of operation is located. | ıld be recruited from the area in whi | ch the blader's principal |
| C. | | led in "Total Employees" under Table A is a proje signed bidder as well as a projection of numbers | | |
| | be dir | ndersigned bidder estimates that (number)ectly employed by the prime contractor and that byed by subcontractors. | (number) | persons will persons will be |
| PART | III. AFF | FIRMATIVE ACTION PLAN | | |
| A. | utiliza in any comm (geare utiliza | indersigned bidder understands and agrees that tion projection included under PART II is determant job category, and in the event that the understancement of work, develop and submit a writed to the completion stages of the contract) tion are corrected. Such Affirmative Action Planinois Department of Human Rights . | nined to be an underutilization of misigned bidder is awarded this cont tten Affirmative Action Plan includ whereby deficiencies in minority | inority persons or women tract, he/she will, prior to ding a specific timetable and/or female employee |
| B. | submi | ndersigned bidder understands and agrees that itted herein, and the goals and timetable included part of the contract specifications. | | |
| Comp | any | | Telephone Number | |
| Addre | ss | | - | |
| | | NOTICE REGARD | ING SIGNATURE | |
| | | signature on the Proposal Signature Sheet will consti ed only if revisions are required. | tute the signing of this form. The follo | wing signature block needs |
| Signat | ture: 🗌 | | Title: | Date: |
| Instruct | ions: | All tables must include subcontractor personnel in addition | to prime contractor personnel. | |
| Table A | | Include both the number of employees that would be him (Table B) that will be allocated to contract work, and inclushould include all employees including all minorities, appre | de all apprentices and on-the-job trainees. | The "Total Employees" column |
| Table B | l - | Include all employees currently employed that will be alloc currently employed. | ated to the contract work including any appr | rentices and on-the-job trainees |
| Table C | ; - | Indicate the racial breakdown of the total apprentices and | on-the-job trainees shown in Table A. | |

ADDITIONAL FEDERAL REQUIREMENTS

In addition to the Required Contract Provisions for Federal-Aid Construction Contracts (FHWA 1273), all bidders make the following certifications.

- A. By the execution of this proposal, the signing bidder certifies that the bidding entity has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action, in restraint of free competitive bidding in connection with the submitted bid. This statement made by the undersigned bidder is true and correct under penalty of perjury under the laws of the United States.
- B. <u>CERTIFICATION, EQUAL EMPLOYMENT OPPORTUNITY:</u>

| 1. | Have you participated in any previous contracts or subcontracts subject to the equal opportunity clause. YES NO |
|----|---|
| 2. | If answer to #1 is yes, have you filed with the Joint Reporting Committee, the Director of OFCC, any Federal agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements of those organizations? YES NO |

Contract No. 61B01 DUPAGE County Section 12-00048-00-SW (Winfield) Project SRTS-4009(129) Various Routes District 1 Construction Funds

PROPOSAL SIGNATURE SHEET

The undersigned bidder hereby makes and submits this bid on the subject Proposal, thereby assuring the Department that all requirements of the Invitation for Bids and rules of the Department have been met, that there is no misunderstanding of the requirements of paragraph 3 of this Proposal, and that the contract will be executed in accordance with the rules of the Department if an award is made on this bid.

| | Firm Name | |
|--|------------------------|--|
| (IF AN INDIVIDUAL) | Signature of Owner | |
| | Business Address | |
| | | |
| | | |
| | Firm Name | |
| | Ву | |
| (IF A CO-PARTNERSHIP) | | |
| (, | | |
| | | Name and Address of All Members of the Firm: |
| | | |
| - | | |
| | Corporate Name | |
| | | |
| (IF A COPPORTION) | Бу | Signature of Authorized Representative |
| (IF A CORPORATION) | | |
| | | Typed or printed name and title of Authorized Representative |
| | Attest | |
| (IE A JOINT VENTURE LICE THE SECTION | 7111001 | Signature |
| (IF A JOINT VENTURE, USE THIS SECTION FOR THE MANAGING PARTY AND THE | Business Address | |
| SECOND PARTY SHOULD SIGN BELOW) | | |
| | | |
| | Corporate Name | |
| (IE A 101) T. VENTUES | Ву | |
| (IF A JOINT VENTURE) | | Signature of Authorized Representative |
| | | Typed or printed name and title of Authorized Representative |
| | | |
| | Attest | Signature |
| | Puninges Address | • |
| | business Audress | |
| If more than two parties are in the joint venture. | please attach an addit | ional signature sheet. |

Return with Bid



Division of Highways Annual Proposal Bid Bond

| This Annual Proposal Bid Bond shall become effective at 12:01 AM (CDST) on | and shall be valid until 11:59 PM (CDST). |
|--|--|
| KNOW ALL PERSONS BY THESE PRESENTS, That We | |
| as PRINCIPAL, and | |
| price, or for the amount specified in the bid proposal under ' | ne STATE OF ILLINOIS in the penal sum of 5 percent of the total bid 'Proposal Guaranty" in effect on the date of the Invitation for Bids, d STATE OF ILLINOIS, for the payment of which we bind ourselves, |
| | SUCH that whereas, the PRINCIPAL may submit bid proposal(s) to tof Transportation, for various improvements published in the e. |
| the time and as specified in the bidding and contract document into a contract in accordance with the terms of the bidding ar coverages and providing such bond as specified with good and the prompt payment of labor and material furnished in the prosenter into such contract and to give the specified bond, the P penalty hereof between the amount specified in the bid propo | d proposal(s) of the PRINCIPAL; and if the PRINCIPAL shall, within its; and if, after award by the Department, the PRINCIPAL shall enter and contract documents including evidence of the required insurance I sufficient surety for the faithful performance of such contract and for secution thereof; or if, in the event of the failure of the PRINCIPAL to RINCIPAL pays to the Department the difference not to exceed the sal and such larger amount for which the Department may contract oposal, then this obligation shall be null and void, otherwise, it shall |
| preceding paragraph, then Surety shall pay the penal sum to t Surety does not make full payment within such period of time | PAL has failed to comply with any requirement as set forth in the he Department within fifteen (15) days of written demand therefor. If e, the Department may bring an action to collect the amount owed. If attorney's fees, incurred in any litigation in which it prevails either in |
| In TESTIMONY WHEREOF, the said PRINCIPAL has caused this instrument to be signed by its officer day of A.D., | In TESTIMONY WHEREOF, the said SURETY has caused this instrument to be signed by its officer day of A.D., |
| (Company Name) | (Company Name) |
| Ву | Ву |
| (Signature and Title) | (Signature of Attorney-in-Fact) |
| Notary for PRINCIPAL | Notary for SURETY |
| STATE OF | STATE OF |
| COUNTY OF | COUNTY OF |
| Signed and attested before me on (date) | Signed and attested before me on (date) |
| by | |
| (Name of Notary Public) | (Name of Notary Public) |
| (Seal) (Signature of Notary Public) | (Seal) (Signature of Notary Public) |
| (19 111 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 | (-3 , , , , , , , , , , , , , , , , , |
| (Date Commission Expires) | (Date Commission Expires) |

| signing the proposal(s) the Principal is ensuring the identified electronic bid bond has been executed and the Principal and Surety |
|---|
| are firmly bound unto the State of Illinois under the conditions of the bid bond as shown above. |
| |

In lieu of completing the above section of the Annual Proposal Bid Bond form, the Principal may file an Electronic Bid Bond. By

| Electronic Bid Bond ID # | Company/Bidder Name | Signature and Title |
|--------------------------|---------------------|---------------------|

This bond may be terminated, at Surety's request, upon giving not less than thirty (30) days prior written notice of the cancellation/termination of the bond. Said written notice shall be issued to the Illinois Department of Transportation, Chief Contracts Official, 2300 South Dirksen Parkway, Springfield, Illinois, 62764, and shall be served in person, by receipted courier delivery or certified or registered mail, return receipt requested. Said notice period shall commence on the first calendar day following the Department's receipt of written cancellation/termination notice. Surety shall remain firmly bound to all obligations herein for proposals submitted prior to the cancellation/termination. Surety shall be released and discharged from any obligation(s) for proposals submitted for any letting or date after the effective date of cancellation/termination.

Illinois Department of Transportation

Return with Bid

Division of Highways Proposal Bid Bond

| | | Item No. | |
|--|---|--|--|
| | | Letting Date | e |
| (NOW ALL PERSONS BY THE | SE PRESENTS, That We | | |
| as PRINCIPAL, and | | | |
| the amount specified in the bid | proposal under "Proposal Guaranty" i | in effect on the date of the Invitation for | of 5 percent of the total bid price, or for r Bids, whichever is the lesser sum, well s, executors, administrators, successors |
| | | | omitted a bid proposal to the STATE OF retation Bulletin Item Number and Letting |
| specified in the bidding and cor with the terms of the bidding and with good and sufficient surety prosecution thereof; or if, in the pays to the Department the diffe | ntract documents; and if, after award documents including evide for the faithful performance of such event of the failure of the PRINCIP perence not to exceed the penalty here tract with another party to perform the | by the Department, the PRINCIPAL sence of the required insurance coverage contract and for the prompt payment AL to enter into such contract and to go for between the amount specified in the | RINCIPAL shall, within the time and as shall enter into a contract in accordance es and providing such bond as specified t of labor and material furnished in the give the specified bond, the PRINCIPAL bid proposal and such larger amount for the this obligation shall be null and void, |
| hen Surety shall pay the penal within such period of time, the [| sum to the Department within fiftee | n (15) days of written demand therefo ollect the amount owed. Surety is liable | as set forth in the preceding paragraph, r. If Surety does not make full payment e to the Department for all its expenses, |
| n TESTIMONY WHEREOF, caused this instrument to be day of | | In TESTIMONY WHEREOF, instrument to be signed by its day of | the said SURETY has caused this officer A.D., |
| (Compa | any Name) | (Com | pany Name) |
| Зу | | Ву | |
| (Sign | ature and Title) | | e of Attorney-in-Fact) |
| Notary for PRINCIPAL | | Notary for SURETY | |
| STATE OF | | STATE OF | |
| COUNTY OF | | COUNTY OF | |
| Signed and attested before r | ne on (date) | Signed and attested before m | ne on (date) |
| (Name of | Notary Public) | (Name o | f Notary Public) |
| | | | |
| (Seal) | | (Seal) | |
| ,, | (Signature of Notary Public) | | (Signature of Notary Public) |
| | (Date Commission Expires) | _ | (Date Commission Expires) |
| proposal the Principal is en | | oid bond has been executed and | Electronic Bid Bond. By signing the the Principal and Surety are firmly |
| Electronic Bid Bond ID # | Company/Bidder Nan | ne | Signature and Title |



DBE Utilization Plan

(1) Policy

It is public policy that disadvantaged businesses as defined in 49 CFR Part 26 and the Special Provision shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with Federal or State funds. Consequently the requirements of 49 CFR Part 26 apply to this contract.

(2) Obligation

Date

The contractor agrees to ensure that disadvantaged businesses as defined in 49 CFR Part 26 and the Special Provision have the maximum opportunity to participate in the performance of contracts or subcontracts financed in whole or in part with Federal or State funds. The contractor shall take all necessary and reasonable steps in accordance with 49 CFR Part 26 and the Special Provision to ensure that said businesses have the maximum opportunity to compete for and perform under this contract. The contractor shall not discriminate on the basis of race, color, national origin or sex in the award and performance of contracts.

| (3) Project and Bid Identification | | | |
|--|--|---|---|
| Complete the following information concerning the project and bid: | | | |
| Route | Total Bid | | _ |
| Section | Contract DBE Goal | | |
| Project | | (Percent) | (Dollar Amount) |
| County | | | |
| Letting Date | | | |
| Contract No. | | | |
| Letting Item No. | | | |
| (4) Assurance | | | |
| Attached are the signed participation statements, forms suse of each business participating in this plan and assuring work of the contract. Failed to meet contract award goals and has included good provided participation as follows: Disadvantaged Business Participation per of the contract goals should be accordingly modified or was support of this request including good faith effort. Als required by the Special Provision evidencing availability and the support of the supp | d documented participation as followers SBE 2025, required by the Special of that each business will perform that each business will perform that each documentation to motion the second second are the signed participant use of each business participant. | al Provision evid n a commercially neet the goals ar ion required by rticipation stater | encing availability and vuseful function in the and that my company has the Special Provision in ments, forms SBE 2025, |
| business will perform a commercially useful function in the Company By | The "as read" Low Bidder is red | for each project. Th | • |
| Title | submitted in accordance with the | | ocal Let Projects |

The Department of Transportation is requesting disclosure of information that is necessary to accomplish the purpose as outlined under State and Federal law. Disclosure of this information is **REQUIRED**. Failure to provide any information will result in the contract not being awarded. This form has been approved by the State Forms Manager Center.

2300 South Dirksen Parkway

Springfield, Illinois 62764

Submit forms to the

Local Agency



DBE Participation Statement

| | • | | | | | | |
|---|--|--|---|--|--|--|--|
| Subcontractor Registration Number | | | Letting | | | | |
| Participation Statement | | | Item No. | | | | |
| (1) Instruction | าร | | Contract No. | | | | |
| | st be completed for each disadvantaged business particip vith the special provision and will be attached to the Utiliza n for the firm. | | | | | | |
| (2) Work: | | | | | | | |
| Please indica | te: J/V Manufacturer Supplier | (60%) | Subcon | tractor | Trucking | | |
| Pay Item No. | Description | | Quantity | Unit Price | Total | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| <u> </u> | | | | <u> </u> Total | | | |
| | yment Items (For any of the above items which are partial ust be sufficient to determine a Commercially Useful Function | | | | ct dollar amount: | | |
| | | | | | | | |
| In the event a contract, the particle undersign perform a concontractor or prior approval actual work performs. | is to be a second-tier subcontractor, or if the first-tier DBE to be a second-tier subcontractor, or if the first-tier DBE to be clearly indicated on the DBE Participation State. DBE subcontractor second-tiers a portion of its subcontraction must submit a DBE Participation Statement, with the ned certify that the information included herein is true and immercially useful function in the work of the contract item of the subcontractor. The undersigned further understart from the Department's Bureau of Small Business Enterperformed on this project and the payment therefore must be neature for Contractor1st Tier2nd Tier | ement, and the act to one come details of a correct, and (s) listed about that no corrises and the | the details of the result of the transaction of the transaction of that the DBE ove and to exchanges to this nat complete a I to the Depart | ne transaction fully of tractors during the n(s) fully explained if firm listed below lecute a contract with statement may be nd accurate inform | explained. work of a nas agreed to th the prime made without ation regarding | | |
| T:41a | | T:Ha | | | | | |
| Title | | Title _ | | | | | |
| Date | | Date | Davase | | | | |
| Contact Pers | on | Contact Person | | | | | |
| Phone | | Phone | | | | | |
| Firm Name | | Firm Na | • | | | | |
| Address | | Address | | | | | |
| City/State/Zip | | City/Stat | e/Zip | | | | |
| | | | | E | | | |
| The Department of Tr | ansportation is requesting disclosure of information that is necessary to accomplish the sta re of this information is REQUIRED . Failure to provide any information will result in the co | atutory purpose as | outlined under the sta | te and heen WC | | | |
| | e Forms Management Center. | dot not being di | .a.aca. Tilio iUlliTildS | 20011 | | | |

PROPOSAL ENVELOPE



PROPOSALS

for construction work advertised for bids by the Illinois Department of Transportation

| Item No. | Item No. | Item No. |
|----------|----------|----------|
| | | |
| | | |
| | | |
| | | |
| | | |
| | | |

Submitted By:

| lame: | |
|-----------|--|
| address: | |
| | |
| | |
| Phone No. | |

Bidders should use an IDOT proposal envelope or affix this form to the front of a 10" x 13" envelope for the submittal of bids. If proposals are mailed, they should be enclosed in a second or outer envelope addressed to:

Engineer of Design and Environment - Room 326 Illinois Department of Transportation 2300 South Dirksen Parkway Springfield, Illinois 62764

NOTICE

Individual bids, including Bid Bond and/or supplemental information if required, should be securely stapled.

CONTRACTOR OFFICE COPY OF CONTRACT SPECIFICATIONS

NOTICE

None of the following material needs to be returned with the bid package unless the special provisions require documentation and/or other information to be submitted.

Contract No. 61B01 DUPAGE County Section 12-00048-00-SW (Winfield) Project SRTS-4009(129) Various Routes District 1 Construction Funds



SUBCONTRACTOR DOCUMENTATION

Public Acts 96-0795, 96-0920, and 97-0895 enacted substantial changes to the provisions of the Code (30 ILCS 500). Among the changes are provisions affecting subcontractors. The Contractor awarded this contract will be required as a material condition of the contract to implement and enforce the contract requirements applicable to subcontractors that entered into a contractual agreement with a total value of \$50,000 or more with a person or entity who has a contract subject to the Code and approved in accordance with article 108.01 of the Standard Specifications for Road and Bridge Construction.

If the Contractor seeks approval of subcontractors to perform a portion of the work, and approval is granted by the Department, the Contractor shall provide a copy of the subcontract to the Illinois Department of Transportation's CPO upon request within 15 calendar days after execution of the subcontract.

Financial disclosures required pursuant to Sec. 50-35 of the Code must be submitted for all applicable subcontractors. The subcontract shall contain the certifications required to be made by subcontractors pursuant to Article 50 of the Code. This Notice to Bidders includes a document incorporating all required subcontractor certifications and disclosures for use by the Contractor in compliance with this mandate. The document is entitled <u>State Required Ethical Standards Governing Subcontractors</u>.

STATE ETHICAL STANDARDS GOVERNING SUBCONTRACTORS

Article 50 of the Code establishes the duty of all State CPOs, SPOs, and their designees to maximize the value of the expenditure of public moneys in procuring goods, services, and contracts for the State of Illinois and to act in a manner that maintains the integrity and public trust of State government. In discharging this duty, they are charged by law to use all available information, reasonable efforts, and reasonable actions to protect, safeguard, and maintain the procurement process of the State of Illinois.

The certifications hereinafter made by the subcontractor are each a material representation of fact upon which reliance is placed should the Department approve the subcontractor. The CPO may terminate or void the contract approval if it is later determined that the bidder or subcontractor rendered a false or erroneous certification. If a false certification is made by a subcontractor the contractor's submitted bid and the executed contract may not be declared void unless the contractor refuses to terminate the subcontract upon the State's request after a finding that the subcontractor's certification was false.

Section 50-2 of the Code provides that every person that has entered into a multi-year contract and every subcontractor with a multi-year subcontract shall certify, by July 1 of each fiscal year covered by the contract after the initial fiscal year, to the responsible CPO whether it continues to satisfy the requirements of Article 50 pertaining to the eligibility for a contract award. If a contractor or subcontractor is not able to truthfully certify that it continues to meet all requirements, it shall provide with its certification a detailed explanation of the circumstances leading to the change in certification status. A contractor or subcontractor that makes a false statement material to any given certification required under Article 50 is, in addition to any other penalties or consequences prescribed by law, subject to liability under the Whistleblower Reward and Protection Act for submission of a false claim.

A. Bribery

Section 50-5. Bribery.

- (a) Prohibition. No person or business shall be awarded a contract or subcontract under this Code who:
 - (1) has been convicted under the laws of Illinois or any other state of bribery or attempting to bribe an officer or employee of the State of Illinois or any other state in that officer's or employee's official capacity; or
 - (2) has made an admission of guilt of that conduct that is a matter of record but has not been prosecuted for that conduct.
- (b) Businesses. No business shall be barred from contracting with any unit of State or local government, or subcontracting under such a contract, as a result of a conviction under this Section of any employee or agent of the business if the employee or agent is no longer employed by the business and:
 - (1) the business has been finally adjudicated not guilty; or
 - (2) the business demonstrates to the governmental entity with which it seeks to contract, or which is signatory to the contract to which the subcontract relates, and that entity finds that the commission of the offense was not authorized, requested, commanded, or performed by a director, officer, or high managerial agent on behalf of the business as provided in paragraph (2) of subsection (a) of Section 5-4 of the Criminal Code of 2012.
- (c) Conduct on behalf of business. For purposes of this Section, when an official, agent, or employee of a business committed the bribery or attempted bribery on behalf of the business and in accordance with the direction or authorization of a responsible official of the business, the business shall be chargeable with the conduct.
- (d) Certification. Every bid submitted to and contract executed by the State, and every subcontract subject to Section 20-120 of the Code shall contain a certification by the contractor or the subcontractor, respectively, that the contractor or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the CPO may declare the related contract void if any certifications required by this Section are false. A contractor who makes a false statement, material to the certification, commits a Class 3 felony.

The contractor or subcontractor certifies that it is not barred from being awarded a contract under Section 50-5.

B. Felons

Section 50-10. Felons.

- (a) Unless otherwise provided, no person or business convicted of a felony shall do business with the State of Illinois or any State agency, or enter into a subcontract, from the date of conviction until 5 years after the date of completion of the sentence for that felony, unless no person held responsible by a prosecutorial office for the facts upon which the conviction was based continues to have any involvement with the business.
- (b) Certification. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Code shall contain a certification by the bidder or contractor or subcontractor, respectively, that the bidder, contractor, or subcontractor is not barred from being awarded a contract or subcontract under this Section and acknowledges that the CPO may declare the related contract void if any of the certifications required by this Section are false.

C. <u>Debt Delinquency</u>

Section 50-11 and 50-12. Debt Delinquency.

The contractor or bidder or subcontractor, respectively, certifies that it, or any affiliate, is not barred from being awarded a contract or subcontract under the Code. Section 50-11 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it knows or should know that it, or any affiliate, is delinquent in the payment of any debt to the State as defined by the Debt Collection Board. Section 50-12 prohibits a person from entering into a contract with a State agency, or entering into a subcontract, if it, or any affiliate, has failed to collect and remit Illinois Use Tax on all sales of tangible personal property into the State of Illinois in accordance with the provisions of the Illinois Use Tax Act. The bidder or contractor or subcontractor, respectively, further acknowledges that the CPO may declare the related contract void if this certification is false or if the bidder, contractor, or subcontractor, or any affiliate, is determined to be delinquent in the payment of any debt to the State during the term of the contract.

D. Prohibited Bidders, Contractors and Subcontractors

Section 50-10.5 and 50-60(c). Prohibited bidders, contractors and subcontractors.

The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-10.5 that no officer, director, partner or other managerial agent of the contracting business has been convicted of a felony under the Sarbanes-Oxley Act of 2002 or a Class 3 or Class 2 felony under the Illinois Securities Law of 1953 or if in violation of Subsection (c) for a period of five years from the date of conviction. Every bid submitted to and contract executed by the State and every subcontract subject to Section 20-120 of the Code shall contain a certification by the bidder, contractor, or subcontractor, respectively, that the bidder, contractor, or subcontract is not barred from being awarded a contract or subcontract under this Section and acknowledges that the CPO shall declare the related contract void if any of the certifications completed pursuant to this Section are false.

E. Section 42 of the Environmental Protection Act

The bidder or contractor or subcontractor, respectively, certifies in accordance with 30 ILCS 500/50-14 that the bidder, contractor, or subcontractor, is not barred from being awarded a contract or entering into a subcontract under this Section which prohibits the bidding on or entering into contracts with the State of Illinois or a State agency, or entering into any subcontract, that is subject to the Code by a person or business found by a court or the Pollution Control Board to have committed a willful or knowing violation of Section 42 of the Environmental Protection Act for a period of five years from the date of the order. The bidder or contractor or subcontractor, respectively, acknowledges that the CPO may declare the contract void if this certification is false.

The undersigned, on behalf of the subcontracting company, has read and understands the above certifications and makes the certifications as required by law.

Name of Subcontracting Company

Authorized Officer

Date

SUBCONTRACTOR DISCLOSURES

I. DISCLOSURES

A. The disclosures hereinafter made by the subcontractor are each a material representation of fact upon which reliance is placed. The subcontractor further certifies that the Department has received the disclosure forms for each subcontract.

The CPO may void the bid, contract, or subcontract, respectively, if it is later determined that the bidder or subcontractor rendered a false or erroneous disclosure. A contractor or subcontractor may be suspended or debarred for violations of the Code. Furthermore, the CPO may void the contract.

B. Financial Interests and Conflicts of Interest

1. Section 50-35 of the Code provides that all subcontracts with a total value of \$50,000 or more, from subcontractors identified in Section 20-120 of the Code, shall be accompanied by disclosure of the financial interests of the subcontractor. This disclosed information for the subcontractor, will be maintained as public information subject to release by request pursuant to the Freedom of Information Act, filed with the Procurement Policy Board, and shall be incorporated as a material term of the Prime Contractor's contract. Furthermore, pursuant to this Section, the Procurement Policy Board may recommend to allow or void a contract or subcontract based on a potential conflict of interest.

The financial interests to be disclosed shall include ownership or distributive income share that is in excess of 5%, or an amount greater than 60% of the annual salary of the Governor, of the subcontracting entity or its parent entity, whichever is less, unless the subcontractor is a publicly traded entity subject to Federal 10K reporting, in which case it may submit its 10K disclosure in place of the prescribed disclosure. If a subcontractor is a privately held entity that is exempt from Federal 10K reporting, but has more than 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual or entity holding any ownership share that is in excess of 5%. The disclosure shall include the names, addresses, and dollar or proportionate share of ownership of each individual making the disclosure, their instrument of ownership or beneficial relationship, and notice of any potential conflict of interest resulting from the current ownership or beneficial interest of each individual making the disclosure having any of the relationships identified in Section 50-35 and on the disclosure form.

The current annual salary of the Governor is \$177,412.00.

In addition, all disclosures shall indicate any other current or pending contracts, subcontracts, proposals, leases, or other ongoing procurement relationships the subcontracting entity has with any other unit of state government and shall clearly identify the unit and the contract, subcontract, proposal, lease, or other relationship.

2. <u>Disclosure Forms</u>. Disclosure Form A is attached for use concerning the individuals meeting the above ownership or distributive share requirements. A separate Disclosure Form A must be submitted with the bid for each individual meeting the above requirements. In addition, a second form (Disclosure Form B) provides for the disclosure of current or pending procurement relationships with other (non-IDOT) state agencies and a total ownership certification. **The forms must be included with each bid.**

C. <u>Disclosure Form Instructions</u>

Form A Instructions for Financial Information & Potential Conflicts of Interest

If the subcontractor is a publicly traded entity subject to Federal 10K reporting, the 10K Report may be submitted to meet the requirements of Form A. If a subcontractor is a privately held entity that is exempt from Federal 10K reporting, but has more than 100 shareholders, it may submit the information that Federal 10K companies are required to report, and list the names of any individual or entity holding any ownership share that is in excess of 5%. If a subcontractor is not subject to Federal 10K reporting, the subcontractor must determine if any individuals are required by law to complete a financial disclosure form. To do this, the subcontractor should answer each of the following questions. A "YES" answer indicates Form A must be completed. If the answer to each of the following questions is "NO", then the NOT APPLICABLE STATEMENT on the second page of Form A must be signed and dated by an individual that is authorized to execute contracts for the subcontracting company. Note: These questions are for assistance only and are not required to be completed.

| 1. | Does anyone in your organization have a direct or beneficial ownership share of greater than 5% of the bidding entity or parent entity? YES NO |
|------|---|
| 2. | Does anyone in your organization have a direct or beneficial ownership share of less than 5%, but which has a value greater than 60% of the annual salary of the Governor? YESNO |
| 3. | Does anyone in your organization receive more than 60% of the annual salary of the Governor of the subcontracting entity's or parent entity's distributive income? YES NO |
| | (Note: Distributive income is, for these purposes, any type of distribution of profits. An annual salary is not distributive income.) |
| 4. | Does anyone in your organization receive greater than 5% of the subcontracting entity's or parent entity's total distributive income, but which is less than 60% of the annual salary of the Governor? YES NO |
| | (Note: Only one set of forms needs to be completed <u>per individual per subcontract</u> even if a specific individual would require a yes answer to more than one question.) |
| 'FS" | answer to any of these questions requires the completion of Form A. The subcontractor must determine each individual in |

A "YES" answer to any of these questions requires the completion of Form A. The subcontractor must determine each individual in the subcontracting entity or the subcontracting entity's parent company that would cause the questions to be answered "Yes". Each form must be signed and dated by an individual that is authorized to execute contracts for your organization. The individual signing can be, but does not have to be, the individual for which the form is being completed. The subcontractor is responsible for the accuracy of any information provided.

If the answer to each of the above questions is "NO", then the <u>NOT APPLICABLE STATEMENT</u> on page 2 of Form A must be signed and dated by an individual that is authorized to execute contracts for your company.

Form B: Instructions for Identifying Other Contracts & Procurement Related Information

Disclosure Form B must be completed for each subcontract submitted by the subcontracting entity. *Note: Checking the <u>NOT APPLICABLE STATEMENT</u> on Form A <u>does not</u> allow the subcontractor to ignore Form B. Form B must be completed, checked, and dated or the subcontract will not be approved.*

The Subcontractor shall identify, by checking Yes or No on Form B, whether it has any pending contracts, subcontracts, leases, bids, proposals, or other ongoing procurement relationship with any other (non-IDOT) State of Illinois agency. If "No" is checked, the subcontractor only needs to complete the check box on the bottom of Form B. If "Yes" is checked, the subcontractor must list all non-IDOT State of Illinois agency pending contracts, subcontracts, leases, bids, proposals, and other ongoing procurement relationships. These items may be listed on Form B or on an attached sheet(s). Contracts with cities, counties, villages, etc. are not considered State of Illinois agency contracts and are not to be included. Contracts or subcontracts with other State of Illinois agencies such as the Department of Natural Resources or the Capital Development Board must be included.

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form A Subcontractor: Financial Information & Potential Conflicts of Interest Disclosure

| Subcontractor Name | | |
|--------------------|-----------------|-------------------------------|
| Subcontractor Name | | |
| | | |
| | | |
| Legal Address | | |
| Legal Address | | |
| | | |
| | | |
| City, State, Zip | | |
| Oity, State, Zip | | |
| | | |
| | | |
| Telephone Number | Email Address | Fax Number (if available) |
| relephone Number | Liliali Addiess | i ax inuitibei (ii available) |
| | | |
| | | |

Disclosure of the information contained in this Form is required by Section 50-35 of the Code (30 ILCS 500). Subcontractors desiring to enter into a subcontract of a State of Illinois contract must disclose the financial information and potential conflict of interest information as specified in this Disclosure Form. This information shall become part of the publicly available contract file. This Form A must be completed for subcontracts with a total value of \$50,000 or more, from subcontractors identified in Section 20-120 of the Code, and for all openended contracts. A publicly traded company may submit a 10K disclosure (or equivalent if applicable) in satisfaction of the requirements set forth in Form A. See Disclosure Form Instructions.

The current annual salary of the Governor is \$177,412.00.

FOR INDIVIDUAL (type or print information)

DISCLOSURE OF FINANCIAL INFORMATION

1. Disclosure of Financial Information. The individual named below has an interest in the SUBCONTRACTOR (or its parent) in terms of ownership or distributive income share in excess of 5%, or an interest which has a value of more than 60% of the annual salary of the Governor. (Make copies of this form as necessary and attach a separate Disclosure Form A for each individual meeting these requirements)

| TOTT INDIVIDUAL (| type or print information) | | |
|---------------------------|--|---|---|
| NAME: | | | |
| ADDRESS _ | | | |
| | | | |
| Type of owner | ship/distributable income share: | : | |
| stock % or \$ value of | sole proprietorship ownership/distributable income sh | Partnershipare: | other: (explain on separate shee |
| | | | |
| | nterest relationships apply. If the | | dicate which, if any, of the following is "Yes", please attach additional |
| (a) State employme | nt, currently or in the previous 3 | years, including contractu | ual employment of services. Yes No |
| If your answer is | yes, please answer each of the | e following questions. | <u> </u> |
| - | currently an officer or employee way Authority? | e of either the Capitol Deve | elopment Board or the Illinois State YesNo |
| currently exceeds | currently appointed to or emplo appointed to or employed by a 60% of the annual salary of the or which you are employed and | ny agency of the State of le Governor, provide the na | Illinois, and your annual salary |

| | 3. | If you are currently appointed to or employed by any a salary exceeds 60% of the annual salary of the Govern (i) more than 7 1/2% of the total distributable incomporation, or (ii) an amount in excess of 100% of the | nor, are you entitled to rece e of your firm, partnershi | eive p, association or ernor? |
|-----|---------------|---|---|---|
| | 4. | If you are currently appointed to or employed by any a salary exceeds 60% of the annual salary of the Governor minor children entitled to receive (i) more than 15 income of your firm, partnership, association or corpo the salary of the Governor? | nor, are you and your spou % in the aggregate of the | use e total distributable excess of two times |
| (b) | | employment of spouse, father, mother, son, or daughte previous 2 years. | r, including contractual er | |
| | If | your answer is yes, please answer each of the following | | J <u> </u> |
| | 1. | Is your spouse or any minor children currently an office Board or the Illinois State Toll Highway Authority? | er or employee of the Cap YesNo | |
| | | Is your spouse or any minor children currently appoint of Illinois? If your spouse or minor children is/are agency of the State of Illinois, and his/her annual annual salary of the Governor, provide the name of you of the State agency for which he/she is employed and | currently appointed to o salary exceeds 60% of the ir spouse and/or minor chi | r employed by any ne Idren, the name |
| | 3. | If your spouse or any minor children is/are currently ap State of Illinois, and his/her annual salary exceeds 609 are you entitled to receive (i) more than 71/2% of the tifirm, partnership, association or corporation, or (ii) annual salary of the Governor? | of the annual salary of the otal distributable income o | ne Governor, f your of 100% of the |
| | 4. | If your spouse or any minor children are currently app State of Illinois, and his/her annual salary exceeds 60% are you and your spouse or minor children entitled to aggregate of the total distributable income of your firm (ii) an amount in excess of two times the salary of the Co | o of the annual salary of the receive (i) more than 15 n, partnership, association Governor? | e Governor, % in the n or corporation, or |
| | - · | | YesN | |
| (C) | unit of | ve status; the holding of elective office of the State of Illi local government authorized by the Constitution of the currently or in the previous 3 years. | | utes of the State of |
| (d) | | onship to anyone holding elective office currently or in the r daughter. | ne previous 2 years; spous YesN | |
| (e) | Americ of the | ntive office; the holding of any appointive government of ca, or any unit of local government authorized by the Co State of Illinois, which office entitles the holder to comp scharge of that office currently or in the previous 3 years | nstitution of the State of I ensation in excess of the | llinois or the statutes expenses incurred in |
| | | onship to anyone holding appointive office currently or in daughter. | the previous 2 years; spo YesN | |
| (g) | Emplo | syment, currently or in the previous 3 years, as or by any | registered lobbyist of the YesN | _ |

| (h) Relationship to anyone who is or was a registered lobbyist son, or daughter. | in the previous 2 years; spouse, father, mother, YesNo |
|--|--|
| (i) Compensated employment, currently or in the previous 3 y committee registered with the Secretary of State or any contact action committee registered with either the Secretary of States | ounty clerk of the State of Illinois, or any political |
| (j) Relationship to anyone; spouse, father, mother, son, or data last 2 years by any registered election or re-election common county clerk of the State of Illinois, or any political action of State or the Federal Board of Elections. | ttee registered with the Secretary of State or any ommittee registered with either the Secretary of |
| | YesNo |
| Communication Disclosure. | |
| Disclose the name and address of each lobbyist and other a Section 2 of this form, who is has communicated, is communic employee concerning the bid or offer. This disclosure i supplemented for accuracy throughout the process and threidentified, enter "None" on the line below: | eating, or may communicate with any State officer or s a continuing obligation and must be promptly |
| Name and address of person(s): | |
| | |
| | |

3

4. Debarment Disclosure. For each of the persons identified under Sections 2 and 3 of this form, disclose whether any of the following has occurred within the previous 10 years: debarment from contracting with any governmental entity; professional licensure discipline; bankruptcies; adverse civil judgments and administrative findings; and criminal felony convictions. This disclosure is a continuing obligation and must be promptly

supplemented for accuracy throughout the procurement process and term of the contract. If no person is identified, enter "None" on the line below: Name of person(s): Nature of disclosure: APPLICABLE STATEMENT This Disclosure Form A is submitted on behalf of the INDIVIDUAL named on previous page. Under penalty of perjury, I certify the contents of this disclosure to be true and accurate to the best of my knowledge. Completed by: Signature of Individual or Authorized Officer Date **NOT APPLICABLE STATEMENT** Under penalty of perjury, I have determined that no individuals associated with this organization meet the criteria that would require the completion of this Form A. This Disclosure Form A is submitted on behalf of the SUBCONTRACTOR listed on the previous page. Signature of Authorized Officer Date

ILLINOIS DEPARTMENT OF TRANSPORTATION

Form B Subcontractor: Other Contracts & Financial Related Information Disclosure

| Subcontractor Name | | | |
|--|---|---|--|
| Legal Address | | | |
| City, State, Zip | | | |
| Telephone Number | Email Address | Fax Number (if available) | |
| Disclosure of the information contained in information shall become part of the publicl a total value of \$50,000 or more, from subcontracts. | y available contract file. This Form | B must be completed for subcontracts with | |
| DISCLOSURE OF OTHER CONTRA | CTS, SUBCONTRACTS, AND PRO | OCUREMENT RELATED INFORMATION | |
| 1. Identifying Other Contracts & Procure any pending contracts, subcontracts, includ any other State of Illinois agency: Ye If "No" is checked, the subcontractor only | ing leases, bids, proposals, or othe sNo | r ongoing procurement relationship with | |
| 2. If "Yes" is checked. Identify each such information such as bid or project number (a INSTRUCTIONS: | | | |
| THE FOLLOWING STATEMENT MUST BE CHECKED | | | |
| П | | | |
| | Signature of Authorized Officer | Date | |
| | | | |
| | OWNERSHIP CERTIFICATION | | |
| Please certify that the following statement is of ownership | s true if the individuals for all submit | ted Form A disclosures do not total 100% | |
| Any remaining ownership interest is parent entity's distributive income o | | han \$106,447.20 of the bidding entity's or interest. | |
| □ Ves □ No □ N/A (Form | A disclosura(s) established 100% of | wnershin) | |

Illinois Department of Transportation

NOTICE TO BIDDERS

- 1. TIME AND PLACE OF OPENING BIDS. Sealed proposals for the improvement described herein will be received by the Department of Transportation. Electronic bids are to be submitted to the electronic bidding system (iCX-Integrated Contractors Exchange). Paper-based bids are to be submitted to the Chief Procurement Officer for the Department of Transportation in care of the Chief Contracts Official at the Harry R. Hanley Building, 2300 South Dirksen Parkway, in Springfield, Illinois until 10:00 a.mMarch 6, 2015. All bids will be gathered, sorted, publicly opened and read in the auditorium at the Department of Transportation's Harry R. Hanley Building shortly after 10:00 a.m.
- **2. DESCRIPTION OF WORK**. The proposed improvement is identified and advertised for bids in the Invitation for Bids as:

Contract No. 61B01 DUPAGE County Section 12-00048-00-SW (Winfield) Project SRTS-4009(129) Various Routes District 1 Construction Funds

This project consists of the construction of sidewalks, pavement markings for crosswalks and curb and gutter removal and replacement on Park Street from Liberty Street to Washington Avenue; Washington Avenue from Park Street to Winfield Road and Metra Parking Lot from Jewell Road to the Railroad Underpass in the Village of Winfield.

- 3. INSTRUCTIONS TO BIDDERS. (a) This Notice, the invitation for bids, proposal and letter of award shall, together with all other documents in accordance with Article 101.09 of the Standard Specifications for Road and Bridge Construction, become part of the contract. Bidders are cautioned to read and examine carefully all documents, to make all required inspections, and to inquire or seek explanation of the same prior to submission of a bid.
 - (b) State law, and, if the work is to be paid wholly or in part with Federal-aid funds, Federal law requires the bidder to make various certifications as a part of the proposal and contract. By execution and submission of the proposal, the bidder makes the certification contained therein. A false or fraudulent certification shall, in addition to all other remedies provided by law, be a breach of contract and may result in termination of the contract.
- 4. AWARD CRITERIA AND REJECTION OF BIDS. This contract will be awarded to the lowest responsive and responsible bidder considering conformity with the terms and conditions established by the Department in the rules, Invitation for Bids and contract documents. The issuance of plans and proposal forms for bidding based upon a prequalification rating shall not be the sole determinant of responsibility. The Department reserves the right to determine responsibility at the time of award, to reject any or all proposals, to readvertise the proposed improvement, and to waive technicalities.

By Order of the Illinois Department of Transportation

Randall S. Blankenhorn, Acting Secretary

CONTRACT 61B01

INDEX FOR SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS

Adopted January 1, 2015

This index contains a listing of SUPPLEMENTAL SPECIFICATIONS, frequently used RECURRING SPECIAL PROVISIONS, and LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS.

ERRATA Standard Specifications for Road and Bridge Construction (Adopted 1-1-12) (Revised 1-1-15)

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The following RECURRING SPECIAL PROVISIONS indicated by an "X" are applicable to this contract and are included by reference:

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LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS

The following LOCAL ROADS AND STREETS RECURRING SPECIAL PROVISIONS indicated by an "X" are applicable to this contract and are included by reference:

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| LR # LR SD12 LR SD13 LR 107-2 LR 107-4 LR 108 LR 109 LR 212 LR 355-1 | <u>Pg#</u> 33 | Special Provision Title Slab Movement Detection Device Required Cold Milled Surface Texture Railroad Protective Liability Insurance for Local Lettings Insurance Combination Bids Equipment Rental Rates Shaping Roadway Bituminous Stabilized Base Course, Road Mix or Traveling | Effective Nov. 11, 1984 Nov. 1, 1987 Mar. 1, 2005 Feb. 1, 2007 Jan. 1, 1994 Jan. 1, 2012 Aug. 1, 1969 | Revised Jan. 1, 2007 Jan. 1, 2007 Jan. 1, 2006 Aug. 1, 2007 Mar. 1, 2005 Jan. 1, 2002 |
|--|---------------|---|---|---|
| LR 355-2 LR 400-1 LR 400-2 LR 400-3 | | Plant Mix Bituminous Stabilized Base Course, Plant Mix Bituminous Treated Earth Surface Bituminous Surface Plant Mix (Class B) Hot In-Place Recycling (HIR) – Surface Recycling | Oct. 1, 1973 Feb. 20, 1963 Jan. 1, 2007 Jan. 1, 2008 Jan. 1, 2012 | Jan. 1, 2007 Jan. 1, 2007 Apr. 1, 2012 |
| LR 400-4 LR 400-5 LR 400-6 LR 400-7 LR 402 | | Full-Depth Reclamation (FDR) with Emulsified Asphalt Cold In-Place Recycling (CIR) With Emulsified Asphalt Cold In Place Recycling (CIR) with Foamed Asphalt Full-Depth Reclamation (FDR) with Foamed Asphalt Salt Stabilized Surface Course | Apr. 1, 2012 Apr. 1, 2012 June 1, 2012 June 1, 2012 Feb. 20, 1963 | Jun. 1, 2012 Jun. 1, 2012 Jan. 1, 2007 |
| LR 403-1 | | Surface Profile Milling of Existing, Recycled or Reclaimed Flexible Pavement | Apr. 1, 2012 | Jun. 1, 2012 |
| LR 403-2 LR 406 | | Bituminous Hot Mix Sand Seal Coat Filling HMA Core Holes with Non-shrink Grout | Aug. 1, 1969 Jan. 1, 2008 | Jan. 1, 2007 |
| LR 420 LR 442 LR 451 LR 503-1 | | PCC Pavement (Special) Bituminous Patching Mixtures for Maintenance Use Crack Filling Bituminous Pavement with Fiber-Asphalt | May 12, 1964 Jan. 1, 2004 Oct. 1, 1991 | Jan. 2, 2007 Jun. 1, 2007 Jan. 1, 2007 |
| LR 503-2 LR 542 LR 663 | | Furnishing Class SI Concrete Furnishing Class SI Concrete (Short Load) Pipe Culverts, Type (Furnished) Calcium Chloride Applied | Oct. 1, 1973 Jan. 1, 1989 Sep. 1, 1964 Jun. 1, 1958 | Jan. 1, 2002 Jan. 1, 2002 Jan. 1, 2007 Jan. 1, 2007 |
| LR 702 LR 1000-1 | | Construction and Maintenance Signs Cold In-Place Recycling (CIR) and Full Depth Reclamation (FDR) with Emulsified Asphalt Mix Design Procedures | Jan. 1, 2004 Apr. 1, 2012 | Jun. 1, 2007 Jun. 1, 2012 |
| LR 1000-2 | | Cold In-Place Recycling (CIR) and Full Depth Reclamation (FDR) with Foamed Asphalt Mix Design Procedures | June 1, 2012 | |
| LR 1004 LR 1030 LR 1032-1 LR 1102 | | Coarse Aggregate for Bituminous Surface Treatment Growth Curve Emulsified Asphalts Road Mix or Traveling Plan Mix Equipment | Jan. 1, 2002 Mar. 1, 2008 Jan. 1, 2007 Jan. 1, 2007 | Jan. 1, 2007 Jan. 1, 2010 Feb. 7, 2008 |
| | | | | |

BDE SPECIAL PROVISIONS

The following special provisions indicated by an "x" are applicable to this contract. An * indicates a new or revised special provision for the letting.

| <u>File</u> Name | <u>Pg.</u> | Special Provision Title | Effective | Revised |
|---------------------|------------|---|---------------|--|
| 80240 | | Above Grade Inlet Protection | July 1, 2009 | Jan. 1, 2012 |
| 80099 | | Accessible Pedestrian Signals (APS) | April 1, 2003 | Jan. 1, 2014 |
| 80274 | | Aggregate Subgrade Improvement | April 1, 2012 | Jan. 1, 2013 |
| 80192 | | Automated Flagger Assistance Device | Jan. 1, 2008 | · |
| 80173 | | Bituminous Materials Cost Adjustments | Nov. 2, 2006 | Aug. 1, 2013 |
| 80241 | | Bridge Demolition Debris | July 1, 2009 | |
| 50261 | | Building Removal-Case I (Non-Friable and Friable Asbestos) | Sept. 1, 1990 | April 1, 2010 |
| 50481 | | Building Removal-Case II (Non-Friable Asbestos) | Sept. 1, 1990 | April 1, 2010 |
| 50491 | | Building Removal-Case III (Friable Asbestos) | Sept. 1, 1990 | April 1, 2010 |
| 50531 | | Building Removal-Case IV (No Asbestos) | Sept. 1, 1990 | April 1, 2010 |
| * 80310 * 80341 | | Coated Galvanized Steel Conduit | Jan. 1, 2013 | Jan. 1, 2015 |
| | | Collable Nonmetallic Conduit | Aug. 1, 2014 | Jan. 1, 2015 |
| 80198 | | Completion Date (via calendar days) | April 1, 2008 | |
| 80199 80293 | | Completion Date (via calendar days) Plus Working Days | April 1, 2008 | 1 1 4 0044 |
| | | Concrete Box Culverts with Skews > 30 Degrees and Design Fills ≤ 5 Feet | April 1, 2012 | April 1, 2014 |
| 80294 | | Concrete Box Culverts with Skews ≤ 30 Degrees Regardless of Design Fill and Skews > 30 Degrees with Design Fills > 5 Feet | April 1, 2012 | April 1, 2014 |
| 80311 | | Concrete End Sections for Pipe Culverts | Jan. 1, 2013 | |
| 80334 | 34 | X Concrete Gutter, Curb, Median, and Paved Ditch | April 1, 2014 | Aug. 1, 2014 |
| 80277 | 35 | X Concrete Mix Design – Department Provided | Jan. 1, 2012 | Jan. 1, 2014 |
| 80261 | 36 | X Construction Air Quality – Diesel Retrofit | June 1, 2010 | Nov. 1, 2014 |
| 80335 | 39 | X Contract Claims | April 1, 2014 | |
| * 80029 | 40 | X Disadvantaged Business Enterprise Participation | Sept. 1, 2000 | Jan. 2, 2015 |
| 80265 | 51 | X Friction Aggregate | Jan. 1, 2011 | Nov. 1, 2014 |
| 80229 | | Fuel Cost Adjustment | April 1, 2009 | July 1, 2009 |
| 80329 | | Glare Screen | Jan. 1, 2014 | |
| 80304 | | Grooving for Recessed Pavement Markings | Nov. 1, 2012 | Aug. 1, 2014 |
| 80246 | | Hot-Mix Asphalt – Density Testing of Longitudinal Joints | Jan. 1, 2010 | April 1, 2012 |
| 80322 | | Hot-Mix Asphalt – Mixture Design Composition and Volumetric Requirements | Nov. 1, 2013 | Nov. 1, 2014 |
| 80323 | | Hot-Mix Asphalt – Mixture Design Verification and Production | Nov. 1, 2013 | Nov. 1, 2014 |
| 80347 | | Hot-Mix Asphalt – Pay for Performance Using Percent Within Limits – Jobsite Sampling | Nov. 1, 2014 | |
| 80348 | | Hot-Mix Asphalt – Prime Coat | Nov. 1, 2014 | |
| 80315 | | Insertion Lining of Culverts | Jan. 1, 2013 | Nov. 1, 2013 |
| * 80351 | | Light Tower | Jan. 1, 2015 | |
| 80336 | | Longitudinal Joint and Crack Patching | April 1, 2014 | The state of the s |
| 80324 | · 55 | X LRFD Pipe Culvert Burial Tables | Nov. 1, 2013 | Nov. 1, 2014 |
| 80325 | 75 | X LRFD Storm Sewer Burial Tables | Nov. 1, 2013 | Nov. 1, 2014 |
| 80045 | | Material Transfer Device | June 15, 1999 | Aug. 1, 2014 |
| * 80342 | | Mechanical Side Tie Bar Inserter | Aug. 1, 2014 | Jan. 1, 2015 |
| 80165 | | Moisture Cured Urethane Paint System | Nov. 1, 2006 | Jan. 1, 2010 |
| 80337 | | Paved Shoulder Removal | April 1, 2014 | |
| 80349 | | Pavement Marking Blackout Tape | Nov. 1, 2014 | |
| 80298 | | Pavement Marking Tape Type IV | April 1, 2012 | |
| 80254 * 80352 | | Pavement Patching | Jan. 1, 2010 | |
| 00002 | | Pavement Striping - Symbols | Jan. 1, 2015 | |
| 00000 | | Portland Coment Concrete Inlay or Overlay | Jan. 1, 2015 | |
| 80338 | | Portland Cement Concrete Partial Depth Hot-Mix Asphalt Patching | April 1, 2014 | |

| <u>File</u> Name | <u>Pg.</u> | Special Provision Title | <u>Effective</u> | Revised |
|---------------------|---|--|------------------|---|
| 1101110 | | | | |
| 80343 | | Precast Concrete Handhole | Aug. 1, 2014 | |
| 80300 | | Preformed Plastic Pavement Marking Type D - Inlaid | April 1, 2012 | |
| 80328 | 85 | X Progress Payments | Nov. 2, 2013 | |
| 3426I | | Railroad Protective Liability Insurance | Dec. 1, 1986 | Jan. 1, 2006 |
| 80157 | VOD der en et eller meddelmet e | Railroad Protective Liability Insurance (5 and 10) | Jan. 1, 2006 | |
| * 80306 | | Reclaimed Asphalt Pavement (RAP) and Reclaimed Asphalt | Nov. 1, 2012 | Jan. 2, 2015 |
| | | Shingles (RAS) | | |
| 80350 | | Retroreflective Sheeting for Highway Signs | Nov. 1, 2014 | |
| 80327 | 86 | X Reinforcement Bars | Nov. 1, 2013 | |
| 80344 | construction desires | Rigid Metal Conduit | Aug. 1, 2014 | |
| * 80354 | 88 | X Sidewalk, Corner, or Crosswalk Closure | Jan. 1, 2015 | |
| 80340 | | Speed Display Trailer | April 2, 2014 | |
| 80127 | | Steel Cost Adjustment | April 2, 2004 | April 1, 2009 |
| 80317 | en entre en | Surface Testing of Hot-Mix Asphalt Overlays | Jan. 1, 2013 | |
| * 80355 | and the second second | Temporary Concrete Barrier | Jan. 1, 2015 | |
| 80301 | | Tracking the Use of Pesticides | Aug. 1, 2012 | |
| * 80356 | | Traffic Barrier Terminals Type 6 or 6B | Jan. 1, 2015 | |
| 20338 | | Training Special Provisions | Oct. 15, 1975 | |
| 80318 | | Traversable Pipe Grate | Jan. 1, 2013 | April 1, 2014 |
| 80345 | | Underpass Luminaire | Aug. 1, 2014 | |
| * 80357 | | Urban Half Road Closure with Mountable Median | Jan. 1, 2015 | 100 100 100 100 100 100 100 100 100 100 |
| 80346 | | Waterway Obstruction Warning Luminaire | Aug. 1, 2014 | |
| 80288 | | Warm Mix Asphalt | Jan. 1, 2012 | Nov. 1, 2014 |
| 80302 | 89 | X Weekly DBE Trucking Reports | June 2, 2012 | |
| 80289 | | Wet Reflective Thermoplastic Pavement Marking | Jan. 1, 2012 | |
| 80071 | 90 | X Working Days | Jan. 1, 2002 | |

The following special provisions are in the 2015 Supplemental Specifications and Recurring Special Provisions:

| <u>File</u> Name | Special Provision Title | New Location | Effective | Revised |
|---------------------|--|---|---------------|---------------|
| 80292 | Coarse Aggregate in Bridge Approach Slabs/Footings | Articles 1004.01(b) and 1004.02(f) | April 1, 2012 | April 1, 2013 |
| 80303 | Granular Materials | Articles 1003.04, 1003.04(c), and 1004.05(c) | Nov. 1, 2012 | |
| 80330 | Pavement Marking for Bike Symbol | Article 780.14 | Jan. 1, 2014 | |
| 80331 | Payrolls and Payroll Records | Recurring CS #1 and #5 | Jan. 1, 2014 | |
| 80332 | Portland Cement Concrete – Curing of Abutments and Piers | Article 1020.13 | Jan. 1, 2014 | |
| 80326 | Portland Cement Concrete Equipment | Article 1103.03(a)(5) | Nov. 1, 2013 | |
| 80281 | Quality Control/Quality Assurance of Concrete Mixtures | Recurring CS #31 | Jan. 1, 2012 | Jan. 1, 2014 |
| 80283 | Removal and Disposal of Regulated Substances | Articles 669.01, 669.08, 669.09, 669.14, and 669.16 | Jan. 1, 2012 | Nov. 2, 2012 |
| 80319 | Removal and Disposal of Surplus Materials | Article 202.03 | Nov. 2, 2012 | |
| 80307 | Seeding | Article 250.07 | Nov. 1, 2012 | |
| 80339 | Stabilized Subbase | Article 312.06 | April 1, 2014 | |
| 80333 | Traffic Control Setup and Removal Freeway/Expressway | Articles 701.18(I) and 701.19(a) | Jan. 1, 2014 | |

The following special provisions require additional information from the designer. The additional information needs to be included in a separate document attached to this check sheet. The Project Development and Implementation section will then include the information in the applicable special provision. The Special Provisions are:

- Bridge Demolition Debris
- Building Removal-Case I
- Building Removal-Case II
- Building Removal-Case III
- Building Removal-Case IV
- Completion Date
- Completion Date Plus Working Days
- DBE Participation

- Material Transfer Device
- Railroad Protective Liability Insurance
- Training Special Provisions
- Working Days

GUIDE BRIDGE SPECIAL PROVISION INDEX/CHECK SHEET

Effective as of the: November 21, 2014 Letting

| <u>P</u> g <u>#</u> | √ | File Name | <u>Title</u> | <u>Effective</u> | Revised |
|----------------------------|----------|-----------|--|------------------|----------------|
| | | GBSP 4 | Polymer Modified Portland Cement Mortar | June 7, 1994 | July 26, 2013 |
| | | GBSP 12 | Drainage System | June 10, 1994 | Jan 1, 2007 |
| | | GBSP 13 | High-Load Multi-Rotational Bearings | Oct 13, 1988 | Oct 30, 2012 |
| | | GBSP 14 | Jack and Remove Existing Bearings | April 20, 1994 | Jan 1, 2007 |
| | | GBSP 15 | Three Sided Precast Concrete Structure | July 12, 1994 | Oct 15, 2011 |
| | | GBSP 16 | Jacking Existing Superstructure | Jan 11, 1993 | Jan 1, 2007 |
| | | GBSP 17 | Bonded Preformed Joint Seal | July 12, 1994 | Jan 1, 2007 |
| | | GBSP 18 | Modular Expansion Joint | May 19, 1994 | April 18, 2014 |
| | | GBSP 21 | Cleaning and Painting Contact Surface Areas of Existing Steel Structures | June 30, 2003 | May 18, 2011 |
| | | GBSP 25 | Cleaning and Painting Existing Steel Structures | Oct 2, 2001 | April 19, 2012 |
| | | GBSP 26 | Containment and Disposal of Lead Paint Cleaning Residues | Oct 2, 2001 | April 30, 2010 |
| | | GBSP 28 | Deck Slab Repair | May 15, 1995 | Oct 15, 2011 |
| | | GBSP 29 | Bridge Deck Microsilica Concrete Overlay | May 15, 1995 | Oct 30, 2012 |
| | | GBSP 30 | Bridge Deck Latex Concrete Overlay | May 15, 1995 | Jan 18, 2011 |
| | | GBSP 31 | Bridge Deck High-Reactivity Metakaolin (HRM) Conc Overlay | Jan 21, 2000 | Oct 30, 2012 |
| | | GBSP 32 | Temporary Sheet Piling | Sept 2, 1994 | Jan 31, 2012 |
| | | GBSP 33 | Pedestrian Truss Superstructure | Jan 13, 1998 | April 18, 2014 |
| | | GBSP 34 | Concrete Wearing Surface | June 23, 1994 | Feb 6, 2013 |
| | | GBSP 35 | Silicone Bridge Joint Sealer | Aug 1, 1995 | Oct 15, 2011 |
| | | GBSP 38 | Mechanically Stabilized Earth Retaining Walls | Feb 3, 1999 | Aug 29, 2014 |
| | | GBSP 42 | Drilled Soldier Pile Retaining Wall | Sept 20, 2001 | Jan 3, 2014 |
| | | GBSP 43 | Driven Soldier Pile Retaining Wall | Nov 13, 2002 | Jan 3, 2014 |
| | | GBSP 44 | Temporary Soil Retention System | Dec 30, 2002 | May 11, 2009 |
| | | GBSP 45 | Bridge Deck Thin Polymer Overlay | May 7, 1997 | Feb 6, 2013 |
| | | GBSP 46 | Geotextile Retaining Walls | Sept 19, 2003 | July 26, 2013 |
| | | GBSP 51 | Pipe Underdrain for Structures | May 17, 2000 | Jan 22, 2010 |
| | | GBSP 53 | Structural Repair of Concrete | Mar 15, 2006 | Aug 29, 2014 |
| | | GBSP 55 | Erection of Curved Steel Structures | June 1, 2007 | |
| | | GBSP 56 | Setting Piles in Rock | Nov 14, 1996 | April 19, 2012 |
| | | GBSP 57 | Temporary Mechanically Stabilized Earth Retaining Walls | Jan 6, 2003 | Aug 29 ,2014 |
| | | GBSP 59 | Diamond Grinding and Surface Testing Bridge Sections | Dec 6, 2004 | Jan 3, 2014 |
| | | GBSP 60 | Containment and Disposal of Non-Lead Paint Cleaning Residues | Nov 25, 2004 | Mar 6, 2009 |
| | | GBSP 61 | Slipform Parapet | June 1, 2007 | Aug 17, 2012 |
| | | GBSP 62 | Concrete Deck Beams | June 13, 2008 | Oct 9, 2009 |
| 91 | X | GBSP 64 | Segmental Concrete Block Wall | Jan 7, 1999 | Oct 30, 2012 |
| | | GBSP 65 | Precast Modular Retaining Walls | Mar 19, 2001 | Jan 3, 2014 |
| | | GBSP 67 | Structural Assessment Reports for Contractor's Means and Methods | Mar 6, 2009 | |
| | | GBSP 70 | Braced Excavation | Aug 9, 1995 | May 18, 2011 |
| | | GBSP 71 | Aggregate Column Ground Improvement | Jan 15, 2009 | Oct 15, 2011 |

| | GBSP 72 | Bridge Deck Fly Ash or GGBF Slag Concrete Overlay | Jan 18, 2011 | Oct 15, 2011 |
|---|---------|---|----------------|----------------|
| | GBSP 73 | Cofferdams | Oct 15, 2011 | |
| | GBSP 74 | Permanent Steel Sheet Piling (LRFD) | Jan 31, 2012 | Aug 17, 2012 |
| | GBSP 75 | Bond Breaker for Prestressed Concrete Bulb-T Beams | April 19, 2012 | |
| | GBSP 76 | Granular Backfill for Structures | April 19, 2012 | Oct 30, 2012 |
| *************************************** | GBSP 77 | Weep Hole Drains for Abutments, Wingwalls, Retaining Walls And Culverts | April 19, 2012 | Oct 22, 2013 |
| | GBSP 78 | Bridge Deck Construction | Oct 22, 2013 | April 18, 2014 |
| | GBSP 79 | Reserved | • | |
| | GBSP 80 | Fabric Reinforced Elastomeric | Aug 29, 2014 | |

| LIST ANY ADDITIONAL SPECIAL PROVISIONS BELOW | |
|--|--|
| | |
| | |

The following Guide Bridge Special Provisions have been incorporated into the 2012 Standard Specifications:

| File | Title | Std Spec |
|--------|---|----------|
| Name | | Location |
| GBSP22 | Cleaning and Painting New Metal Structures | 506 |
| GBSP36 | Surface Preparation and Painting Req. for Weathering Steel | 506 |
| GBSP50 | Removal of Existing Non-composite Bridge Decks | 501 |
| GBSP58 | Mechanical Splicers | 508 |
| GBSP63 | Demolition Plans for Removal of Existing Structures | 501 |
| GBSP68 | Piling | 512 |
| GBSP69 | Freeze-Thaw Aggregates for Concrete Superstructures Poured on Grade | 1004 |

The following Guide Bridge Special Provisions have been discontinued or have been superseded:

| File | Title | Disposition: |
|--------|--|--------------------|
| Name | | |
| GBSP37 | Underwater Structure Excavation Protection | Replaced by GBSP73 |
| GBSP11 | Permanent Steel Sheet Piling | Replaced by GBSP74 |
| GBSP47 | High Performance Concrete Structures | Discontinued |
| GBSP52 | Porous Granular Embankment (Special) | Replaced by GBSP76 |
| GBSP66 | Wave Equation Analysis of Piles | Discontinued |



Special Provisions

The following Special Provisions supplement the "Standard Specifications for Road and Bridge Construction", Adopted <u>January 1, 2012</u>, the latest edition of the "Manual on Uniform Traffic Control Devices for Streets and Highways", and the "Manual of Test Procedures of Materials" in effect on the date of invitation of bids, and the Supplemental Specifications and Recurring Special Provisions indicated on the check Sheet included here in which apply to and govern the construction of <u>C-91-411-12</u>; <u>SRTS-4009(129)</u>; Contract #61B01; 12-00048-00-SW in DuPage County, and in case of conflict with any part, or parts, of said Specifications, the said special Provisions shall take precedence and shall govern.

Village of Winfield DuPage County Section 12-00048-00-SW Contract No. C-91-411-12

LOCATION OF IMPROVEMENTS

The project is located in the Village of Winfield, DuPage County, Illinois on Park Street, Washington Ave and Metra parking lot.

The total net and gross length of the project is 1815 feet (0.34 miles).

DESCRIPTION OF IMPROVEMENTS

The work consists of mobilization, striping, removal of various items, the installation of a 5 foot wide sidewalk, earth excavation, topsoil, seeding, erosion control and related restoration. The work also includes any other related work necessary to complete the improvements as shown on the plans and as specified herein.

CLEARING

As part of the clearing operation the Contractor will be required to prune and trim any trees or bushes for adequate clearance. This also includes root pruning. Also, the Contractor will be required to remove and relocate any signs, mailboxes, fences, and railroad ties which interfere with construction.

Prior to commencement of the clearing operation, the Contractor and the Engineer shall inspect the site and determine the trees and bushes to prune and trim.

This work will be paid for at the contract unit price per each tree root pruning and trimming.

PIPE CULVERT REMOVAL

This work shall consist of removal and disposal of pipe culvert and excavated material as shown on the plans. The work shall be paid for per linear foot for pipe culvert removal.

SANITARY MANHOLES TO BE ADJUSTED

This work shall be performed in accordance with Section 602 of the Standard Specifications. Adjustment includes excavation/backfill around the frame and top of structure, cleaning, repairs with new block, bricks and mortar, concrete adjusting rings and butyl rope and external sealing band, complete. Reuse existing frames, lids and grates. This work will be paid at the Contract Unit Price per each for SANITARY MANHOLES TO BE ADJUSTED, which will include all materials and labor required.

FLAGSTONE RETAINING WALL REMOVAL

The removal of the existing flagstone retaining wall shall be according to the applicable provisions of Section 501 of the Standard Specifications. The existing wall is a flagstone wall measured for payment in feet in place along the top of the existing wall. This work will be paid for at the contract unit price per FOOT for Flagstone Wall Removal.

REMOVE AND REPLACE EXISTING BLOCK WALL

This work shall consist of removal and replacement of existing flagstone wall with height less than 12". This work will be paid at the Contract Unit Price per face SQ-FT for removed and replaced flagstone wall, which will include all materials and labor required.

REMOVE AND REPLACE EXISTING STONE WALL

This work shall consist of removal and replacement of existing stone wall with height less than 24". This work will be paid at the Contract Unit Price per face SQ-FT for removed and replaced stone wall, which will include all materials and labor required.

SEGMENTAL CONCRETE BLOCK WALL

This work shall consist of installing a segmental concrete block wall to the lines and grades shown on the plans. All stone base, block, caps, excavation, backfill, grading and associated items are included. Provide shop drawings for approval. This work will be paid at the Contract Unit Price per face SQ-FT for SEGMENTAL CONCRETE BLOCK WALL, which will include all materials and labor required.

TRAFFIC CONTROL PLAN

Effective: September 30, 1985 Revised: January 1, 2007

Traffic Control shall be according to the applicable sections of the Standard Specifications, the Supplemental Specifications, the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", any special details and Highway Standards contained in the plans, and the Special Provisions contained herein.

Special attention is called to Article 107.09 of the Standard Specifications and the following Highway Standards, Details, Quality Standard for Work Zone Traffic Control Devices, Recurring Special Provisions and Special Provisions contained herein, relating to traffic control.

The Contractor shall contact the District One Bureau of Traffic at least 72 hours in advance of beginning work.

<u>STANDARDS:</u> 701006-05, 701301-04, 701311-03, 701501-06, 701801-05, 701901-03, 780001-04

<u>DETAILS:</u> Traffic Control and Protection for Side Roads, Intersections, and Driveways; Arterial Road Information Sign

SPECIAL PROVISIONS:

Maintenance of Roadways Work Zone Traffic Control Surveillance (LRS 3) Flaggers in Work Zones (LRS 4)

MAINTENANCE OF ROADWAYS

Effective: September 30, 1985 Revised: November 1, 1996

Beginning on the date that work begins on this project, the Contractor shall assume responsibility for normal maintenance of all existing roadways within the limits of the improvement. This normal maintenance shall include all repair work deemed necessary by the Engineer, but shall not include snow removal operations. Traffic control and protection for maintenance of roadways will be provided by the Contractor as required by the Engineer.

If items of work have not been provided in the contract, or otherwise specified for payment, such items, including the accompanying traffic control and protection required by the Engineer, will be paid for in accordance with Article 109.04 of the Standard Specifications.

COARSE AGGREGATE FOR BACKFILL, TRENCH BACKFILL AND BEDDING (D-1)

Effective: November 1, 2011 Revised: November 1, 2013

This work shall be according to Section 1004.05 of the Standard Specifications except for the following:

Reclaimed Asphalt Pavement (RAP) maybe blended with gravel, crushed gravel, crushed stone crushed concrete, crushed slag, chats, crushed sand stone or wet bottom boiler slag. The RAP used shall be according to the current Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications". The RAP shall be uniformly graded and shall pass the 1.0 in. (25 mm) screen. When RAP is blended with any of the coarse aggregate listed above, the blending shall be done mechanically with calibrated feeders. The feeders shall have an accuracy of \pm 2.0 percent of the actual quantity of material delivered. The final blended product shall not contain more than 40 percent by weight RAP.

The coarse aggregate listed above shall meet CA 6 and CA 10 gradations prior to being blended with the processed and uniformly graded RAP. Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight.

RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES (D-1)

Effective: November 1, 2012 Revise: January 2, 2015

Revise Section 1031 of the Standard Specifications to read:

"SECTION 1031. RECLAIMED ASPHALT PAVEMENT AND RECLAIMED ASPHALT SHINGLES

1031.01 Description. Reclaimed asphalt pavement and reclaimed asphalt shingles shall be according to the following.

- (a) Reclaimed Asphalt Pavement (RAP). RAP is the material resulting from cold milling or crushing an existing hot-mix asphalt (HMA) pavement. RAP will be considered processed FRAP after completion of both crushing and screening to size. The Contractor shall supply written documentation that the RAP originated from routes or airfields under federal, state, or local agency jurisdiction.
- (b) Reclaimed Asphalt Shingles (RAS). Reclaimed asphalt shingles (RAS). RAS is from the processing and grinding of preconsumer or post-consumer shingles. RAS shall be a clean and uniform material with a maximum of 0.5 percent unacceptable material, as defined in Bureau of Materials and Physical Research Policy Memorandum "Reclaimed Asphalt Shingle (RAS) Sources", by weight of RAS. All RAS used shall come from a Bureau of Materials and Physical Research approved processing facility where it shall be ground and processed to 100 percent passing the 3/8 in. (9.5 mm) sieve and 90 percent passing the #4 (4.75 mm) sieve. RAS shall meet the testing requirements specified herein. In addition, RAS shall meet the following Type 1 or Type 2 requirements.
 - (1) Type 1. Type 1 RAS shall be processed, preconsumer asphalt shingles salvaged from the manufacture of residential asphalt roofing shingles.
 - (2) Type 2. Type 2 RAS shall be processed post-consumer shingles only, salvaged from residential, or four unit or less dwellings not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP).

1031.02 Stockpiles. RAP and RAS stockpiles shall be according to the following.

(a) RAP Stockpiles. The Contractor shall construct individual, sealed RAP stockpiles meeting one of the following definitions. Additional processed RAP (FRAP) shall be stockpiled in a separate working pile, as designated in the QC Plan, and only added to the sealed stockpile when test results for the working pile are complete and are found to meet tolerances specified herein for the original sealed FRAP stockpile. Stockpiles shall be sufficiently separated to prevent intermingling at the base. All stockpiles (including unprocessed RAP and FRAP) shall be identified by signs indicating the type as listed below (i.e. "Non- Quality, FRAP -#4 or Type 2 RAS", etc...).

- (1) Fractionated RAP (FRAP). FRAP shall consist of RAP from Class I, Superpave HMA (High and Low ESAL) or equivalent mixtures. The coarse aggregate in FRAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. All FRAP shall be processed prior to testing and sized into fractions with the separation occurring on or between the #4 (4.75 mm) and 1/2 in. (12.5 mm) sieves. Agglomerations shall be minimized such that 100 percent of the RAP in the coarse fraction shall pass the maximum sieve size specified for the mix the FRAP will be used in.
- (2) Restricted FRAP (B quality) stockpiles shall consist of RAP from Class I, Superpave (High ESAL), or HMA (High ESAL). If approved by the Engineer, the aggregate from a maximum 3.0 inch single combined pass of surface/binder milling will be classified as B quality. All millings from this application will be processed into FRAP as described previously.
- (3) Conglomerate. Conglomerate RAP stockpiles shall consist of RAP from Class I, Superpave HMA (High and Low ESAL) or equivalent mixtures. The coarse aggregate in this RAP shall be crushed aggregate and may represent more than one aggregate type and/or quality but shall be at least C quality. This RAP may have an inconsistent gradation and/or asphalt binder content prior to processing. All conglomerate RAP shall be processed (FRAP) prior to testing. Conglomerate RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.
- (4) Conglomerate "D" Quality (DQ). Conglomerate DQ RAP stockpiles shall consist of RAP from HMA shoulders, bituminous stabilized subbases or Superpave (Low ESAL)/HMA (Low ESAL) IL-19.0L binder mixture. The coarse aggregate in this RAP may be crushed or round but shall be at least D quality. This RAP may have an inconsistent gradation and/or asphalt binder content. Conglomerate DQ RAP stockpiles shall not contain steel slag or other expansive material as determined by the Department.
- (5) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above shall be classified as "Non-Quality".
- RAP or FRAP containing contaminants, such as earth, brick, sand, concrete, sheet asphalt, bituminous surface treatment (i.e. chip seal), pavement fabric, joint sealants, plant cleanout etc., will be unacceptable unless the contaminants are removed to the satisfaction of the Engineer. Sheet asphalt shall be stockpiled separately.
- (b) RAS Stockpiles. Type 1 and Type 2 RAS shall be stockpiled separately and shall be sufficiently separated to prevent intermingling at the base. Each stockpile shall be signed indicating what type of RAS is present.

However, a RAS source may submit a written request to the Department for approval to blend mechanically a specified ratio of type 1 RAS with type 2 RAS. The source will not be permitted to change the ratio of the blend without the Department prior written approval. The Engineer's written approval will be required, to mechanically blend RAS with any fine aggregate produced under the AGCS, up to an equal weight of RAS, to improve workability. The fine aggregate shall be "B Quality" or better from an approved Aggregate Gradation Control System source. The fine aggregate shall be one that is approved for use in the HMA mixture and accounted for in the mix design and during HMA production.

Records identifying the shingle processing facility supplying the RAS, RAS type and lot number shall be maintained by project contract number and kept for a minimum of three years.

1031.03 Testing. FRAP and RAS testing shall be according to the following.

- (a) FRAP Testing. When used in HMA, the FRAP shall be sampled and tested either during processing or after stockpiling. It shall also be sampled during HMA production.
 - (1) During Stockpiling. For testing during stockpiling, washed extraction samples shall be run at the minimum frequency of one sample per 500 tons (450 metric tons) for the first 2000 tons (1800 metric tons) and one sample per 2000 tons (1800 metric tons) thereafter. A minimum of five tests shall be required for stockpiles less than 4000 tons (3600 metric tons).
 - (2) Incoming Material. For testing as incoming material, washed extraction samples shall be run at a minimum frequency of one sample per 2000 tons (1800 metric tons) or once per week, whichever comes first.
 - (3) After Stockpiling. For testing after stockpiling, the Contractor shall submit a plan for approval to the District proposing a satisfactory method of sampling and testing the RAP/FRAP pile either in-situ or by restockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to obtain representative samples throughout the pile for testing.

Before extraction, each field sample of FRAP, shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedure. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

(b) RAS Testing. RAS shall be sampled and tested during stockpiling according to Bureau of Materials and Physical Research Policy Memorandum, "Reclaimed Asphalt Shingle (RAS) Sources". The Contractor shall also sample as incoming material at the HMA plant.

- (1) During Stockpiling. Washed extraction and testing for unacceptable materials shall be run at the minimum frequency of one sample per 200 tons (180 metric tons) for the first 1000 tons (900 metric tons) and one sample per 1000 tons (900 metric tons) thereafter. A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). Once a ≤ 1000 ton (900 metric ton), five-sample/test stockpile has been established it shall be sealed. Additional incoming RAS shall be in a separate working pile as designated in the Quality Control plan and only added to the sealed stockpile when the test results of the working pile are complete and are found to meet the tolerances specified herein for the original sealed RAS stockpile.
- (2) Incoming Material. For testing as incoming material at the HMA plant, washed extraction shall be run at the minimum frequency of one sample per 250 tons (227 metric tons). A minimum of five samples are required for stockpiles less than 1000 tons (900 metric tons). The incoming material test results shall meet the tolerances specified herein.

The Contractor shall obtain and make available all test results from start of the initial stockpile sampled and tested at the shingle processing facility in accordance with the facility's QC Plan.

Before extraction, each field sample shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Department use. The Contractor shall extract the other test sample according to Department procedures. The Engineer reserves the right to test any sample (split or Department-taken) to verify Contractor test results.

1031.04 Evaluation of Tests. Evaluation of tests results shall be according to the following.

(a) Evaluation of FRAP Test Results. All test results shall be compiled to include asphalt binder content, gradation and, when applicable (for slag), G_{mm}. A five test average of results from the original pile will be used in the mix designs. Individual extraction test results run thereafter, shall be compared to the average used for the mix design, and will be accepted if within the tolerances listed below.

| Parameter | FRAP |
|-----------------|----------------------|
| No. 4 (4.75 mm) | ± 6 % |
| No. 8 (2.36 mm) | ± 5 % |
| No. 30 (600 μm) | ± 5 % |
| No. 200 (75 μm) | ± 2.0 % |
| Asphalt Binder | ± 0.3 % |
| G _{mm} | ± 0.03 ^{1/} |

1/ For stockpile with slag or steel slag present as determined in the current Manual of Test Procedures Appendix B 21, "Determination of Reclaimed Asphalt Pavement Aggregate Bulk Specific Gravity".

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the FRAP stockpile shall not be used in Hot-Mix Asphalt unless the FRAP representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

The Contractor shall maintain a representative moving average of five tests to be used for Hot-Mix Asphalt production.

With the approval of the Engineer, the ignition oven may be substituted for extractions according to the Illinois Test Procedure, "Calibration of the Ignition Oven for the Purpose of Characterizing Reclaimed Asphalt Pavement (RAP)" or Illinois Modified AASHTO T-164-11, Test Method A.

(b) Evaluation of RAS Test Results. All of the test results, with the exception of percent unacceptable materials, shall be compiled and averaged for asphalt binder content and gradation. A five test average of results from the original pile will be used in the mix designs. Individual test results run thereafter, when compared to the average used for the mix design, will be accepted if within the tolerances listed below.

| Parameter | RAS |
|------------------------|---------|
| No. 8 (2.36 mm) | ±5% |
| No. 16 (1.18 mm) | ±5% |
| No. 30 (600 μm) | ± 4 % |
| No. 200 (75 µm) | ± 2.5 % |
| Asphalt Binder Content | ± 2.0 % |

If any individual sieve and/or asphalt binder content tests are out of the above tolerances when compared to the average used for the mix design, the RAS shall not be used in Hot-Mix Asphalt unless the RAS representing those tests is removed from the stockpile. All test data and acceptance ranges shall be sent to the District for evaluation.

(c) Quality Assurance by the Engineer. The Engineer may witness the sampling and splitting conduct assurance tests on split samples taken by the Contractor for quality control testing a minimum of once a month.

The overall testing frequency will be performed over the entire range of Contractor samples for asphalt binder content and gradation. The Engineer may select any or all split samples for assurance testing. The test results will be made available to the Contractor as soon as they become available.

The Engineer will notify the Contractor of observed deficiencies.

Differences between the Contractor's and the Engineer's split sample test results will be considered acceptable if within the following limits.

| Test Parameter | Acceptable Limits of Precision | |
|------------------------|--------------------------------|------|
| % Passing:1/ | FRAP | RAS |
| 1 / 2 in. | 5.0% | |
| No. 4 | 5.0% | |
| No. 8 | 3.0% | 4.0% |
| No. 30 | 2.0% | 3.0% |
| No. 200 | 2.2% | 2.5% |
| Asphalt Binder Content | 0.3% | 1.0% |
| G _{mm} | 0.030 | |

^{1/} Based on washed extraction.

In the event comparisons are outside the above acceptable limits of precision, the Engineer will immediately investigate.

(d) Acceptance by the Engineer. Acceptable of the material will be based on the validation of the Contractor's quality control by the assurance process.

1031.05 Quality Designation of Aggregate in RAP and FRAP.

- (a) RAP. The aggregate quality of the RAP for homogenous, conglomerate, and conglomerate "D" quality stockpiles shall be set by the lowest quality of coarse aggregate in the RAP stockpile and are designated as follows.
 - (1) RAP from Class I, Superpave/HMA (High ESAL), or (Low ESAL) IL-9.5L surface mixtures are designated as containing Class B quality coarse aggregate.
 - (2) RAP from Superpave/HMA (Low ESAL) IL-19.0L binder mixture is designated as Class D quality coarse aggregate.
 - (3) RAP from Class I, Superpave/HMA (High ESAL) binder mixtures, bituminous base course mixtures, and bituminous base course widening mixtures are designated as containing Class C quality coarse aggregate.
 - (4) RAP from bituminous stabilized subbase and BAM shoulders are designated as containing Class D quality coarse aggregate.

(b) FRAP. If the Engineer has documentation of the quality of the FRAP aggregate, the Contractor shall use the assigned quality provided by the Engineer.

If the quality is not known, the quality shall be determined as follows. Fractionated RAP stockpiles containing plus #4 (4.75 mm) sieve coarse aggregate shall have a maximum tonnage of 5,000 tons (4,500 metric tons). The Contractor shall obtain a representative sample witnessed by the Engineer. The sample shall be a minimum of 50 lb (25 kg). The sample shall be extracted according to Illinois Modified AASHTO T 164 by a consultant prequalified by the Department for the specified testing. The consultant shall submit the test results along with the recovered aggregate to the District Office. The cost for this testing shall be paid by the Contractor. The District will forward the sample to the BMPR Aggregate Lab for MicroDeval Testing, according to Illinois Modified AASHTO T 327. A maximum loss of 15.0 percent will be applied for all HMA applications. The fine aggregate portion of the fractionated RAP shall not be used in any HMA mixtures that require a minimum of "B" quality aggregate or better, until the coarse aggregate fraction has been determined to be acceptable thru a MicroDeval Testing.

1031.06 Use of FRAP and/or RAS in HMA. The use of FRAP and/or RAS shall be a Contractor's option when constructing HMA in all contracts.

- (a) FRAP. The use of FRAP in HMA shall be as follows.
 - (1) Coarse Aggregate Size (after extraction). The coarse aggregate in all FRAP shall be equal to or less than the nominal maximum size requirement for the HMA mixture to be produced.
 - (2) Steel Slag Stockpiles. FRAP stockpiles containing steel slag or other expansive material, as determined by the Department, shall be homogeneous and will be approved for use in HMA (High ESAL and Low ESAL) mixtures regardless of lift or mix type.
 - (3) Use in HMA Surface Mixtures (High and Low ESAL). FRAP stockpiles for use in HMA surface mixtures (High and Low ESAL) shall have coarse aggregate that is Class B quality or better. FRAP shall be considered equivalent to limestone for frictional considerations unless produced/screened to minus 3/8 inch.
 - (4) Use in HMA Binder Mixtures (High and Low ESAL), HMA Base Course, and HMA Base Course Widening. FRAP stockpiles for use in HMA binder mixtures (High and Low ESAL), HMA base course, and HMA base course widening shall be FRAP in which the coarse aggregate is Class C quality or better.
 - (5) Use in Shoulders and Subbase. FRAP stockpiles for use in HMA shoulders and stabilized subbase (HMA) shall be FRAP, Restricted FRAP, conglomerate, or conglomerate DQ.

- (b) RAS. RAS meeting Type 1 or Type 2 requirements will be permitted in all HMA applications as specified herein.
- (c) FRAP and/or RAS Usage Limits. Type 1 or Type 2 RAS may be used alone or in conjunction with FRAP in HMA mixtures up to a maximum of 5.0% by weight of the total mix.

When FRAP is used alone or FRAP is used in conjunction with RAS, the percent of virgin asphalt binder replacement (ABR) shall not exceed the amounts indicated in the table below for a given N Design.

Max Asphalt Binder Replacement for FRAP with RAS Combination

| HMA Mixtures 1/2/ | Maximum % ABR | | |
|-------------------|---------------------------|---------|-----------------------------------|
| Ndesign | Binder/Leveling Binder | Surface | Polymer Modified ^{3/} |
| 30L | 50 | 40 | 10 |
| 50 | 40 | 35 | 10 |
| 70 | 40 | 30 | 10 |
| 90 | 40 | 30 | 104/ |
| 4.75 mm N-50 | | | 30 |
| SMA N-80 | | | 20 |

- 1/ For HMA "All Other" (shoulder and stabilized subbase) N-30, the percent asphalt binder replacement shall not exceed 50% of the total asphalt binder in the mixture.
- 2/ When the binder replacement exceeds 15 percent for all mixes, except for SMA and IL-4.75, the high and low virgin asphalt binder grades shall each be reduced by one grade (i.e. 25 percent binder replacement using a virgin asphalt binder grade of PG64-22 will be reduced to a PG58-28). When constructing full depth HMA and the ABR is less than 15 percent, the required virgin asphalt binder grade shall be PG64-28.
- 3/ When the ABR for SMA or IL-4.75 is 15 percent or less, the required virgin asphalt binder shall be SBS PG76-22 and the elastic recovery shall be a minimum of 80. When the ABR for SMA or IL-4.75 exceeds 15%, the virgin asphalt binder grade shall be SBS PG70-28 and the elastic recovery shall be a minimum of 80.
- 4/ For polymerized surface mix used for overlays, with up to 10 percent ABR, an SBS PG70-22 will be required. However if used in full depth HMA, an SBS PG70-28 will be required.

1031.07 HMA Mix Designs. At the Contractor's option, HMA mixtures may be constructed utilizing RAP/FRAP and/or RAS material meeting the detailed requirements specified herein.

- (a) FRAP and/or RAS. FRAP and /or RAS mix designs shall be submitted for verification. If additional FRAP or RAS stockpiles are tested and found to be within tolerance, as defined under "Evaluation of Tests" herein, and meet all requirements herein, the additional FRAP or RAS stockpiles may be used in the original design at the percent previously verified.
- (b) RAS. Type 1 and Type 2 RAS are not interchangeable in a mix design. A RAS stone bulk specific gravity (Gsb) of 2.300 shall be used for mix design purposes.

1031.08 HMA Production. HMA production utilizing FRAP and/or RAS shall be as follows.

To remove or reduce agglomerated material, a scalping screen, gator, crushing unit, or comparable sizing device approved by the Engineer shall be used in the RAS and FRAP feed system to remove or reduce oversized material. If material passing the sizing device adversely affects the mix production or quality of the mix, the sizing device shall be set at a size specified by the Engineer.

If during mix production, corrective actions fail to maintain FRAP, RAS or QC/QA test results within control tolerances or the requirements listed herein the Contractor shall cease production of the mixture containing FRAP or RAS and conduct an investigation that may require a new mix design.

- (a) RAS. RAS shall be incorporated into the HMA mixture either by a separate weight depletion system or by using the RAP weigh belt. Either feed system shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. The portion of RAS shall be controlled accurately to within ± 0.5 percent of the amount of RAS utilized. When using the weight depletion system, flow indicators or sensing devices shall be provided and interlocked with the plant controls such that the mixture production is halted when RAS flow is interrupted.
- (b) HMA Plant Requirements. HMA plants utilizing FRAP and/or RAS shall be capable of automatically recording and printing the following information.
 - (1) Dryer Drum Plants.
 - a. Date, month, year, and time to the nearest minute for each print.
 - b. HMA mix number assigned by the Department.
 - c. Accumulated weight of dry aggregate (combined or individual) in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).

- d. Accumulated dry weight of RAS and FRAP in tons (metric tons) to the nearest 0.1 ton (0.1 metric ton).
- e. Accumulated mineral filler in revolutions, tons (metric tons), etc. to the nearest 0.1 unit.
- f. Accumulated asphalt binder in gallons (liters), tons (metric tons), etc. to the nearest 0.1 unit.
- g. Residual asphalt binder in the RAS and FRAP material as a percent of the total mix to the nearest 0.1 percent.
- h. Aggregate RAS and FRAP moisture compensators in percent as set on the control panel. (Required when accumulated or individual aggregate and RAS and FRAP are printed in wet condition.)
- When producing mixtures with FRAP and/or RAS, a positive dust control system shall be utilized.
- j. Accumulated mixture tonnage.
- k. Dust Removed (accumulated to the nearest 0.1 ton)

(2) Batch Plants.

- a. Date, month, year, and time to the nearest minute for each print.
- b. HMA mix number assigned by the Department.
- c. Individual virgin aggregate hot bin batch weights to the nearest pound (kilogram).
- d. Mineral filler weight to the nearest pound (kilogram).
- f. RAS and FRAP weight to the nearest pound (kilogram).
- g. Virgin asphalt binder weight to the nearest pound (kilogram).
- h. Residual asphalt binder in the RAS and FRAP material as a percent of the total mix to the nearest 0.1 percent.

The printouts shall be maintained in a file at the plant for a minimum of one year or as directed by the Engineer and shall be made available upon request. The printing system will be inspected by the Engineer prior to production and verified at the beginning of each construction season thereafter.

1031.09 RAP in Aggregate Surface Course and Aggregate Shoulders. The use of

RAP or FRAP in aggregate surface course and aggregate shoulders shall be as follows.

- (a) Stockpiles and Testing. RAP stockpiles may be any of those listed in Article 1031.02, except "Non-Quality" and "FRAP". The testing requirements of Article 1031.03 shall not apply. RAP used to construct aggregate surface course and aggregate shoulders shall be according to the current Bureau of Materials and Physical Research's Policy Memorandum, "Reclaimed Asphalt Pavement (RAP) for Aggregate Applications"
- (b) Gradation. One hundred percent of the RAP material shall pass the 1 1/2 in. (37.5mm) sieve. The RAP material shall be reasonably well graded from coarse to fine. RAP material that is gap-graded, FRAP, or single sized will not be accepted for use as Aggregate Surface Course and Aggregate Shoulders."

Village of Winfield DuPage County Section 12-00048-00-SW Contract No. C-91-411-12

HMA MIXTURE DESIGN REQUIREMENTS (D-1)

Effective: January 1, 2013 Revised: November 1, 2014

1) Design Composition and Volumetric Requirements

Revise the last sentence of the first paragraph of Article 312.05 of the Standard Specifications to read:

"The minimum compacted thickness of each lift shall be according to Article 406.06(d)."

Delete the minimum compacted lift thickness table in Article 312.05 of the Standard Specifications.

Revise the second paragraph of Article 355.02 of the Standard Specifications to read:

"The mixture composition used shall be IL-19.0."

Revise Article 355.05(a) of the Standard Specifications to read:

"(a) The top lift thickness shall be 2 1/4 in. (60 mm) for mixture composition IL-19.0." Revise the Leveling Binder table and second paragraph of Article 406.05(c) of the Standard Specifications to read:

| "Leveling Binder | | |
|---|-----------------------------|--|
| Nominal, Compacted, Leveling Mixture Compos Binder Thickness, in. (mm) | | |
| ≤ 1 1/4 (32) | IL-4.75, IL-9.5, or IL-9.5L | |
| > 1 1/4 to 2 (32 to 50) | IL-9.5 or IL-9.5L | |

The density requirements of Article 406.07(c) shall apply for leveling binder, machine method, when the nominal compacted thickness is: 3/4 in. (19 mm) or greater for IL-4.75 mixtures; and 1 1/4 in. (32 mm) or greater for IL-9.5 and IL-9.5L mixtures."

Revise the table in Article 406.06(d) of the Standard Specifications to read:

| "MINIMUM COMPACTED LIFT THICKNESS | | |
|-----------------------------------|---------------------|--|
| Mixture Composition | Thickness, in. (mm) | |
| IL-4.75 | 3/4 (19) | |
| SMA-9.5, IL-9.5, IL-9.5L | 1 1/2 (38) | |
| SMA-12.5 | 2 (50) | |
| IL-19.0, IL-19.0L | 2 1/4 (57)" | |

Revise the ninth paragraph of Article 406.14 of the Standard Specifications to read: "Test strip mixture will be evaluated at the contract unit price according to the following."

Revise Article 406.14(a) of the Standard Specifications to read:

"(a) If the HMA placed during the initial test strip is determined to be acceptable the mixture will be paid for at the contract unit price."

Revise Article 406.14(b) of the Standard Specifications to read:

"(b) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was not produced within 2.0 to 6.0 percent air voids or within the individual control limits of the JMF according to the Department's test results, the mixture will not be paid for and shall be removed at the Contractor's expense. An additional test strip shall be constructed and the mixture will be paid for in full, if produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF."

Revise Article 406.14(c) of the Standard Specifications to read:

"(c) If the HMA placed during the initial test strip (1) is determined to be unacceptable to remain in place by the Engineer, and (2) was produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF according to the Department's test results, the mixture shall be removed. Removal will be paid according to Article 109.04. This initial mixture will be paid for at the contract unit price. An additional test strip shall be constructed and the mixture will be paid for in full, if produced within 2.0 to 6.0 percent air voids and within the individual control limits of the JMF."

Delete Article 406.14(d) of the Standard Specifications.

Delete Article 406.14(e) of the Standard Specifications.

Delete the last sentence of Article 407.06(c) of the Standard Specifications.

Revise Note 2. of Article 442.02 of the Standard Specifications to read:

"Note 2. The mixture composition of the HMA used shall be IL-19.0 binder, designed with the same Ndesign as that specified for the mainline pavement."

Village of Winfield DuPage County Section 12-00048-00-SW Contract No. C-91-411-12

Delete the second paragraph of Article 482.02 of the Standard Specifications.

Revise the first sentence of the sixth paragraph of Article 482.05 of the Standard Specifications to read:

"When the mainline HMA binder and surface course mixture option is used on resurfacing projects, shoulder resurfacing widths of 6 ft (1.8 m) or less may be placed simultaneously with the adjacent traffic lane for both the binder and surface courses."

Revise the second sentence of the fourth paragraph of Article 601.04 of the Standard Specifications to read:

"The top 5 in. (125 mm) of the trench shall be backfilled with an IL-19.0L Low ESAL mixture meeting the requirements of Section 1030 and compacted to a density of not less than 90 percent of the theoretical density."

Revise the second sentence of the fifth paragraph of Article 601.04 of the Standard Specifications to read:

"The top 8 in. (200 mm) of the trench shall be backfilled with an IL-19.0L Low ESAL mixture meeting the requirements of Section 1030 and compacted to a density of not less than 90 percent of the theoretical density."

Revise Article 1003.03(c) of the Standard Specifications to read:

"(c) Gradation. The fine aggregate gradation for all HMA shall be FA 1, FA 2, FA 20, FA 21, or FA 22. The fine aggregate gradation for SMA shall be FA/FM 20.

For mixture IL-4.75 and surface mixtures with an Ndesign = 90, at least 50 percent of the required fine aggregate fraction shall consist of either stone sand, slag sand, or steel slag meeting the FA 20 gradation.

For mixture IL-19.0, Ndesign = 90 the fine aggregate fraction shall consist of at least 67 percent manufactured sand meeting FA 20 or FA 22 gradation. For mixture IL-19.0, Ndesign = 50 or 70 the fine aggregate fraction shall consist of at least 50 percent manufactured sand meeting FA 20 or FA 22 gradation. The manufactured sand shall be stone sand, slag sand, steel slag sand, or combinations thereof.

Gradation FA 1, FA 2, or FA 3 shall be used when required for prime coat aggregate application for HMA."

Delete the last sentence of the first paragraph of Article 1004.03(b) of the Standard Specifications.

Revise the table in Article 1004.03(c) of the Standard Specifications to read:

| "Use | Size/Application | Gradation No. |
|-------------------|----------------------|-----------------------------------|
| Class A-1, 2, & 3 | 3/8 in. (10 mm) Seal | CA 16 |
| Class A-1 | 1/2 in. (13 mm) Seal | CA 15 |
| Class A-2 & 3 | Cover | CA 14 |
| HMA High ESAL | IL-19.0 | CA 11 ^{1/} |
| | IL-9.5 | CA 16, CA 13 ³ |
| HMA Low ESAL | IL-19.0L | CA 11 ^{1/} |
| | IL-9.5L | CA 16 |
| | Stabilized Subbase | |
| | or Shoulders | |
| SMA ^{2/} | 1/2 in. (12.5mm) | CA13 ³ /, CA14 or CA16 |
| | Binder & Surface | |
| | IL 9.5 | CA16, CA 13 ^{3/} |
| | Surface | |

- 1/ CA 16 or CA 13 may be blended with the gradations listed.
- 2/ The coarse aggregates used shall be capable of being combined with stone sand, slag sand, or steel slag sand meeting the FA/FM 20 gradation and mineral filler to meet the approved mix design and the mix requirements noted herein.
- 3/ CA 13 shall be 100 percent passing the 1/2 in. (12.5mm) sieve.

Revise Article 1004.03(e) of the Supplemental Specifications to read:

"(e) Absorption. For SMA the coarse aggregate shall also have water absorption ≤ 2.0 percent."

Revise the nomenclature table in Article 1030.01 of the Standard Specifications to read:

| "High ESAL | IL-19.0 binder; | |
|------------|--|--|
| | IL-9.5 surface; IL-4.75; SMA-12.5, | |
| | SMA-9.5 | |
| Low ESAL | IL-19.0L binder; IL-9.5L surface; | |
| | Stabilized Subbase (HMA) ^{1/} ; | |
| | HMA Shoulders ^{2/} | |

- 1/ Uses 19.0L binder mix.
- 2/ Uses 19.0L for lower lifts and 9.5L for surface lift."

Revise Article 1030.02 of the Standard Specifications and Supplemental Specifications to read:

"1030.02 Materials. Materials shall be according to the following.

| Item | Article/Section |
|----------------------|-----------------|
| (a) Coarse Aggregate | |
| (b) Fine Aggregate | |

| (c) RAP Material | 1031 |
|--|------|
| (d) Mineral Filler | |
| (e) Hydrated Lime | |
| (f) Slaked Quicklime (Note 1) | |
| (g) Performance Graded Asphalt Binder (Note 2) | 1032 |
| (h) Fibers (Note 3) | |
| (i) Warm Mix Asphalt (WMA) Technologies (Note 4) | |

- Note 1. Slaked quicklime shall be according to ASTM C 5.
- Note 2. The asphalt binder shall be an SBS PG 76-28 when the SMA is used on a full-depth asphalt pavement and SBS PG 76-22 when used as an overlay, except where modified herein. The asphalt binder shall be an Elvaloy or SBS PG 76-22 for IL-4.75, except where modified herein. The elastic recovery shall be a minimum of 80.
- Note 3. A stabilizing additive such as cellulose or mineral fiber shall be added to the SMA mixture according to Illinois Modified AASHTO M 325. The stabilizing additive shall meet the Fiber Quality Requirements listed in Illinois Modified AASHTO M 325. Prior to approval and use of fibers, the Contractor shall submit a notarized certification by the producer of these materials stating they meet these requirements. Reclaimed Asphalt Shingles (RAS) may be used in Stone Matrix Asphalt (SMA) mixtures designed with an SBA polymer modifier as a fiber additive if the mix design with RAS included meets AASHTO T305 requirements. The RAS shall be from a certified source that produces either Type I or Type 2. Material shall meet requirements noted herein and the actual dosage rate will be determined by the Engineer.
- Note 4. Warm mix additives or foaming processes shall be selected from the current Bureau of Materials and Physical Research Approved List, "Warm Mix Asphalt Technologies"."

Revise Article 1030.04(a)(1) of the Standard Specifications and the Supplemental Specifications to read:

"(1) High ESAL Mixtures. The Job Mix Formula (JMF) shall fall within the following limits.

| High ESAL, MIXTURE COMPOSITION (% PASSING) 1/ | | | | | | | | | | |
|---|------|-----|--------|-------------------|--------|-------------------|------------------|------------------|---------|-----------------|
| Sieve | IL-1 | 9.0 | SMA 4/ | | SMA 4/ | | IL-9.5 | | IL-4.75 | |
| Size | m | m | | 12.5 | | -9.5 | m | m | m | ım |
| | | | | m | _ | nm | | | | |
| 4.40 | min | max | min | max | min | max | min | max | mın | max |
| 1 1/2 in | | | | | | | | | | |
| (37.5 mm) | | | | | | | | | | |
| 1 in. (25 mm) | | 100 | | | | | | | | |
| 3/4 in. (19 mm) | 90 | 100 | | 100 | | | | | | |
| 1/2 in. (12.5 mm) | 75 | 89 | 80 | 100 | | 100 | | 100 | | 100 |
| 3/8 in. (9.5 mm) | | | | 65 | 90 | 100 | 90 | 100 | | 100 |
| #4 (4.75 mm) | 40 | 60 | 20 | 30 | 36 | 50 | 34 | 69 | 90 | 100 |
| #8 (2.36 mm) | 20 | 42 | 16 | 24 ^{5/} | 16 | 32 ^{5/} | 34 ^{6/} | 52 ^{2/} | 70 | 90 |
| #16 (1.18 mm) | 15 | 30 | | | | | 10 | 32 | 50 | 65 |
| #30 (600 μm) | | | 12 | 16 | 12 | 18 | | | | |
| #50 (300 μm) | 6 | 15 | | | | | 4 | 15 | 15 | 30 |
| #100 (150 μm) | 4 | 9 | | | | | 3 | 10 | 10 | 18 |
| #200 (75 μm) | 3 | 6 | 7.0 | 9.0 ^{3/} | 7.5 | 9.5 ^{3/} | 4 | 6 | 7 | 9 ^{3/} |
| Ratio Dust/Asph alt Binder | | 1.0 | | 1.5 | | 1.5 | | 1.0 | | 1.0 |

- 1/ Based on percent of total aggregate weight.
- 2/ The mixture composition shall not exceed 44 percent passing the #8 (2.36 mm) sieve for surface courses with Ndesign = 90.
- 3/ Additional minus No. 200 (0.075 mm) material required by the mix design shall be mineral filler, unless otherwise approved by the Engineer.
- 4/ The maximum percent passing the #635 (20 μ m) sieve shall be \leq 3 percent.
- When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted above the percentage stated on the table.

6/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted below 34 percent.

Delete Article 1030.04(a)(3) of the Standard Specifications.

Delete Article 1030.04(a)(4) of the Standard Specifications.

Revise Article 1030.04(b)(1) of the Standard Specifications to read:

"(1) High ESAL Mixtures. The target value for the air voids of the HMA shall be 4.0 percent and for IL-4.75 it shall be 3.5 percent at the design number of gyrations. The VMA and VFA of the HMA design shall be based on the nominal maximum size of the aggregate in the mix, and shall conform to the following requirements.

| | VOLUMETRIC REQUIREMENTS High ESAL | | | | |
|---------|--------------------------------------|------------------|-----------------------|--------------|--|
| | Voids it | n the Mineral Ag | gregate | Voids Filled | |
| | | (VMA), | | with Asphalt | |
| | | % minimum | | Binder | |
| Ndesign | | | IL-4.75 ^{1/} | (VFA), % | |
| | IL-19.0 | IL-9.5 | | % | |
| 50 | | 18.5 | | | |
| 70 | 13.5 | 65 - 75 | | | |
| 90 | .0.0 | 15.0 | | 05-75 | |

Maximum Draindown for IL-4.75 shall be 0.3 percent

Revise the table in Article 1030.04(b)(2) of the Standard Specifications to read:

| | "VOLUMETRIC REQUIREMENTS | | | |
|-------------|--------------------------|-----------|-------------|-------------|
| | | Low ESAL | | |
| Mixture | Design | Design | VMA (Voids | VFA (Voids |
| Composition | Compactive | Air Voids | in the | Filled with |
| | Effort | Target % | Mineral | Asphalt |
| | | _ | Aggregate), | Binder), |
| | | | % min. | % |
| IL-9.5L | N _{DES} =30 | 4.0 | 15.0 | 65-78 |
| IL-19.0L | N _{DES} =30 | 4.0 | 13.5 | N/A" |

^{2/} VFA for IL-4.75 shall be 72-85 percent"

Replace Article 1030.04(b)(3) of the Standard Specifications with the following:

"(3) SMA Mixtures.

| | Volumetric Requirements SMA ^{1/} | | | |
|---------|--|--|--|--|
| Ndesign | Design Air Voids Target % | Voids in the Mineral Aggregate (VMA), % min. | Voids Filled with Asphalt (VFA), % | |
| 80 4/ | 3.5 | 17.0 ^{2/} 16.0 ^{3/} | 75 - 83 | |

- Maximum draindown shall be 0.3 percent. The draindown shall be determined at the JMF asphalt binder content at the mixing temperature plus 30 °F.
- Applies when specific gravity of coarse aggregate is ≥ 2.760 .
- Applies when specific gravity of coarse aggregate is < 2.760.
- Blending of different types of aggregate will not be permitted.

 For surface course, the coarse aggregate can be crushed steel slag, crystalline crushed stone or crushed sandstone. For binder course, coarse aggregate shall be crushed stone (dolomite), crushed gravel, crystalline crushed stone, or crushed sandstone.

Delete Article 1030.04(b)(4) of the Standard Specifications.

Delete Article 1030.04(b)(5) from the Supplemental Specifications.

Delete last sentence of the second paragraph of Article 1102.01(a) (13) a.

Add to second paragraph in Article 1102.01 (a) (13) a.:

"As an option, collected bag-house dust may be used in lieu of manufactured mineral filler, provided; 1) there is enough available for the production of the SMA mix for the entire project and 2) a mix design was prepared with collected bag-house dust."

Revise the table in Article 1030.05(d)(2)a. of the Standard Specifications to read:

| | Frequency of Tests | Test Method |
|--|--|-----------------------------------|
| "Deremeter | High ESAL Misture | See Manual of Test Procedures for |
| "Parameter | High ESAL Mixture Low ESAL Mixture | Materials |
| Aggregate Gradation | LOW LOAL WINTER | Materials |
| % passing sieves: | 1 washed ignition oven test on the mix per half day of production | Illinois Procedure |
| 1/2 in. (12.5 mm), No. 4 (4.75 mm), No. 8 (2.36 mm), No. 30 (600 µm) No. 200 (75 µm) | Note 3. | |
| Asphalt Binder | | |
| Content by Ignition Oven | 1 per half day of production | Illinois-Modified AASHTO T 308 |
| Note 1. | ` | |
| VMA | Day's production ≥ 1200 tons: | Illinois-Modified AASHTO R 35 |
| Note 2. | 1 per half day of production | |
| | Day's production < 1200 tons: | |
| | 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day) | |
| Air Voids | Day's production | |
| | ≥ 1200 tons: | THE STATE OF THE STATE OF |
| Bulk Specific Gravity of Gyratory Sample | 1 per half day of production | Illinois-Modified AASHTO T 312 |
| Note 4. | | |

| | Frequency of Tests | Test Method |
|--|---|-----------------------------------|
| | | See Manual of Test |
| "Parameter | High ESAL Mixture | Procedures for |
| | Low ESAL Mixture | Materials |
| | Day's production < 1200 tons: 1 per half day of production for first 2 days and 1 per day thereafter (first sample of the day) | |
| | Day's production | |
| Maximum Specific Gravity of Mixture | ≥ 1200 tons: | Illinois-Modified AASHTO T 209 |
| | 1 per half day of production | |
| | Day's production < 1200 tons: | |
| | 1 per half day of production for first | |
| | 2 days and 1 per day thereafter (first | |
| | sample of the day) | |

- Note 1. The Engineer may waive the ignition oven requirement for asphalt binder content if the aggregates to be used are known to have ignition asphalt binder content calibration factors which exceed 1.5 percent. If the ignition oven requirement is waived, other Department approved methods shall be used to determine the asphalt binder content.
- Note 2. The G_{sb} used in the voids in the mineral aggregate (VMA) calculation shall be the same average G_{sb} value listed in the mix design.
- Note 3. The Engineer reserves the right to require additional hot bin gradations for batch plants if control problems are evident.
- Note 4. The WMA compaction temperature for mixture volumetric testing shall be 270 ± 5 °F (132 ± 3 °C) for quality control testing. The WMA compaction temperature for quality assurance testing will be 270 ± 5 °F (132 ± 3 °C) if the mixture is not allowed to cool to room temperature. If the mixture is allowed to cool to room temperature, it shall be reheated to standard HMA compaction temperatures."

Revise the table in Article 1030.05(d)(2)b. of the Standard Specifications to read:

| "Parameter | High ESAL Mixture Low ESAL Mixture |
|------------------------------|---------------------------------------|
| Ratio Dust/Asphalt Binder | 0.6 to 1.2 |
| Moisture | 0.3 %" |

Revise the Article 1030.05(d)(4) of the Supplemental Specifications to read:

"(4) Control Limits. Target values shall be determined by applying adjustment factors to the AJMF where applicable. The target values shall be plotted on the control charts within the following control limits.

| | | "CONTRO | DL LIMITS | | | |
|---------------------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| | High E | SAL | SM | IA | IL-4 | .75 |
| Parameter | Individual Test | Moving Avg. of 4 | Test | Moving Avg. of 4 | Individual Test | Moving Avg. of 4 |
| % Passing: 1/ | | | | | | |
| 1/2 in. (12.5 mm) | ±6% | ±4% | ±6% | ±4% | | |
| 3/8 in. (9.5mm) | | | ±4% | ±3% | | |
| No. 4 (4.75 mm) | ±5% | ±4% | ±5% | ± 4 % | | |
| No. 8 (2.36 mm) | ±5% | ±3% | ±4% | ±2% | | |
| No. 16 (1.18 mm) | | | ±4% | ±2% | ±4% | ±3% |
| No. 30 (600 μm) | ±4% | ± 2.5 % | ±4% | ± 2.5 % | | |
| Total Dust Content No. 200 (75 µm) | ± 1.5 % | ± 1.0 % | | | ± 1.5 % | ± 1.0 % |
| Asphalt Binder | ± 0.3 % | ± 0.2 % | ± 0.2 % | ± 0.1 % | ± 0.3 % | ± 0.2 % |
| Content | | | | | | |
| Voids | ± 1.2 % | ± 1.0 % | ± 1.2 % | ± 1.0 % | ± 1.2 % | ± 1.0 % |
| VMA | -0.7 % ^{2/} | -0.5 % ^{2/} | -0.7 % ^{2/} | -0.5 % ^{2/} | -0.7 % ^{2/} | -0.5 % ^{2/} |

- 1/ Based on washed ignition oven
- 2/ Allowable limit below minimum design VMA requirement

| DENSIT | Y CONTROL LIMITS | |
|---------------------|------------------|-----------------------------|
| Mixture Composition | Parameter | Individual Test |
| 1L-4.75 | Ndesign = 50 | 93.0 - 97.4 % ^{1/} |
| IL-9.5 | Ndesign = 90 | 92.0 - 96.0 % |
| IL-9.5,IL-9.5L | Ndesign < 90 | 92.5 - 97.4 % |
| IL-19.0 | Ndesign = 90 | 93.0 - 96.0 % |
| IL-19.0, IL-19.0L | Ndesign < 90 | 93.0 ^{2/} - 97.4 % |
| SMA | Ndesign = 80 | 93.5 - 97.4 % |

1/ Density shall be determined by cores or by correlated, approved thin lift nuclear gauge.

2/ 92.0 % when placed as first lift on an unimproved subgrade."

Revise the table in Article 1030.05(d)(5) of the Supplemental Specifications to read:

| "CONTROL CHART | High ESAL, |
|-----------------------|---------------------------------|
| REQUIREMENTS | Low ESAL, SMA |
| | & IL-4.75 |
| | % Passing Sieves: |
| | 1/2 in. (12.5 mm) ^{2/} |
| Gradation 1/3/ | No. 4 (4.75 mm) |
| | No. 8 (2.36 mm) |
| | No. 30 (600 µm) |
| Total Dust Content 1/ | No. 200 (75 μm) |
| | Asphalt Binder Content |
| | Bulk Specific Gravity |
| | Maximum Specific |
| | Gravity of Mixture |
| | Voids |
| : | Density |
| | VMA |

- 1/ Based on washed ignition oven.
- 2/ Does not apply to IL-4.75.
- 3/ SMA also requires the 3/8 in. (9.5 mm) sieve."

Delete Article 1030.05(d)(6)a.1.(b.) of the Standard Specifications.

Delete Article 1030.06(b) of the Standard Specifications.

Delete Article 1102.01(e) of the Standard Specifications.

2) Design Verification and Production

<u>Description</u>. The following states the requirements for Hamburg Wheel and Tensile Strength testing for High ESAL, IL-4.75, and Stone Matrix Asphalt (SMA) hot-mix asphalt (HMA) mixes during mix design verification and production.

Mix Design Testing. Add the following below the referenced AASHTO standards in Article 1030.04 of the Standard Specifications:

AASHTO T 324 Hamburg Wheel Test

AASHTO T 283 Tensile Strength Test

Add the following to Article 1030.04 of the Standard Specifications:

"(d) Verification Testing. High ESAL, IL-4.75, and SMA mix designs submitted for verification will be tested to ensure that the resulting mix designs will pass the required criteria for the Hamburg Wheel Test (IL mod AASHTO T-324) and the Tensile Strength Test (IL mod AASHTO T-283). The Department will perform a verification test on gyratory specimens compacted by the Contractor. If the mix fails the Department's verification test, the Contractor shall make the necessary changes to the mix and resubmit compacted specimens to the Department for verification. If the mix fails again, the mix design will be rejected.

All new and renewal mix designs will be required to be tested, prior to submittal for Department verification and shall meet the following requirements:

(1)Hamburg Wheel Test criteria. The maximum allowable rut depth shall be 0.5 in. (12.5 mm). The minimum number of wheel passes at the 0.5 in. (12.5 mm) rut depth criteria shall be based on the high temperature binder grade of the mix as specified in the mix requirements table of the plans.

| Illinois Modified AASHTO T | 324 Requirements 1 | f |
|----------------------------|--------------------|---|
|----------------------------|--------------------|---|

| Asphalt Binder Grade | # Repetitions | Max Rut Depth (mm) |
|-----------------------|---------------|--------------------|
| PG 70 -XX (or higher) | 20,000 | 12.5 |
| PG 64 -XX (or lower) | 10,000 | 12.5 |

1/ When produced at temperatures of 275 ± 5 °F (135 ± 3 °C) or less, loose Warm Mix Asphalt shall be oven aged at 270 ± 5 °F (132 ± 3 °C) for two hours prior to gyratory compaction of Hamburg Wheel specimens.

Note: For SMA Designs (N-80) the maximum rut depth is 6.0 mm at 20,000 repetitions. For IL 4.75mm Designs (N-50) the maximum rut depth is 9.0mm at 15,000 repetitions.

(2) Tensile Strength Criteria. The minimum allowable conditioned tensile strength shall be 60 psi (415 kPa) for non-polymer modified performance graded (PG) asphalt binder and 80 psi (550 kPa) for polymer modified PG asphalt binder. The maximum allowable unconditioned tensile strength shall be 200 psi (1380 kPa)."

<u>Production Testing.</u> Revise Article 1030.06(a) of the Standard Specifications to read:

"(a) High ESAL, IL-4.75, WMA, and SMA Mixtures. For each contract, a 300 ton (275 metric tons) test strip, except for SMA mixtures it will be 400 ton (363 metric ton), will be required at the beginning of HMA production for each mixture with a quantity of 3000 tons (2750 metric tons) or more according to the Manual of Test Procedures for Materials "Hot Mix Asphalt Test Strip Procedures".

Before start-up, target values shall be determined by applying gradation correction factors to the JMF when applicable. These correction factors shall be determined from previous experience. The target values, when approved by the Engineer, shall be used to control HMA production. Plant settings and control charts shall be set according to target values.

Before constructing the test strip, target values shall be determined by applying gradation correction factors to the JMF when applicable. After any JMF adjustment, the JMF shall become the Adjusted Job Mix Formula (AJMF). Upon completion of the first acceptable test strip, the JMF shall become the AJMF regardless of whether or not the JMF has been adjusted. If an adjustment/plant change is made, the Engineer may require a new test strip to be constructed. If the HMA placed during the initial test strip is determined to be unacceptable to remain in place by the Engineer, it shall be removed and replaced.

The limitations between the JMF and AJMF are as follows.

| Parameter | Adjustment |
|-------------------|------------|
| 1/2 in. (12.5 mm) | ± 5.0 % |
| No. 4 (4.75 mm) | ± 4.0 % |
| No. 8 (2.36 mm) | ± 3.0 % |
| No. 30 (600 µm) | * |
| No. 200 (75 µm) | * |
| Asphalt Binder | ± 0.3 % |
| Content | |

^{*} In no case shall the target for the amount passing be greater than the JMF.

Any adjustments outside the above limitations will require a new mix design.

Mixture sampled to represent the test strip shall include additional material sufficient for the Department to conduct Hamburg Wheel testing according to Illinois Modified AASHTO T324 (approximately 60 lb (27 kg) total).

The Contractor shall immediately cease production upon notification by the Engineer of failing Hamburg Wheel test. All prior produced material may be paved out provided all other mixture criteria is being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

The Department may conduct additional Hamburg Wheel tests on production material as determined by the Engineer."

Revise the title of Article 1030.06(b) of the Standard Specifications to read:

"(b) Low ESAL Mixtures."

Add the following to Article 1030.06 of the Standard Specifications:

"(c) Hamburg Wheel Test. All HMA mixtures shall be sampled within the first 500 tons (450 metric tons) on the first day of production or during start up with a split reserved for the Department. The mix sample shall be tested according to the Illinois Modified AASHTO T 324 and shall meet the requirements specified herein. Mix production shall not exceed 1500 tons (1350 metric tons) or one day's production, whichever comes first, until the testing is completed and the mixture is found to be in conformance. The requirement to cease mix production may be waived if the plant produced mixture demonstrates conformance prior to start of mix production for a contract.

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The Department may conduct additional Hamburg Wheel Tests on production material as determined by the Engineer. If the mixture fails to meet the Hamburg Wheel criteria, no further mixture will be accepted until the Contractor takes such action as is necessary to furnish a mixture meeting the criteria"

The Contractor shall immediately cease production upon notification by the Engineer of failing Hamburg Wheel test. All prior produced material may be paved out provided all other mixture criteria are being met. No additional mixture shall be produced until the Engineer receives passing Hamburg Wheel tests.

Method of Measurement:

Add the following after the fourth paragraph of Article 406.13 (b):

"The plan quantities of SMA mixtures shall be adjusted using the actual approved binder and surface Mix Design's G_{mb}."

Basis of Payment.

Replace the seventh paragraph of Article 406.14 of the Standard Specifications with the following:

"For all mixes designed and verified under the Hamburg Wheel criteria, the cost of furnishing and introducing anti-stripping additives in the HMA will not be paid for separately, but shall be considered as included in the contract unit price of the HMA item involved.

No additional compensation will be awarded to the Contractor because of reduced production rates associated with the addition of the anti-stripping additive."

GROUND TIRE RUBBER (GTR) MODIFIED ASPHALT BINDER (D-1)

Effective: June 26, 2006 Revised: January 1, 2013

Add the following to the end of article 1032.05 of the Standard Specifications:

"(c) Ground Tire Rubber (GTR) Modified Asphalt Binder. A quantity of 10.0 to 14.0 percent GTR (Note 1) shall be blended by dry unit weight with a PG 64-28 to make a GTR 70-28 or a PG 58-28 to make a GTR 64-28. The base PG 64-28 and PG 58-28 asphalt binders shall meet the requirements of Article 1032.05(a). Compatible polymers may be added during production. The GTR modified asphalt binder shall meet the requirements of the following table.

| Test | Asphalt Grade GTR 70-28 | Asphalt Grade GTR 64-28 |
|--|----------------------------|----------------------------|
| Flash Point (C.O.C.), AASHTO T 48, °F (°C), min. | 450 (232) | 450 (232) |
| Rotational Viscosity, AASHTO T 316 @ 275 °F (135 °C), Poises, Pa·s, max. | 30 (3) | 30 (3) |
| Softening Point, AASHTO T 53, °F (°C), min. | 135 (57) | 130 (54) |
| Elastic Recovery, ASTM D 6084, Procedure A (sieve waived) @ 77 °F, (25 °C), aged, ss, 100 mm elongation, 5 cm/min., cut immediately, %, min. | 65 | 65 |

Note 1. GTR shall be produced from processing automobile and/or light truck tires by the ambient grinding method. GTR shall not exceed 1/16 in. (2 mm) in any dimension and shall contain no free metal particles or other materials. A mineral powder (such as talc) meeting the requirements of AASHTO M 17 may be added, up to a maximum of four percent by weight of GTR to reduce sticking and caking of the GTR particles. When tested in accordance with Illinois modified AASHTO T 27, a 50 g sample of the GTR shall conform to the following gradation requirements:

| Sieve Size | Percent Passing |
|------------------|-----------------|
| No. 16 (1.18 mm) | 100 |
| No. 30 (600 μm) | 95 ± 5 |
| No. 50 (300 μm) | > 20 |

Add the following to the end of Note 1 of article 1030.03 of the Standard Specifications:

"A dedicated storage tank for the Ground Tire Rubber (GTR) modified asphalt binder shall be provided. This tank must be capable of providing continuous mechanical mixing throughout by continuous agitation and recirculation of the asphalt binder to provide a uniform mixture. The tank shall be heated and capable of maintaining the temperature of the asphalt binder at 300 °F to 350 °F (149 °C to 177 °C). The asphalt binder metering systems of dryer drum plants shall be calibrated with the actual GTR modified asphalt binder material with an accuracy of \pm 0.40 percent."

Revise 1030.02(c) of the Standard Specifications to read:

"(c) RAP Materials (Note 3)1031"

Add the following note to 1030.02 of the Standard Specifications:

"Note 3. When using reclaimed asphalt pavement and/or reclaimed asphalt shingles, the maximum asphalt binder replacement percentage shall be according to the most recent special provision for recycled materials."

STATUS OF UTILITIES TO BE ADJUSTED

Effective: January 30, 1987 Revised: January 24, 2013

Utilities companies involved in this project have provided the following estimated durations:

| Name of Utility | Туре | Location | Estimated Duration of Time for the Completion of Relocation or Adjustments |
|---|---------------------|--|---|
| Nicor Gas Engineering Department 1844 Ferry Road Naperville, IL 60563 Attn.: Connie Lane 630-388-3830 | Gas main/ valves | Various | No relocations or adjustments required. |
| Comcast Cable R.O.W. Department Att.: Martha Gieras 688 Industrial Drive Elmhurst, IL 60126 630-600-6349 | Cable TV | Various w/ both underground and aerial. | No relocations or adjustments required. |
| Commonwealth Edison Public Relations Attn.: Joe Stacho 1N423 Swift Road Lombard, IL 60148 630-424-5704 | Electrical | Various and aerial | No relocations or adjustments required. |
| AT&T Legal Mandate Office Attn.: Antointte Glover-Jones 1000 Commerce Drive Oak Brook, IL 60126 630-573-5703 | Telephone | Misc. locations | No relocations or adjustments required. |

The above represents the best information available to the Department and is included for the convenience of the bidder. The applicable portions of Articles 105.07 and 107.31 of the Standard Specifications shall apply.

In accordance with 605 ILCS 5/9-113 of the Illinois Compiled Statutes, utility companies have 90 days to complete the relocation of their facilities after receipt of written notice from the Department. The 90-day written notice will be sent to the utility companies after the following occurs:

- 1) Proposed right of way is clear for contract award.
- 2) Final plans have been sent to and received by the utility company.
- 3) Utility permit is received by the Department and the Department is ready to issue said permit.
- 4) If a permit has not been submitted, a 15 day letter is sent to the utility company notifying them they have 15 days to provide their permit application. After allowing 15 days for submission of the permit the 90 day notice is sent to the utility company.

 Any time within the 90 day relocation period the utility company may request a waiver for additional time to complete their relocation. The Department has 10 days to review and respond to a waiver request.

HOT MIX ASPHALT - QUANTITY CORRECTION (BMPR)

Effective: October 1, 2014 Revised: October 2, 2014

Revise the fifth paragraph of Article 406.13(b) of the Standard Specifications to read as follows:

"HMA and Stone Matrix Asphalt (SMA) mixture in excess of 103 percent of the quantity shown on the plans or the plan quantity as specified by the Engineer will not be measured for payment. The "adjusted quantity to be placed" and the "adjusted pay quantity" for HMA and SMA mixtures will be calculated as follows.

Adjusted Quantity To Be Placed = $C \times Q$ quantity shown on the plans or the plan quantity as specified by the Engineer

where: C = English: $C = \frac{G_{mb} \times 46.8}{U}$ Metric: $C = \frac{G_{mb} \times 24.99}{U}$

and where: G_{mb} = average bulk specific gravity from approved mix design U = unit weight of HMA shown on the plans in lb/sq yd/in. (kg/sq m/25 mm), used to estimate plan quantity 46.8 = English constant 24.99 = metric constant

Adjusted Pay Quantity (not to exceed 103 percent of the quantity shown on the plans or the plan quantity as specified by the Engineer) = B x HMA tons actually placed

where: $B = \frac{1}{C}$

If project circumstances warrant a new mix design, the above equations shall be used to calculate the adjusted plan quantity and adjusted pay quantity for each mix design using its respective average bulk specific gravity."

WOODEN FENCE REMOVAL

This work shall consist of removal and disposal of existing wooden fence as shown on the plans and as directed by the Engineer. The Contractor shall remove all components of the existing fence including any concrete used to anchor fence posts, bracing, guy wires and posts. All holes left as a result of post removal shall be filled and tamped with dirt to the elevation of natural ground.

This work will be paid at the Contract Unit Price per linear foot of fencing, which will include all materials and labor required.

REMOVE AND REINSTALL BRICK PAVER

This work consists of removing and salvaging existing brick pavers and constructing brick paver driveway on aggregate base and sand bed. Restrict pedestrian and vehicular traffic in the area during installation of pavers. Do not build on frozen, wet, saturated, or muddy sub-grade. Protect partially completed paving against weather damage when work is not in progress. Remove and replace completed work damaged during construction.

The Contractor shall remove the existing bricks utilizing methods that will minimize damage so they may be salvaged and reused. Whenever possible, care must be taken not to chip, break, or otherwise damage existing brick pavers during removal. Pavers are to be stacked neatly and stored on palettes in a location specified by the Engineer. Pavers that are deemed by the Engineer to be damaged during removal must be properly disposed of by the Contractor upon completion of salvaging.

Aggregate Base: Place aggregate base materials only on an approved surface. Compact the finished subgrade to 95 percent of its maximum unit weight. Compact the aggregate base layer to 98 percent of maximum unit weight. Level and shape aggregate base surface to the required grade and cross section within a tolerance of 1/4 inch.

Sand Bedding Layer: Spread sand bedding layer materials evenly over the entire area to be paved, screed to a level that provides a 1-inch thickness and that allows the pavers to be flush with adjacent sidewalk after compaction. Protect completed sand bedding layer from damage until covered with paver units. Do not pre-compact sand bedding layer.

Pavers: Correct any unsatisfactory substrate or installation conditions prior to placing any pavers. Use full pavers wherever possible. Where cutting is required, use the largest size pavers possible. Cut pavers as needed to match the existing pattern and to neatly fit adjoining work. Cut pavers with block splitter or other equipment designed to cut masonry with clean, sharp, unchipped edges. Ragged cuts will not be accepted. Cut through the full thickness of the pavers. Do not cut more than 1 inch of the 4-inch dimension of a soldier course. Lay paver units to match the existing paver pattern on site. Set all pavers flush to existing adjacent concrete sidewalk and adjoining work. Pavers are to be fit and/or feathered into the existing brickwork pattern so as not to interrupt the existing paver pattern on site. Maintain uniform 1/16-inch to 1/8-inch joints between pavers. Remove and replace pavers that are broken, chipped, stained, or otherwise damaged. Clean pavers during installation and upon completion of the work.

The completed work, as described, will be measured and paid at the Contract Unit Price per square foot of brick paver removed and reinstalled, which will include all materials, labor and equipment required.

Village of Winfield DuPage County Section 12-00048-00-SW Contract No. C-91-411-12

BRICK PAVER REMOVAL

This work consists of furnishing labor and equipment necessary to remove, salvage and store the existing bricks from the locations shown on the plans or as directed by the Engineer. The work also includes the removal and disposal of excess associated material necessary to complete the work.

The Contractor shall remove the existing bricks utilizing methods that will minimize damage so they may be salvaged and reused. The bricks must be neatly stockpiled at an Engineer approved location on the project. If bricks are damaged and are not reusable the Contractor must dispose of them in accordance with the standard specifications.

The completed work, as described, will be measured and paid at the Contract Unit Price per square foot of brick paver removal, which will include all materials and labor required.

State of Illinois Department of Transportation Bureau of Local Roads and Streets

SPECIAL PROVISION FOR INSURANCE

Effective: February 1, 2007 Revised: August 1, 2007

All references to Sections or Articles in this specification shall be construed to mean specific Section or Article of the Standard Specifications for Road and Bridge Construction, adopted by the Department of Transportation.

The Contractor shall name the following entities as additional insured under the Contractor's general liability insurance policy in accordance with Article 107.27:

VILLAGE OF WINFIELD

The entities listed above and their officers, employees, and agents shall be indemnified and held harmless in accordance with Article 107.26.

CONCRETE GUTTER, CURB, MEDIAN, AND PAVED DITCH (BDE)

Effective: April 1, 2014 Revised: August 1, 2014

Add the following to Article 606.02 of the Standard Specifications:

Revise the fifth paragraph of Article 606.07 of the Standard Specifications to read:

"Transverse contraction and longitudinal construction joints shall be sealed according to Article 420.12, except transverse joints in concrete curb and gutter shall be sealed with polysulfide or polyurethane joint sealant."

Add the following to Section 1050 of the Standard Specifications:

"1050.04 Polyurethane Joint Sealant. The joint sealant shall be a polyurethane sealant, Type S, Grade NS, Class 25 or better, Use T (T₁ or T₂), according to ASTM C 920."

80334

CONCRETE MIX DESIGN - DEPARTMENT PROVIDED (BDE)

Effective: January 1, 2012 Revised: January 1, 2014

For the concrete mix design requirements in Article 1020.05(a) of the Supplemental Specifications and Recurring Special Provisions, the Contractor has the option to request the Engineer determine mix design material proportions for Class PV, PP, RR, BS, DS, SC, and SI concrete. A single mix design for each class of concrete will be provided. Acceptance by the Contractor to use the mix design developed by the Engineer shall not relieve the Contractor from meeting specification requirements.

80277

CONSTRUCTION AIR QUALITY - DIESEL RETROFIT (BDE)

Effective: June 1, 2010 Revised: November 1, 2014

The reduction of emissions of particulate matter (PM) for off-road equipment shall be accomplished by installing retrofit emission control devices. The term "equipment" refers to diesel fuel powered devices rated at 50 hp and above, to be used on the jobsite in excess of seven calendar days over the course of the construction period on the jobsite (including rental equipment).

Contractor and subcontractor diesel powered off-road equipment assigned to the contract shall be retrofitted using the phased in approach shown below. Equipment that is of a model year older than the year given for that equipment's respective horsepower range shall be retrofitted:

| Effective Dates | Horsepower Range | Model Year |
|---|------------------|------------|
| June 1, 2010 1/ | 600-749 | 2002 |
| 00110 1, 2010 | 750 and up | 2006 |
| June 1, 2011 ²⁾ | 100-299 | 2003 |
| | 300-599 | 2001 |
| | 600-749 | 2002 |
| | 750 and up | 2006 |
| June 1, 2012 2/ | 50-99 | 2004 |
| | 100-299 | 2003 |
| | 300-599 | 2001 |
| Water water and the second of | 600-749 | 2002 |
| | 750 and up | 2006 |

^{1/} Effective dates apply to Contractor diesel powered off-road equipment assigned to the contract.

The retrofit emission control devices shall achieve a minimum PM emission reduction of 50 percent and shall be:

- a) Included on the U.S. Environmental Protection Agency (USEPA) Verified Retrofit

 Technology List (http://www.epa.gov/cleandiesel/verification/verif-list.htm),
 or verified by the California Air Resources Board (CARB)

 (http://www.arb.ca.gov/diesel/verdev/vt/cvt.htm); or
- b) Retrofitted with a non-verified diesel retrofit emission control device if verified retrofit emission control devices are not available for equipment proposed to be used on the project, and if the Contractor has obtained a performance certification from the retrofit

^{2/} Effective dates apply to Contractor and subcontractor diesel powered off-road equipment assigned to the contract.

device manufacturer that the emission control device provides a minimum PM emission reduction of 50 percent.

Note: Large cranes (Crawler mounted cranes) which are responsible for critical lift operations are exempt from installing retrofit emission control devices if such devices adversely affect equipment operation.

Diesel powered off-road equipment with engine ratings of 50 hp and above, which are unable to be retrofitted with verified emission control devices or if performance certifications are not available which will achieve a minimum 50 percent PM reduction, may be granted a waiver by the Department if documentation is provided showing good faith efforts were made by the Contractor to retrofit the equipment.

Construction shall not proceed until the Contractor submits a certified list of the diesel powered off-road equipment that will be used, and as necessary, retrofitted with emission control devices. The list(s) shall include (1) the equipment number, type, make, Contractor/rental company name; and (2) the emission control devices make, model, USEPA or CARB verification number, or performance certification from the retrofit device manufacturer. Equipment reported as fitted with emissions control devices shall be made available to the Engineer for visual inspection of the device installation, prior to being used on the jobsite.

The Contractor shall submit an updated list of retrofitted off-road construction equipment as retrofitted equipment changes or comes on to the jobsite. The addition or deletion of any diesel powered equipment shall be included on the updated list.

If any diesel powered off-road equipment is found to be in non-compliance with any portion of this special provision, the Engineer will issue the Contractor a diesel retrofit deficiency deduction.

Any costs associated with retrofitting any diesel powered off-road equipment with emission control devices shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed. The Contractor's compliance with this notice and any associated regulations shall not be grounds for a claim.

Diesel Retrofit Deficiency Deduction

When the Engineer determines that a diesel retrofit deficiency exists, a daily monetary deduction will be imposed for each calendar day or fraction thereof the deficiency continues to exist. The calendar day(s) will begin when the time period for correction is exceeded and end with the Engineer's written acceptance of the correction. The daily monetary deduction will be \$1,000.00 for each deficiency identified.

The deficiency will be based on lack of diesel retrofit emissions control.

If a Contractor accumulates three diesel retrofit deficiency deductions for the same piece of equipment in a contract period, the Contractor will be shutdown until the deficiency is corrected.

Such a shutdown will not be grounds for any extension of the contract time, waiver of penalties, or be grounds for any claim.

CONTRACT CLAIMS (BDE)

Effective: April 1, 2014

Revise the first paragraph of Article 109.09(a) of the Standard Specifications to read:

"(a) Submission of Claim. All claims filed by the Contractor shall be in writing and in sufficient detail to enable the Department to ascertain the basis and amount of the claim. As a minimum, the following information must accompany each claim submitted."

Revise Article 109.09(e) of the Standard Specifications to read:

"(e) Procedure. The Department provides two administrative levels for claims review.

Level | Engineer of Construction

Level II Chief Engineer/Director of Highways or Designee

- (1) Level I. All claims shall first be submitted at Level I. Two copies each of the claim and supporting documentation shall be submitted simultaneously to the District and the Engineer of Construction. The Engineer of Construction, in consultation with the District, will consider all information submitted with the claim and render a decision on the claim within 90 days after receipt by the Engineer of Construction. Claims not conforming to this Article will be returned without consideration. The Engineer of Construction may schedule a claim presentation meeting if in the Engineer of Construction's judgment such a meeting would aid in resolution of the claim, otherwise a decision will be made based on the claim documentation submitted. If a Level I decision is not rendered within 90 days of receipt of the claim, or if the Contractor disputes the decision, an appeal to Level II may be made by the Contractor.
- (2) Level II. An appeal to Level II shall be made in writing to the Engineer of Construction within 45 days after the date of the Level I decision. Review of the claim at Level II shall be conducted as a full evaluation of the claim. A claim presentation meeting may be scheduled if the Chief Engineer/Director of Highways determines that such a meeting would aid in resolution of the claim, otherwise a decision will be made based on the claim documentation submitted. A Level II final decision will be rendered within 90 days of receipt of the written request for appeal.

Full compliance by the Contractor with the provisions specified in this Article is a contractual condition precedent to the Contractor's right to seek relief in the Court of Claims. The Director's written decision shall be the final administrative action of the Department. Unless the Contractor files a claim for adjudication by the Court of Claims within 60 days after the date of the written decision, the failure to file shall constitute a release and waiver of the claim."

80335

DISADVANTAGED BUSINESS ENTERPRISE PARTICIPATION (BDE)

Effective: September 1, 2000 Revised: January 2, 2015

<u>FEDERAL OBLIGATION</u>. The Department of Transportation, as a recipient of federal financial assistance, is required to take all necessary and reasonable steps to ensure nondiscrimination in the award and administration of contracts. Consequently, the federal regulatory provisions of 49 CFR Part 26 apply to this contract concerning the utilization of disadvantaged business enterprises. For the purposes of this Special Provision, a disadvantaged business enterprise (DBE) means a business certified by the Department in accordance with the requirements of 49 CFR Part 26 and listed in the Illinois Unified Certification Program (IL UCP) DBE Directory.

STATE OBLIGATION. This Special Provision will also be used by the Department to satisfy the requirements of the Business Enterprise for Minorities, Females, and Persons with Disabilities Act, 30 ILCS 575. When this Special Provision is used to satisfy state law requirements on 100 percent state-funded contracts, the federal government has no involvement in such contracts (not a federal-aid contract) and no responsibility to oversee the implementation of this Special Provision by the Department on those contracts. DBE participation on 100 percent state-funded contracts will not be credited toward fulfilling the Department's annual overall DBE goal required by the US Department of Transportation to comply with the federal DBE program requirements.

<u>CONTRACTOR ASSURANCE</u>. The Contractor makes the following assurance and agrees to include the assurance in each subcontract that the Contractor signs with a subcontractor.

The Contractor, subrecipient, or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The Contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of contracts funded in whole or in part with federal or state funds. Failure by the Contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the recipient deems appropriate, which may include, but is not limited to:

- (a) Withholding progress payments;
- (b) Assessing sanctions;
- (c) Liquidated damages; and/or
- (d) Disqualifying the Contractor from future bidding as non-responsible.

OVERALL GOAL SET FOR THE DEPARTMENT. As a requirement of compliance with 49 CFR Part 26, the Department has set an overall goal for DBE participation in its federally assisted contracts. That goal applies to all federal-aid funds the Department will expend in its federally assisted contracts for the subject reporting fiscal year. The Department is required to make a

good faith effort to achieve the overall goal. The dollar amount paid to all approved DBE companies performing work called for in this contract is eligible to be credited toward fulfillment of the Department's overall goal.

CONTRACT GOAL TO BE ACHIEVED BY THE CONTRACTOR. This contract includes a specific DBE utilization goal established by the Department. The goal has been included because the Department has determined that the work of this contract has subcontracting opportunities that may be suitable for performance by DBE companies. The determination is based on an assessment of the type of work, the location of the work, and the availability of DBE companies to do a part of the work. The assessment indicates that, in the absence of unlawful discrimination, and in an arena of fair and open competition, DBE companies can be expected to perform **O.OO**% of the work. This percentage is set as the DBE participation goal for this contract. Consequently, in addition to the other award criteria established for this contract, the Department will only award this contract to a bidder who makes a good faith effort to meet this goal of DBE participation in the performance of the work. A bidder makes a good faith effort for award consideration if either of the following is done in accordance with the procedures set for in this Special Provision:

- (a) The bidder documents that enough DBE participation has been obtained to meet the goal or,
- (b) The bidder documents that a good faith effort has been made to meet the goal, even though the effort did not succeed in obtaining enough DBE participation to meet the goal.

<u>DBE LOCATOR REFERENCES</u>. Bidders shall consult the IL UCP DBE Directory as a reference source for DBE-certified companies. In addition, the Department maintains a letting and item specific DBE locator information system whereby DBE companies can register their interest in providing quotes on particular bid items advertised for letting. Information concerning DBE companies willing to quote work for particular contracts may be obtained by contacting the Department's Bureau of Small Business Enterprises at telephone number (217) 785-4611, or by visiting the Department's website at www.dot.il.gov.

<u>BIDDING PROCEDURES</u>. Compliance with this Special Provision is a material bidding requirement. The failure of the bidder to comply will render the bid not responsive.

- (a) The bidder shall submit a Disadvantaged Business Utilization Plan on Department forms SBE 2025 and 2026 with the bid.
- (b) The Utilization Plan shall indicate that the bidder either has obtained sufficient DBE participation commitments to meet the contract goal or has not obtained enough DBE participation commitments in spite of a good faith effort to meet the goal. The Utilization Plan shall further provide the name, telephone number, and telefax number of a responsible official of the bidder designated for purposes of notification of plan approval or disapproval under the procedures of this Special Provision.

- (c) The Utilization Plan shall include a DBE Participation Commitment Statement, Department form SBE 2025, for each DBE proposed for the performance of work to achieve the contract goal. For bidding purposes, submission of the completed SBE 2025 forms, signed by the DBEs and faxed to the bidder will be acceptable as long as the original is available and provided upon request. All elements of information indicated on the said form shall be provided, including but not limited to the following:
 - (1) The names and addresses of DBE firms that will participate in the contract;
 - (2) A description, including pay item numbers, of the work each DBE will perform;
 - (3) The dollar amount of the participation of each DBE firm participating. The dollar amount of participation for identified work shall specifically state the quantity, unit price, and total subcontract price for the work to be completed by the DBE. If partial pay items are to be performed by the DBE, indicate the portion of each item, a unit price where appropriate and the subcontract price amount;
 - (4) DBE Participation Commitment Statements, form SBE 2025, signed by the bidder and each participating DBE firm documenting the commitment to use the DBE subcontractors whose participation is submitted to meet the contract goal;
 - (5) If the bidder is a joint venture comprised of DBE companies and non-DBE companies, the plan must also include a clear identification of the portion of the work to be performed by the DBE partner(s); and,
 - (6) If the contract goal is not met, evidence of good faith efforts; the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor is selected over a DBE for work on the contract.

GOOD FAITH EFFORT PROCEDURES. The contract will not be awarded until the Utilization Plan submitted by the apparent successful bidder is approved. All information submitted by the bidder must be complete, accurate and adequately document that enough DBE participation has been obtained or document that good faith efforts of the bidder, in the event enough DBE participation has not been obtained, before the Department will commit to the performance of the contract by the bidder. The Utilization Plan will be approved by the Department if the Utilization Plan documents sufficient commercially useful DBE work performance to meet the contract goal or the bidder submits sufficient documentation of a good faith effort to meet the contract goal pursuant to 49 CFR Part 26, Appendix A. The Utilization Plan will not be approved by the Department if the Utilization Plan does not document sufficient DBE participation to meet the contract goal unless the apparent successful bidder documented in the Utilization Plan that it made a good faith effort to meet the goal. This means that the bidder must show that all necessary and reasonable steps were taken to achieve the contract goal. Necessary and reasonable steps are those which, by their scope, intensity and appropriateness to the objective, could reasonably be expected to obtain sufficient DBE participation, even if they were not successful. The Department will consider the quality, quantity, and intensity of the kinds of efforts that the bidder has made. Mere *pro forma* efforts, in other words, efforts done as a matter of form, are not good faith efforts; rather, the bidder is expected to have taken genuine efforts that would be reasonably expected of a bidder actively and aggressively trying to obtain DBE participation sufficient to meet the contract goal.

- (a) The following is a list of types of action that the Department will consider as part of the evaluation of the bidder's good faith efforts to obtain participation. These listed factors are not intended to be a mandatory checklist and are not intended to be exhaustive. Other factors or efforts brought to the attention of the Department may be relevant in appropriate cases, and will be considered by the Department.
 - (1) Soliciting through all reasonable and available means (e.g. attendance at pre-bid meetings, advertising and/or written notices) the interest of all certified DBE companies that have the capability to perform the work of the contract. The bidder must solicit this interest within sufficient time to allow the DBE companies to respond to the solicitation. The bidder must determine with certainty if the DBE companies are interested by taking appropriate steps to follow up initial solicitations.
 - (2) Selecting portions of the work to be performed by DBE companies in order to increase the likelihood that the DBE goals will be achieved. This includes, where appropriate, breaking out contract work items into economically feasible units to facilitate DBE participation, even when the prime Contractor might otherwise prefer to perform these work items with its own forces.
 - (3) Providing interested DBE companies with adequate information about the plans, specifications, and requirements of the contract in a timely manner to assist them in responding to a solicitation.
 - (4) a. Negotiating in good faith with interested DBE companies. It is the bidder's responsibility to make a portion of the work available to DBE subcontractors and suppliers and to select those portions of the work or material needs consistent with the available DBE subcontractors and suppliers, so as to facilitate DBE participation. Evidence of such negotiation includes the names, addresses, and telephone numbers of DBE companies that were considered; a description of the information provided regarding the plans and specifications for the work selected for subcontracting; and evidence as to why additional agreements could not be reached for DBE companies to perform the work.
 - b. A bidder using good business judgment would consider a number of factors in negotiating with subcontractors, including DBE subcontractors, and would take a firm's price and capabilities as well as contract goals into consideration. However, the fact that there may be some additional costs involved in finding and using DBE companies is not in itself sufficient reason for a bidder's failure to meet the contract DBE goal, as long as such costs are reasonable. Also the ability or desire of a bidder to perform the work of a contract with its own organization does not relieve the bidder of the responsibility to make good faith

efforts. Bidders are not, however, required to accept higher quotes from DBE companies if the price difference is excessive or unreasonable. In accordance with Section 6 of the above Bidding Procedures, the documentation of good faith efforts must include copies of each DBE and non-DBE subcontractor quote submitted to the bidder when a non-DBE subcontractor was selected over a DBE for work on the contract.

- (5) Not rejecting DBE companies as being unqualified without sound reasons based on a thorough investigation of their capabilities. The bidder's standing within its industry, membership in specific groups, organizations, or associations and political or social affiliations (for example union vs. non-union employee status) are not legitimate causes for the rejection or non-solicitation of bids in the bidder's efforts to meet the project goal.
- (6) Making efforts to assist interested DBE companies in obtaining bonding, lines of credit, or insurance as required by the recipient or Contractor.
- (7) Making efforts to assist interested DBE companies in obtaining necessary equipment, supplies, materials, or related assistance or services.
- (8) Effectively using the services of available minority/women community organizations; minority/women contractors' groups; local, state, and federal minority/women business assistance offices; and other organizations as allowed on a case-by-case basis to provide assistance in the recruitment and placement of DBE companies.
- (b) If the Department determines that the apparent successful bidder has made a good faith effort to secure the work commitment of DBE companies to meet the contract goal, the Department will award the contract provided that it is otherwise eligible for award. If the Department determines that the bidder has failed to meet the requirements of this Special Provision or that a good faith effort has not been made, the Department will notify the responsible company official designated in the Utilization Plan that the bid is not responsive. The notification shall include a statement of reasons for the determination.
- (c) The bidder may request administrative reconsideration of a determination adverse to the bidder within the five working days after the receipt of the notification date of the determination by delivering the request to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764 (Telefax: (217) 785-1524). Deposit of the request in the United States mail on or before the fifth business day shall not be deemed delivery. The determination shall become final if a request is not made and delivered. A request may provide additional written documentation or argument concerning the issues raised in the determination statement of reasons, provided the documentation and arguments address efforts made prior to submitting the bid. The request will be forwarded to the Department's Reconsideration Officer. The Reconsideration Officer will extend an opportunity to the bidder to meet in person in

order to consider all issues of documentation and whether the bidder made a good faith effort to meet the goal. After the review by the Reconsideration Officer, the bidder will be sent a written decision within ten working days after receipt of the request for consideration, explaining the basis for finding that the bidder did or did not meet the goal or make adequate good faith efforts to do so. A final decision by the Reconsideration Officer that a good faith effort was made shall approve the Utilization Plan submitted by the bidder and shall clear the contract for award. A final decision that a good faith effort was not made shall render the bid not responsive.

<u>CALCULATING DBE PARTICIPATION</u>. The Utilization Plan values represent work anticipated to be performed and paid for upon satisfactory completion. The Department is only able to count toward the achievement of the overall goal and the contract goal the value of payments made for the work actually performed by DBE companies. In addition, a DBE must perform a commercially useful function on the contract to be counted. A commercially useful function is generally performed when the DBE is responsible for the work and is carrying out its responsibilities by actually performing, managing, and supervising the work involved. The Department and Contractor are governed by the provisions of 49 CFR Part 26.55(c) on questions of commercially useful functions as it affects the work. Specific counting guidelines are provided in 49 CFR Part 26.55, the provisions of which govern over the summary contained herein.

- (a) DBE as the Contractor: 100 percent goal credit for that portion of the work performed by the DBE's own forces, including the cost of materials and supplies. Work that a DBE subcontracts to a non-DBE does not count toward the DBE goals.
- (b) DBE as a joint venture Contractor: 100 percent goal credit for that portion of the total dollar value of the contract equal to the distinct, clearly defined portion of the work performed by the DBE's own forces.
- (c) DBE as a subcontractor: 100 percent goal credit for the work of the subcontract performed by the DBE's own forces, including the cost of materials and supplies, excluding the purchase of materials and supplies or the lease of equipment by the DBE subcontractor from the prime Contractor or its affiliates. Work that a DBE subcontractor in turn subcontracts to a non-DBE does not count toward the DBE goal.
- (d) DBE as a trucker: 100 percent goal credit for trucking participation provided the DBE is responsible for the management and supervision of the entire trucking operation for which it is responsible. At least one truck owned, operated, licensed, and insured by the DBE must be used on the contract. Credit will be given for the following:
 - (1) The DBE may lease trucks from another DBE firm, including an owner-operator who is certified as a DBE. The DBE who leases trucks from another DBE receives credit for the total value of the transportation services the lessee DBE provides on the contract.

- (2) The DBE may also lease trucks from a non-DBE firm, including from an owner-operator. The DBE who leases trucks from a non-DBE is entitled to credit only for the fee or commission is receives as a result of the lease arrangement.
- (e) DBE as a material supplier:
 - (1) 60 percent goal credit for the cost of the materials or supplies purchased from a DBE regular dealer.
 - (2) 100 percent goal credit for the cost of materials of supplies obtained from a DBE manufacturer.
 - (3) 100 percent credit for the value of reasonable fees and commissions for the procurement of materials and supplies if not a regular dealer or manufacturer.

CONTRACT COMPLIANCE. Compliance with this Special Provision is an essential part of the contract. The Department is prohibited by federal regulations from crediting the participation of a DBE included in the Utilization Plan toward either the contract goal or the Department's overall goal until the amount to be applied toward the goals has been paid to the DBE. The following administrative procedures and remedies govern the compliance by the Contractor with the contractual obligations established by the Utilization Plan. After approval of the Utilization Plan and award of the contract, the Utilization Plan and individual DBE Participation Statements become part of the contract. If the Contractor did not succeed in obtaining enough DBE participation to achieve the advertised contract goal, and the Utilization Plan was approved and contract awarded based upon a determination of good faith, the total dollar value of DBE work calculated in the approved Utilization Plan as a percentage of the awarded contract value shall become the amended contract goal. All work indicated for performance by an approved DBE shall be performed, managed, and supervised by the DBE executing the Participation Statement.

- (a) <u>NO AMENDMENT</u>. No amendment to the Utilization Plan may be made without prior written approval from the Department's Bureau of Small Business Enterprises. All requests for amendment to the Utilization Plan shall be submitted to the Department of Transportation, Bureau of Small Business Enterprises, Contract Compliance Section, 2300 South Dirksen Parkway, Room 319, Springfield, Illinois 62764. Telephone number (217) 785-4611. Telefax number (217) 785-1524.
- (b) <u>CHANGES TO WORK</u>. Any deviation from the DBE condition-of-award or contract plans, specifications, or special provisions must be approved, in writing, by the Department as provided elsewhere in the Contract. The Contractor shall notify affected DBEs in writing of any changes in the scope of work which result in a reduction in the dollar amount condition-of-award to the contract. Where the revision includes work committed to a new DBE subcontractor, not previously involved in the project, then a Request for Approval of Subcontractor, Department form BC 260A, must be signed and submitted. If the commitment of work is in the form of additional tasks assigned to an existing subcontract, than a new Request for Approval of Subcontractor shall not be

required. However, the Contractor must document efforts to assure that the existing DBE subcontractor is capable of performing the additional work and has agreed in writing to the change.

- (c) <u>SUBCONTRACT</u>. The Contractor must provide DBE subcontracts to IDOT upon request. Subcontractors shall ensure that all lower tier subcontracts or agreements with DBEs to supply labor or materials be performed in accordance with this Special Provision.
- (d) <u>ALTERNATIVE WORK METHODS</u>. In addition to the above requirements for reductions in the condition of award, additional requirements apply to the two cases of Contractorinitiated work substitution proposals. Where the contract allows alternate work methods which serve to delete or create underruns in condition of award DBE work, and the Contractor selects that alternate method or, where the Contractor proposes a substitute work method or material that serves to diminish or delete work committed to a DBE and replace it with other work, then the Contractor must demonstrate one of the following:
 - (1) That the replacement work will be performed by the same DBE (as long as the DBE is certified in the respective item of work) in a modification of the condition of award; or
 - (2) That the DBE is aware that its work will be deleted or will experience underruns and has agreed in writing to the change. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so; or
 - (3) That the DBE is not capable of performing the replacement work or has declined to perform the work at a reasonable competitive price. If this occurs, the Contractor shall substitute other work of equivalent value to a certified DBE or provide documentation of good faith efforts to do so.
- (e) TERMINATION AND REPLACEMENT PROCEDURES. The Contractor shall not terminate or replace a DBE listed on the approved Utilization Plan, or perform with other forces work designated for a listed DBE except as provided in this Special Provision. The Contractor shall utilize the specific DBEs listed to perform the work and supply the materials for which each is listed unless the Contractor obtains the Department's written consent as provided in subsection (a). Unless Department consent is provided for termination of a DBE subcontractor, the Contractor shall not be entitled to any payment for work or material unless it is performed or supplied by the DBE listed in the Utilization Plan.

As stated above, the Contractor shall not terminate or replace a DBE subcontractor listed in the approved Utilization Plan without prior written consent. This includes, but is not limited to, instances in which the Contractor seeks to perform work originally designated for a DBE subcontractor with its own forces or those of an affiliate, a non-DBE firm, or with another DBE firm. Written consent will be granted only if the Bureau of

Small Business Enterprises agrees, for reasons stated in its concurrence document, that the Contractor has good cause to terminate or replace the DBE firm. Before transmitting to the Bureau of Small Business Enterprises any request to terminate and/or substitute a DBE subcontractor, the Contractor shall give notice in writing to the DBE subcontractor, with a copy to the Bureau, of its intent to request to terminate and/or substitute, and the reason for the request. The Contractor shall give the DBE five days to respond to the Contractor's notice. The DBE so notified shall advise the Bureau and the Contractor of the reasons, if any, why it objects to the proposed termination of its subcontract and why the Bureau should not approve the Contractor's action. If required in a particular case as a matter of public necessity, the Bureau may provide a response period shorter than five days.

For purposes of this paragraph, good cause includes the following circumstances:

- (1) The listed DBE subcontractor fails or refuses to execute a written contract;
- (2) The listed DBE subcontractor fails or refuses to perform the work of its subcontract in a way consistent with normal industry standards. Provided, however, that good cause does not exist if the failure or refusal of the DBE subcontractor to perform its work on the subcontract results from the bad faith or discriminatory action of the prime contractor;
- (3) The listed DBE subcontractor fails or refuses to meet the prime Contractor's reasonable, nondiscriminatory bond requirements;
- (4) The listed DBE subcontractor becomes bankrupt, insolvent, or exhibits credit unworthiness;
- (5) The listed DBE subcontractor is ineligible to work on public works projects because of suspension and debarment proceedings pursuant 2 CFR Parts 180, 215 and 1,200 or applicable state law.
- (6) You have determined that the listed DBE subcontractor is not a responsible contractor;
- (7) The listed DBE subcontractor voluntarily withdraws from the projects and provides to you written notice of its withdrawal;
- (8) The listed DBE is ineligible to receive DBE credit for the type of work required;
- (9) A DBE owner dies or becomes disabled with the result that the listed DBE contractor is unable to complete its work on the contract;
- (10) Other documented good cause that compels the termination of the DBE subcontractor. Provided, that good cause does not exist if the prime Contractor seeks to terminate a DBE it relied upon to obtain the contract so that the prime

Contractor can self-perform the work for which the DBE contractor was engaged or so that the prime Contractor can substitute another DBE or non-DBE contractor after contract award.

When a DBE is terminated, or fails to complete its work on the Contract for any reason the Contractor shall make a good faith effort to find another DBE to substitute for the original DBE to perform at least the same amount of work under the contract as the terminated DBE to the extent needed to meet the established Contract goal. The good faith efforts shall be documented by the Contractor. If the Department requests documentation under this provision, the Contractor shall submit the documentation within seven days, which may be extended for an additional seven days if necessary at the request of the Contractor. The Department shall provide a written determination to the Contractor stating whether or not good faith efforts have been demonstrated.

- (f) PAYMENT RECORDS. The Contractor shall maintain a record of payments for work performed to the DBE participants. The records shall be made available to the Department for inspection upon request. After the performance of the final item of work or delivery of material by a DBE and final payment therefore to the DBE by the Contractor, but not later than thirty calendar days after payment has been made by the Department to the Contractor for such work or material, the Contractor shall submit a DBE Payment Agreement on Department form SBE 2115 to the Regional Engineer. If full and final payment has not been made to the DBE, the DBE Payment Agreement shall indicate whether a disagreement as to the payment required exists between the Contractor and the DBE or if the Contractor believes that the work has not been satisfactorily completed. If the Contractor does not have the full amount of work indicated in the Utilization Plan performed by the DBE companies indicated in the Utilization Plan and after good faith efforts are reviewed, the Department may deduct from contract payments to the Contractor the amount of the goal not achieved as liquidated and ascertained damages. The Contractor may request an administrative reconsideration of any amount deducted as damages pursuant to subsection (h) of this part.
- (g) <u>ENFORCEMENT</u>. The Department reserves the right to withhold payment to the Contractor to enforce the provisions of this Special Provision. Final payment shall not be made on the contract until such time as the Contractor submits sufficient documentation demonstrating achievement of the goal in accordance with this Special Provision or after liquidated damages have been determined and collected.
- (h) <u>RECONSIDERATION</u>. Notwithstanding any other provision of the contract, including but not limited to Article 109.09 of the Standard Specifications, the Contractor my request administrative reconsideration of a decision to deduct the amount of the goal not achieved as liquidated damages. A request to reconsider shall be delivered to the Contract Compliance Section and shall be handled and considered in the same manner as set forth in paragraph (c) of "Good Faith Effort Procedures" of this Special Provision, except a final decision that a good faith effort was not made during contract performance

to achieve the goal agreed to in the Utilization Plan shall be the final administrative decision of the Department.

FRICTION AGGREGATE (BDE)

Effective: January 1, 2011 Revised: November 1, 2014

Revise Article 1004.01(a)(4) of the Standard Specifications to read:

- "(4) Crushed Stone. Crushed stone shall be the angular fragments resulting from crushing undisturbed, consolidated deposits of rock by mechanical means. Crushed stone shall be divided into the following, when specified.
 - a. Carbonate Crushed Stone. Carbonate crushed stone shall be either dolomite or limestone. Dolomite shall contain 11.0 percent or more magnesium oxide (MgO). Limestone shall contain less than 11.0 percent magnesium oxide (MgO).
 - b. Crystalline Crushed Stone. Crystalline crushed stone shall be either metamorphic or igneous stone, including but is not limited to, quartzite, granite, rhyolite and diabase."

Revise Article 1004.03(a) of the Standard Specifications to read:

"1004.03 Coarse Aggregate for Hot-Mix Asphalt (HMA). The aggregate shall be according to Article 1004.01 and the following.

(a) Description. The coarse aggregate for HMA shall be according to the following table.

| Use | Mixture | Aggregates Allowed |
|---------|---------------|---|
| Class A | Seal or Cover | Allowed Alone or in Combination 5/: |
| | | Gravel Crushed Gravel Carbonate Crushed Stone Crystalline Crushed Stone Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag Crushed Concrete |

| Use | Mixture | Aggregates Allowed | |
|------------------------------|---|--|------------------------|
| HMA Low ESAL | Stabilized Subbase or Shoulders | Allowed Alone or in Cor Gravel Crushed Gravel Carbonate Crushed Sto Crystalline Crushed Sto Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag ^{1/} Crushed Concrete | ne |
| HMA High ESAL Low ESAL | Binder IL-19.0 or IL-19.0L SMA Binder | Allowed Alone or in Cor Crushed Gravel Carbonate Crushed Sto Crystalline Crushed Sto Crushed Sandstone Crushed Slag (ACBF) Crushed Concrete ^{3/} | one ^{2/} |
| HMA High ESAL Low ESAL | C Surface and Leveling Binder IL-9.5 or IL-9.5L SMA Ndesign 50 Surface | Allowed Alone or in Con Crushed Gravel Carbonate Crushed Sto Crystalline Crushed Sto Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag ^{4/} Crushed Concrete ^{3/} | one ^{2/} |
| HMA High ESAL | D Surface and Leveling Binder IL-9.5 SMA Ndesign 50 Surface | Allowed Alone or in Co Crushed Gravel Carbonate Crushed Sto Limestone) ^{2/} Crystalline Crushed Sto Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag ^{4/} Crushed Concrete ^{3/} | one (other than |
| | | Other Combinations Al Up to 25% Limestone | lowed: With Dolomite |

| Use | Mixture | Aggregates Allowed | |
|--|--|--|---|
| | | 50% Limestone | Any Mixture D aggregate other than Dolomite |
| | | 75% Limestone | Crushed Slag (ACBF) or Crushed Sandstone |
| HMA High ESAL | E Surface IL-9.5 SMA Ndesign 80 | Allowed Alone or in Co Crushed Gravel Crystalline Crushed St Crushed Sandstone Crushed Slag (ACBF) | |
| To the state of th | Surface | Crushed Steel Slag Crushed Concrete ^{3/} No Limestone. | |
| | | Other Combinations A | llowed: |
| | | Up to | With |
| | | 50% Dolomite ^{2/} | Any Mixture E aggregate |
| | | 75% Dolomite ^{2/} | Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone |
| | | 75% Crushed Gravel or Crushed Concrete ^{3/} | Crushed Sandstone, Crystalline Crushed Stone, Crushed Slag (ACBF), or Crushed Steel Slag |
| HMA | F Surface | Allowed Alone or in Co | ombination ^{5/} : |
| High ESAL | SMA Ndesign 80 Surface | Crystalline Crushed S Crushed Sandstone Crushed Slag (ACBF) Crushed Steel Slag No Limestone. | |
| | | Other Combinations A | <u>llowed</u> : |

| Use | Mixture | Aggregates Allowed | |
|-----|---------|---|---|
| | | Up to | With |
| | | 50% Crushed Gravel, Crushed Concrete ^{3/} , or Dolomite ^{2/} | Crushed Sandstone, Crushed Slag (ACBF), Crushed Steel Slag, or Crystalline Crushed Stone |

- 1/ Crushed steel slag allowed in shoulder surface only.
- 2/ Carbonate crushed stone shall not be used in SMA Ndesign 80. In SMA Ndesign 50, carbonate crushed stone shall not be blended with any of the other aggregates allowed alone in Ndesign 50 SMA binder or Ndesign 50 SMA surface.
- 3/ Crushed concrete will not be permitted in SMA mixes.
- 4/ Crushed steel slag shall not be used as leveling binder.
- 5/ When combinations of aggregates are used, the blend percent measurements shall be by volume."

LRFD PIPE CULVERT BURIAL TABLES (BDE)

Effective: November 1, 2013 Revised: November 1, 2014

Revise Article 542.02 of the Standard Specifications to read as follows:

| | | "Item | Article/Section |
|---|------|--|-----------------|
| 1 | (a) | Galvanized Corrugated Steel Pipe | |
| | (b) | Galvanized Corrugated Steel Pipe Arch | |
| | (c) | Bituminous Coated Corrugated Steel Pipe | |
| | (d) | Bituminous Coated Corrugated Steel Pipe Arch | 1006.01 |
| | (e) | Reserved | |
| | (f) | Aluminized Steel Type 2 Corrugated Pipe | 1006.01 |
| | (g) | Aluminized Steel Type 2 Corrugated Pipe Arch | |
| | (h) | Precoated Galvanized Corrugated Steel Pipe | 1006.01 |
| | (i) | Precoated Galvanized Corrugated Steel Pipe Arch | |
| | (j) | Corrugated Aluminum Alloy Pipe | |
| | (k) | Corrugated Aluminum Alloy Pipe Arch | 1006.03 |
| | (1) | Extra Strength Clay Pipe | |
| | (m) | Concrete Sewer, Storm Drain, and Culvert Pipe | 1042 |
| | (n) | Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe | |
| | (o) | Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe | |
| | (p) | Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe | |
| | (q) | Polyvinyl Chloride (PVC) Pipe | |
| | (r) | Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior | |
| | (s) | Corrugated Polypropylene (CPP) pipe with smooth Interior | |
| | (t) | Corrugated Polyethylene (PE) Pipe with a Smooth Interior | |
| | (u) | Polyethylene (PE) Pipe with a Smooth Interior | |
| | (v) | Rubber Gaskets and Preformed Flexible Joint Sealants for Concrete Pipe | |
| | (w) | Mastic Joint Sealer for Pipe | |
| | (x) | External Sealing Band | |
| | (y) | Fine Aggregate (Note 1) | |
| | | Coarse Aggregate (Note 2) | |
| | | Packaged Rapid Hardening Mortar or Concrete | |
| | | Nonshrink Grout | |
| | | Reinforcement Bars and Welded Wire Fabric | |
| | (dd) | Handling Hole Plugs | 1042.16 |
| | | | |

Note 1. The fine aggregate shall be moist.

Note 2. The coarse aggregate shall be wet."

Revise the table for permitted materials in Article 542.03 of the Standard Specifications as follows:

| "Class | Materials |
|--------|---|
| Α | Rigid Pipes: |
| | Extra Strength Clay Pipe |
| | Concrete Sewer Storm Drain and Culvert Pipe, Class 3 |
| | Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |
| | Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe |
| | Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe |
| С | Rigid Pipes: |
| | Extra Strength Clay Pipe |
| | Concrete Sewer Storm Drain and Culvert Pipe, Class 3 |
| | Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |
| | Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe |
| | Flexible Pipes: |
| | Aluminized Steel Type 2 Corrugated Pipe |
| | Aluminized Steel Type 2 Corrugated Pipe Arch |
| | Precoated Galvanized Corrugated Steel Pipe |
| | Precoated Galvanized Corrugated Steel Pipe Arch |
| | Corrugated Aluminum Alloy Pipe |
| | Corrugated Aluminum Alloy Pipe Arch |
| | Polyvinyl Chloride (PVC) Pipe |
| | Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior |
| | Polyethylene (PE) Pipe with a Smooth Interior |
| · | Corrugated Polypropylene (CPP) Pipe with Smooth Interior |
| D | Rigid Pipes: |
| | Extra Strength Clay Pipe |
| | Concrete Sewer Storm Drain and Culvert Pipe, Class 3 |
| | Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |
| | Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe |
| | Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe |
| | Flexible Pipes: Galvanized Corrugated Steel Pipe |
| | Galvanized Corrugated Steel Pipe Arch |
| | Bituminous Coated Corrugated Steel Pipe |
| | Bituminous Coated Corrugated Steel Pipe Arch |
| | Aluminized Steel Type 2 Corrugated Pipe |
| | Aluminized Steel Type 2 Corrugated Pipe Arch |
| | Precoated Galvanized Corrugated Steel Pipe |
| | Precoated Galvanized Corrugated Steel Pipe Arch |
| | Corrugated Aluminum Alloy Pipe |
| | Corrugated Aluminum Alloy Pipe Arch |
| | Polyvinyl Chloride (PVC) Pipe |
| | Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior |
| | Corrugated Polyethylene (PE) Pipe with a Smooth Interior |
| | Polyethylene (PE) Pipe with a Smooth Interior" |
| | Corrugated Polypropylene (CPP) Pipe with Smooth Interior |

Revise Articles 542.03(b) and (c) of the Standard Specifications to read:

- "(b) Extra strength clay pipe will only be permitted for pipe culverts Type 1, for 10 in., 12 in., 42 in. and 48 in. (250 mm, 300 mm, 1050 mm and 1200 mm), Types 2, up to and including 48 in. (1200 mm), Type 3, up to and including 18 in. (450 mm), Type 4 up to and including 10 in. (250 mm), for all pipe classes.
- (c) Concrete sewer, storm drain, and culvert pipe Class 3 will only be permitted for pipe culverts Type 1, up to and including 10 in (250 mm), Type 2, up to and including 30 in. (750 mm), Type 3, up to and including 15 in. (375 mm); Type 4, up to and including 10 in. (250 mm), for all pipe classes."

Replace the pipe tables in Article 542.03 of the Standard Specifications with the following:

| | Type 7 | rt: Fill Height: | Greater than 30' g 30' not exceeding 35' | > | > | > | > | > | > | ^ | > | > | > | > | > | > | 2730 | 2740 | 2750 | 2750 | 2760 | 2770 | |
|---|--------|------------------|--|----|----|----|----|----|----|----|----|----|----|----|----|----|------|------|------|------|------|------|--------|
| e Pipe | Type 6 | Fill Height: | Greater than 25' not exceeding 30' | > | > | > | > | > | > | > | > | > | > | > | > | > | 2370 | 2380 | 2390 | 2400 | 2410 | 2410 | |
| "Table IA: Classes of Reinforced Concrete Pipe for the Respective Diameters of Pipe and Fill Heights over the Top of the Pipe | Type 5 | Fill Height: | Greater than 20' not exceeding 25' | 2 | ≥ | ≥ | 2 | ≥ | ≥ | Α | ≥ | 2 | Ν | ≥ | 2 | ۸ | 2020 | 2020 | 2030 | 2040 | 2050 | 2060 | |
| "Table IA: Classes of Reinforced Concrete Pipe live Diameters of Pipe and Fill Heights over the | Type 4 | Fill Height: | Greater than 15' not exceeding 20' | 2 | > | > | 2 | ≥ | 2 | 2 | ≥ | ≥ | 2 | ≥ | 2 | ۸۱ | 2 | 2 | 1680 | 1690 | 1700 | 1710 | |
| "Table IA: Class bective Diameters o | Type 3 | Fill Height: | Greater than 10' not exceeding 15' | Ξ | Ξ | Ξ | = | = | = | = | = | = | = | = | = | Ξ | = | = | = | = | = | 1360 | |
| for the Resp | Type 2 | Fill Height: | Greater than 3' not exceeding 10' | = | = | = | _ | = | = | | | = | | = | = | = | = | = | = | = | = | 111 | |
| | Type 1 | Fill Height: | 3' and less 1' min cover | 2 | ≥ | ≥ | = | = | 2 | = | = | = | = | = | = | = | = | = | = | = | = | | |
| | | Nominal | Diameter in. | 12 | 15 | 18 | 21 | 24 | 30 | 36 | 42 | 48 | 54 | 09 | 99 | 72 | 78 | 84 | 90 | 96 | 102 | 108 | Notos. |

Notes:
A number indicates the D-Load for the diameter and depth of fill and that a special design is required.
Design assumptions; Water filled pipe, Type 2 bedding and Class C Walls

| | | for the Re | Table IA: Classe | Table IA: Classes of Reinforced Concrete Pipe for the Respective Diameters of Pipe and Fill Heights over the Top of the Pipe (Metric) | e Pipe er the Top of the Pipe | | |
|---------------------------|---------------------------------|------------------------------------|--------------------------------------|---|--------------------------------------|--|---------------------------------------|
| | Type 1 | Type 2 | Type 3 | Type 4 | Type 5 | Type 6 | Type 7 |
| Nominal Diameter mm | | Fill Height: | Fill Height: | Fill Height: | Fill Height: | Fill Height: | Fill Height: |
| | 1 m and less 0.3 m min cover | Greater than 1 m not exceeding 3 m | Greater than 3 m not exceeding 4.5 m | Greater than 3 m not Greater than 4.5 m not exceeding 4.5 m | Greater than 6 m not exceeding 7.5 m | Greater than 6 m not Greater than 7.5 m not Greater than 9 m not exceeding 7.5 m | Greater than 9 m not exceeding 10.5 m |
| 300 | ۸۱ | = | | ٨١ | Α | > | > |
| 375 | ≥ | == | = | 2 | ≥ | > | > |
| 450 | 2 | | | IV | 2 | ^ | ^ |
| 525 | = | = | ≡ | Λl | ΛΙ | ^ | > |
| 009 | = | = | = | 2 | 2 | > | > |
| 750 | N. | = | | Ŋ | ΛΙ | ^ | ^ |
| 006 | = | = | = | 2 | 2 | > | > |
| 1050 | = | = | = | 2 | 2 | > | > |
| 1200 | = | 11 | 111 | ľV | \ | ۸ | ^ |
| 1350 | = | = | = | 2 | 2 | > | > |
| 1500 | = | = | | 2 | 2 | > | > |
| 1650 | = | = | = | 2 | 2 | > | ^ |
| 1800 | = | = | | ≥ | > | > | > |
| 1950 | = | = | = | 2 | 100 | 110 | 130 |
| 2100 | = | _ | = | Ν | 100 | 110 | 130 |
| 2250 | = | = | = | 80 | 100 | 110 | 130 |
| 2400 | = | - | = | 80 | 100 | 110 | 130 |
| 2550 | = | = | = | 80 | 100 | 120 | 130 |
| 2700 | = | = | 70 | 80 | 100 | 120 | 130 |
| | | | | | | | |

Notes: A number indicates the D-Load for the diameter and depth of fill and that a special design is required. Design assumptions; Water filled pipe, Type 2 bedding and Class C Walls

| | | u. | OR THE | RESPE | CTIVE D | IAMETE | R OF PI | TABI PE AND | E IB: TI | HICKNE! | SS OF C | ORRUG, E TOP C | ATED ST | EEL PIPE | TABLE IB: THICKNESS OF CORRUGATED STEEL PIPE FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 2 2/3"X1/2", 3"X1" AND 5"X1" CORRUGATIONS | , 3"x1" AN | D 5"x1" C | ORRUGA' | SNOIL | | |
|--------------------|------------------|------------------------------|-----------------|------------------|-----------------------------------|---------|------------------|---------------------------------------|--------------|------------------|---------------------------------------|-------------------|------------------|---------------------------------------|---|------------------|---------------------------------------|-------------------|------------------|---------------------------------------|---------------------------------------|
| | | Type 1 | | | Type 2 | | | Туре 3 | | | Type 4 | | | Type 5 | | | Type 6 | | | Type 7 | |
| əjəmi | FI | Fill Height: | | £ | Fill Height | | _ | Fill Height: | ı, | | Fill Height: | · | | Fill Height: | ı i | | Fill Height | | | Fill Height: | |
| siO lenimo *.ni | 3. 1. 1. | 3' and less 1' min, cover | | Gre | Greater than 3 not exceeding 1 | 3, 10, | Gre | Greater than 10' not exceeding 15' | 10' g 15' | a pi | Greater than 15' not exceeding 20' | 15° g 20' | oğ g | Greater than 20' not exceeding 25' | , 20' ₃ 25' | Gre | Greater than 25' not exceeding 30' | 25' 30' | Gre | Greater than 30' not exceeding 35' | , , , , , , , , , , , , , , , , , , , |
| N | 2 2/3" x 1/2" | 3"x1" | 5"x1" | 2 2/3" x 1/2" | 3"×1" | 5"x1" | 2 2/3" × 1/2" | 3"X1" | 5"x1" | 2 2/3" x 1/2" | 3"x1" | 5"x1" | 2 2/3" × 1/2" | 3"x1" | 5"x1" | 2 2/3" × 1/2" | 3"x1" | 5"x1" | 2 2/3" × 1/2" | 3"x1" | 5"x1" |
| 12 | 0.064 | | | 0.064 | | | 0.064 | | | 0.064 | | | 0.064 | | | 0.064 | | | 0.064 | | |
| 15 | 0.064 | | | 0.064 | | | 0.064 | | | 0.064 | | | 0.064 | _ | | 0.064 | | | (0.079) | | |
| 18 | (0.079) | | | 0.064 | | | 0.064 | | | 0.064 | | | 0.064 | | | (0.079) | | | (0.079) | | |
| 21 | (0.079) | | | 0.064 | | | 0.064 | | | 0.064 | | | (0.079) | | | (0.079) | | | (6.079) | | |
| 24 | (0.079) | | | 0.064 | | | 0.064 | | | 0.064 | | | (0.02) | | | (0.079) | | | (0.109) | | |
| 30 | (0.109E) | | | 0.064 | | | 0.064 | | | (0.079) | | | (0.02) | | | (0.109) | | | 0.109 | | |
| 36 | (0.109€) | | | 0.064 | | | (6.079) | | | (0.079) | | | (0.109) | | | 0,109 | | | (0.138E) | | |
| 42 | 0.079 | | | 0.064 | | | (0.079) | | | (0.079) | | | (0.109) | | | (0.109E) | | | (0.109E) | | |
| 48 | 0.109 | (0.109) | 0.109 | (0.109) | 0.079 | 0.079 | (0.109) | 0.079 | (0.109) | 0.109 | (0.109) | 0.109 | (0.138) | (0.109) | 0.109 | (0.138E) | 0.109 | 0.109 | (0.138E) | 0.109 | (0.138) |
| 54 | 0.109 | (0,109) | | (0.109) | 0.079 | 0.079 | 0.109 | (0.109) | 0.109 | 0.109 | (0.109) | 0.109 | (0,138) | 0.109 | 0.109 | (0.138E) | 0,109 | (0.138) | (0.138E) | 0.138 | 0.138 |
| 90 | 0.109 | 0.109 | 0.109 | 0.109 | 0.079 | (0.109) | 0.109 | (0.109) | 0.109 | 0.109 | (0.109) | 0.109 | (0.138) | 0.109 | 0.109 | (0.138E) | (0.138) | (0.138) | 0.138E | (0.138E) | (0.138E) |
| 99 | (0.138) | 0,109 | 0.109 | 0.109 | 0.079 | (0.109) | 0.109 | (0.109) | 0.109 | 0.109 | 0.109 | 0.109 | (0.138) | 0.109 | (0.138) | (0.138長) | 0.138 | 0.138 | 0.138E | (0.138E) | 0.138E |
| 72 | 0.138 | 0.109 | | 0.138 | (0.109) | (0.109) | 0.138 | (0.109) | 0.109 | 0.138 | 0.109 | 0.109 | 0.138 | (0.138) | (0.138) | (0.168E) | (0.138E) | 0.138E | (0.168E) | (0.138E) | 0.138E |
| 78 | 0.168 | 0.109 | (0.138) | 0.168 | (0.109) | 0.109 | 0.168 | 0.109 | 0.109 | 0.168 | 0.109 | (0.138) | 0.168 | (0.138) | (0.138) | H0.168E | (0.138层) | 0.138E | H0.168E | 0.138臣 | (0.168E) |
| 88 | 0.168 | (0.138) | (0.138) | 0.168 | (0.109) | 0.109 | 0,168 | 0.109 | 0.109 | 0.168 | 0.109 | (0.138) | 0.168 | (0.138) | 0.138 | H0.168E | (0.138E) | 0.138E | H0.168E | (0.168E) | (0.168E) |
| 06 | | (0.138) | (0.138) (0.138) | | (0.109) | 0.109 | | 0.109 | 0.109 | | (0.138) | (0.138) | | (0.138) | 0.138 | | 0.138E | (0.168E) | | (0.168E) (0.168E) | (0.168E) |
| 96 | | (0.138) | (0.138) (0.138) | | (0.109) | 0.109 | | 0.109 | 0.109 | | (0.138) | (0.138) | | (0.138) | 0.138 | | (0.168E) | (0.168E) | | (0.168E) | (0.168E) |
| 102 | | 0.109Z | 0.109Z 0.109Z | | (0.109) | 0.109 | | 0.109 | (0.138) | | (0.138) | (0.138) | | (0.138) | 0.138 | | (0.168E) | (0.168E) (0.168E) | | H0.138E H0.168E | H0.168E |
| 108 | | 0.109Z | 0.109Z (0.138Z) | | 0.109 | 0.109 | | 0.109 | (0.138) | _ | (0.138) | 0.138 | | 0.138 | (0.168) | | (0.168E) | (0.168E) | | H0.138E H0.168E | HO. 168E |
| 4. | | 0.109Z | 0.109Z (0.138Z) | | 0.109 | 0,109 | | 0.109 | (0.138) | | (0.138) | 0.138 | | (0.168) | (0.168) | | (0.168E) | (0.168E) 0.168E | | H0.138E H0.168E | HO.168E |
| 120 | | 0.109Z | 0.109Z (0.138Z) | | 0,109 | 0.109 | | (0.138) | (0.138) | | (0.138) | 0.138 | | (0.168) | (0.168) | | H0.138E | HO.138E HO.168E | | H0.168E H0.168E | HO.168E |
| 126 | | 0.138Z 0.138Z | 0.138Z | | 0.138 | 0.138 | | 0.138 | 0.138 | | 0.138 | (0.168) | | (0.168) | (0.168) | | H0.138E | H0.138E H0.168E | | H0.168E H0.168E | H0.168E |
| 132 | | 0.138Z 0.138Z | 0.138Z | | 0.138 | 0.138 | | 0.138 | 0.138 | | (0.168) | (0.168) | | 0.168 | 0.168 | | HO.138E | HO.138E HO.168E | | H0.168E H0.168E | HO.168E |
| 138 | | 0.138Z | 0.138Z 0.138Z | | 0.138 | 0.138 | | 0.138 | 0.138 | | (0.168) | | | (0.168E) | (0.168E) H0.168E | | H0,168E | HO.168E HO.168E | | H0.168E | |
| 144 | | 0.1682 0.1682 | 0.1682 | | 0.168 | 0.168 | | 0.168 | 0.168 | | 0.168 | 0.168 | | H0.168E | HO.168E HO.168E | | H0.168E | H0.168E H0,168E | | H0,168E | |

Notes:

* Aluminized Type 2 Steel or Precoated Galvanized Steel shall be required for diameters up to 42" according to Article 1006.01, 1 1/2" x 1/4" corrugations shall be used for diameters less than 12". Thicknesses are based on longitudinal riveted seam fabrication, values in "(" can be reduced by one gage thickness if helical seam fabricates only helical seam fabrication is allowed.

E. Elongation according to Article 542.04(e)

Z. 1"-5" Minimum fill

| TABLE IB: THICKNESS OF CORRUGATED STEEL PIPE FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 68 mm x 13 mm, 75 mm x 25 mm AND 125 mm x 25 mm CORRUGATIONS (Metric) | |
|--|--|
|--|--|

| | <u>=</u> | 19 m 10.5 m | 68 x 13 75 x 25 125 x 25 mm mm | | | | | | | | | (3.51) | 3.51 | (3.51E) | 3.51E | 3.51E | (4.27E) | (4.27E) | (4.27E) | (4.27E) | H 3.51E H 4.27E | H 4.27E | H 4.27E | H 4.27E | H 4.27E | H 4.27E | | |
|----------|--------------|--|--|------|--------|--------|---|--------|---------|---------|---------|----------|---------|---------|---------|---------|-----------------|-----------------|---------|---------|-----------------|---------|---------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Type 7 | Fill Height | Greater than 9 m not exceeding 10.5 m | 75 x 25 mm | | | | | | | | | 2.77 | 3.51 | (3.51E) | (3.51E) | (3.51€) | 3,51€ | H 4.27E (4.27E) | (4.27E) | (4.27E) | H 3.51E | H 3.51E | H 3.51E | H 4.27E | H 4.27E | H 4.27E | H 4.27E | H 4 27E |
| | | Gre not ey | 68 x 13 mm | 1.63 | (2.01) | (2.01) | (2.01) | (2.77) | 2.77 | (3.51E) | (2.77E) | (3.51E) | (3.51E) | 3.51E | 3.51E | (4.27E) | H 4.27E | H 4.27E | | | | | | | | | | |
| | ر ا | 7.5 m g 9 m | 125 x 25 mm | | | | | | | | | 2.77 | (3.51) | (3.51) | 3.51 | 3,51巨 | 3.51臣 | 3.51E | (4.27E) | (4.27E) | (4 27E) | (4.27E) | 4.27E | H 3.51E H 4.27E | H 3.51E H 4.27E | H 3.51E H 4.27E | H 4.27E H 4.27E | H A 37E H A 37E |
| Type 6 | FIII Height | Greater than 7.5 m not exceeding 9 m | 75 × 25 mm | | | | | | | | | 2.77 | 2,77 | (3.51) | 3.51 | (3.51E) | H 4.27E (3.51E) | H 4.27E (3.51E) | 3.51E | (4.27E) | (4.27E) | (4.27E) | (4.27E) | H 3.51E | H 3.51E | H 3.51E | H 4.27E | 1 7 275 |
| | | Gree not e | 68 x 13 mm | 1,63 | 1.63 | (2.01) | (2.01) | (2.01) | (2.77) | 2.77 | (2.77E) | (3.51E) | (3.51E) | (3.51E) | (3.51E) | (4.27E) | H 4.27E | H 4.27E | | | | | | | | | | |
| | | 6 m 7.5 m | 125 x 25 mm | | | | | | | | | 2.77 | 2.77 | 2.77 | (3.51) | (3.51) | (3.51) | 3.51 | 3.51 | 3.51 | 3.51 | (4.27) | (4.27) | (4.27) | (4.27) | 4.27 | (4.27E) H 4.27E | 17 C Y 17 |
| Type 5 | Fill Height: | Greater than 6 m not exceeding 7.5 m | 75 x 25 mm | | | | | | | | | (2.77) | 2.77 | 2.77 | 2.77 | (3.51) | (3.51) | (3.51) | (3.51) | (3.51) | (3.51) | 3.51 | (4.27) | (4.27) | (4.27) | 4.27 | (4.27E) | 740 1 240 1 |
| | | Gree not es | 68 x 13 mm | 1.63 | 1,63 | 1.63 | (2.01) | (2.01) | (2.01) | (2.77) | (2.77) | (3.51) | (3.51) | (3.51) | (3.51) | 3.51 | 4.27 | 4.27 | | | | | | | | | | |
| | | .5 m 6 m | 125 x 25 mm | | | | | | | | | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | (3.51) | (3.51) | (3.51) | (3.51) | (3.51) | 3.51 | 3.51 | 3,51 | (4.27) | (4.27) | (4.27) | 70 7 |
| Type 4 | Fill Height | Greater than 4.5 m not exceeding 6 m | 75 × 25 mm | | | | | | | | | (2.77) | (2.77) | (2.77) | 2.77 | 2.77 | 2.77 | 2.77 | (3.51) | (3.51) | (3.51) | (3.51) | (3.51) | (3.51) | 3.51 | (4.27) | (4.27) | 7.07 |
| | | Grea not e | 68 x 13 mm | 1.63 | 1.63 | 1.63 | 1.63 | 1.63 | (2.01) | (2.01) | (2.01) | 2.77 | 2.77 | 2.77 | 2.77 | 3.51 | 4.27 | 4.27 | | | | | | | | | | |
| | | 3 m 4.5 m | 125 x 25 mm | | | | | | | | | (2.77) | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | (3.51) | (3.51) | (3.51) | (3.51) | 3.51 | 3.51 | 3.51 | 4 27 |
| Type 3 | FIII Height | Greater than 3 m not exceeding 4.5 m | 75 x 25 mm | | | | | | | | | 2.01 | (2.77) | (2.77) | (2.77) | (2.77) | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | (3.51) | 3.51 | 3.51 | 3.51 | 1 27 |
| | | Gree not ey | 68 x 13 mm | 1.63 | 1.63 | 1.63 | 1.63 | 1,63 | 1.63 | (2.01) | (2.01) | (2.77) | 2.77 | 2.77 | 2.77 | 3.51 | 4.27 | 4.27 | · | | | | | | | | | |
| Γ | | .m 3.m | 125 x 25 mm | | | | | | | | | 2.01 | 2.01 | (2.77) | (2.77) | (2.77) | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | 2.77 | 3.51 | 3.51 | 3.51 | 70.4 |
| Type 2 | Fill Height: | Greater than 1 m not exceeding 3 m | 75×25 mm | | | | *************************************** | | | | | 2.01 | 2.01 | 2.01 | 2.01 | (2.77) | (2.77) | (2.77) | (2.77) | (2.77) | (2.77) | 2.77 | 2.77 | 2.77 | 3.51 | 3.51 | 3.51 | 4 27 |
| | E | Grea not ex | 68 x 13 75 x 25 125 x 25 68 x 13 75 x 25 125 x 25 68 x 13 75 x 25 125 x 25 68 x 13 75 x 25 125 x 25 12 | 1.63 | 1.63 | 1.63 | 1.63 | 1.63 | 1,63 | 1.63 | 1.63 | (2.77) | (2.77) | 2.77 | 2.77 | 3.51 | 4,27 | 4.27 | | | | | | | | | | |
| | | Ja. | | | | | | | | | | 2.77 | 2.77 | 2.77 | 2.77 | (3.51) | (3.51) | (3.51) | (3.51) | (3.51) | 2.77Z | (3.51Z) | (3.51Z) | (3.512) | 3.51Z | 3.512 | 3.51Z | 4 277 |
| Type 1 | FIII Height: | 1 m and less 0.3 m min. cover | 68 x 13 75 x 25 125 x 25 mm | | | | | | | | | (2.77) | (2.77) | 2.77 | 2.77 | 2.77 | 2.77 | (3.51) | (3.51) | (3.51) | 2.772 | 2.772 | 2.77Z | 2.77Z | | 3.512 | 3,512 | 4 977 |
| - | | 1 m 0.3 m | 8 x 13 7 | 1.63 | 1.63 | (2.01) | (2.01) | (2.01) | (2.77E) | (2.77E) | 2.01 | 2.77 (| 2.77 | 2.77 | (3.51) | 3,51 | 4,27 | 4.27 (| | | | | | | | | | |
| \vdash |) anate | siO lsni * mm | | 300 | 375 | 450 (| 525 (| 009 | 750 (2 | 2) 006 | 1050 | 1200 | 1350 | 1500 | 1650 (| 1800 | 1950 | 2100 | 2250 | 2400 | 2550 | 2700 | 2850 | 3000 | 3150 | 3300 | 3450 | 3600 |

Auminized Type 2 Steel or Precoated Galvanized Steel shall be required for diameters up to 1050 mm according to Article 1006.01, 38 mm x 6.5 mm corrugations shall be used for diameters less than 300 mm.
Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.
A thickness preceded by an "H" indicates only helical seam fabrication is allowed.
E Elongation according to Article 542.04(e) Notes:

| | | | 35°. | 3"x1" | <u> </u> | | | | | H 0.060 | H 0,060E | (0.105E) | (0.135E) | (0.135E) | (0.135E) | (0.135E) | (0.164E) | (0.164E) | 0.164E) | (0.164E) | H 0.135E | H 0,135E | H 0.164E | H 0.164E | |
|--|--------|--------------|---------------------------------------|-------------|----------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| | Type 7 | Fill Height: | than 3 | | | | | | | \dashv | | <u>6</u> | <u>6</u> | 6 | <u>6</u> | \dashv | | ē | 0.1 | <u>o</u> | Ë. | Ή | Ë. | HO. | _ |
| TIONS | Tyr | H | Greater than 30' not exceeding 35' | 2 2/3"×1/2" | 090'0 | (0.075) | H 0.060 | H 0.060E | (0.105E) | H 0.075E | H 0,075E | 0.105E | 0.105E | (0.135E) | (0.164E) | H 0.164E | H 0.164E | | | | | | | | |
| CORRUGA | 9 6 | ight: | han 25° ding 30° | 3"x1" | | | | | | H 0.060 | H 0.060 | 0,105 | (0.105E) | (0.105E) | (0.135E) | (0.135E) | (0.135E) | (0.135E) | (0.164E) | (0.164E) | (0.164E) | (0.164E) | (0.164E) | H 0.164E | H 0.164E |
| AND 3"x1" | Type 6 | Fill Height: | Greater than 25' not exceeding 30' | 2 2/3"×1/2" | 090'0 | 0.060 | (0.075) | H 0.060 | (0.105) | H 0.075E | H 0.075E | 0.105E | 0.105E | 0,105E | 0.135E | 0,164E | H 0.164E | | | | | | | | |
| PIPE R 2 2/3"x1/2" | 3.5 | ight | han 20' ding 25' | 3"×1" | | | | | | H 0.060 | H 0.060 | (0.075) | (0.105) | (0.105) | (0.105) | (0.135) | (0.135) | (0.135) | (0.135) | (0.135) | (0.135) | (0.164) | (0.164) | 0.164 | 0.164 |
| IUM ALLOY 4E PIPE FO! | Type 5 | Fill Height | Greater than 20' not exceeding 25' | 2 2/3"x1/2" | 0.060 | 0.060 | 0.060 | (0.075) | (0.105) | (0.105) | (0.135) | 0.105 | 0.105 | 0.105 | 0.135 | 0.164 | 0.164 | | | | | | | | |
| ED ALUMIN TOP OF TH | 4 | ight: | nan 15' ding 20' | 3"×1" | | • | | | | H 0.060 | H 0.060 | 0,060 | (0.075) | (0.075) | (0.105) | (0.105) | (0.105) | (0.105) | (0.135) | (0.135) | (0.135) | 0.135 | 0.135 | 0.164 | 0.164 |
| CORRUGAT S OVER THE | Type 4 | Fill Height | Greater than 15' not exceeding 20' | 2 2/3"×1/2" | 090'0 | 0.060 | 0.060 | 090'0 | (0.075) | (0.105) | (0.105) | 0.105 | 0.105 | 0.105 | 0,135 | 0.164 | 0.164 | | | | | | | | |
| KNESS OF LL HEIGHT | 3 | ight: | 10' ding 15' | 3"×1" | | | | | | H 0,060 | H 0.060 | 090.0 | 0.060 | 0.060 | (0.075) | (0.075) | (0.075) | (0.105) | 0.105 | 0.105 | 0.105 | 0.135 | 0.135 | 0.164 | 0.164 |
| TABLE IC: THICKNESS OF CORRUGATED ALUMINUM ALLOY PIPE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 2 2/3°x1/2" AND 3°x1" CORRUGATIONS | Type 3 | Fill Height | Greater than 10' not exceeding 15' | 2 2/3"×1/2" | 090'0 | 0.060 | 0.060 | 0.060 | 0.060 | 0.075 | (0.105) | 0.105 | 0.105 | 0.105 | 0.135 | 0.164 | 0.164 | | | | | | | | |
| TAB ETER OF F | 12 | ight: | ater than 3' xceeding 10' | 3"x1" | | | | | | H 0.060 | H 0.060 | 090'0 | 0.060 | 090'0 | 090.0 | 0.060 | 0.060 | 0.075 | 0.105 | 0.105 | 0.105 | 0.135 | 0.135 | 0.164 | 0.164 |
| CTIVE DIAM | Type 2 | Fill Height | Greater t not excee | 2 2/3"x1/2" | 090.0 | 0.060 | 090'0 | 090'0 | 090'0 | 0.075 | 0.075 | 0.105 | 0.105 | 0.105 | 0.135 | 0.164 | 0.164 | | | | | | | | |
| FOR THE RESPECTIVE | 1 | ight: | less | 3"x1" | | | | | | H 0.060 | H 0.060E | (0.075) | (0.075) | (0.105) | (0.105) | (0.105) | (0.105) | (0.135) | (0.135) | (0.135) | (0.135) | 0.1352 | 0.135Z | 0.164Z | 0.164Z |
| FOR 1 | Type 1 | Fill Height | 3' and less 1' min. cover | 2 2/3"×1/2" | (0.075) | (0.075) | (0.075) | H 0.060E | (0.105E) | H 0.075E | (0.135E) | 0.105E | 0.105E | 0.105E | 0.135E | 0.164E | 0.164E | | | | | | | | |
| | Jə; | iəmei | O Isnin .ni | noM | 12 | 5 | 48 | 21 | 24 | 30 | 36 | 42 | 48 | 54 | 8 | 99 | 72 | 78 | 84 | 6 | 96 | 102 | 108 | 114 | 120 |

Notes:
Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.
A thickness preceded by an "H" indicates only helical seam fabrication is allowed.
E Elongation according to Article 542.04(e), the elongation requirement for Type 1 fill heights may be eliminated for fills above 1'-6"
Z 1"-6" Minimum fill

| | | | FOR THE | TABLE RESPECT FC | TABLE IC: THICKNESS OF CORRUGATED ALUMINUM ALLOY PIPE FOR THE RESPECTIVE DIAMETER OF PIPE AND FILL HEIGHTS OVER THE TOP OF THE PIPE FOR 68 mm x 13 mm AND 75 mm x 25 mm CORRUGATIONS (Metric) | VESS OF C TER OF PIF 13 mm ANI | ORRUGA E AND FIL 75 mm x (Metric) | TED ALUM LL HEIGHT 25 mm CO | IINUM ALLC 'S OVER TH PRRUGATIC | YY PIPE HE TOP OF INS | THE PIPE | | | |
|----------------|----------------------------------|----------------------|----------------------|---------------------------------------|---|--------------------------------------|--|-----------------------------------|---------------------------------------|-----------------------------|---|---------------|--|----------------------|
| 15 | Type 1 |)e 1 | Typ | Type 2 | Type 3 | 93 | Type 4 | e 4 | Type 5 | 3.5 | Type 6 | 9 | Type 7 | 7. |
| emete | Fill Height: | eight: | H | Fill Height: | Fill Height: | ight: | Fill Height | eight: | Fill Height | ight: | Fill Height: | ight: | Fill Height: | ight: |
| siO Isni mm | 1 m and less 0.3 m min. cover | nd less in. cover | Greater not excet | Greater than 1 m not exceeding 3 m | Greater than 3 m not exceeding 4.5 m | nan 3 m ing 4.5 m | Greater than 4.5 m not exceeding 6 m | lan 4.5 m ding 6 m | Greater than 6 m not exceeding 7.5 m | nan 6 m ing 7.5 m | Greater than 7.5 m not exceeding 9 m | | Greater than 9 m not exceeding 10.5 m | ian 9 m ng 10.5 m |
| тоИ | 68 x 13 mm | 75 x 25 mm | 68 x 13 mm | 75×25 mm | 68 x 13 mm | 75 x 25 mm | 68 x 13 mm | 75 x 25 mm | 68 x 13 mm | 75 x 25 mm | 68 x 13 mm | 75 x 25 mm | 68 x 13 mm | 75 x 25 mm |
| 300 | (1.91) | | 1.52 | | 1.52 | | 1.52 | | 1.52 | | 1.52 | | 1.52 | |
| 375 | (1.91) | | 1.52 | | 1.52 | | 1.52 | | 1.52 | | 1.52 | | (1.91) | , |
| 450 | (1.91) | | 1.52 | | 1.52 | | 1.52 | | 1.52 | | (1.91) | | H 1.52 | |
| 525 | H 1.52E | | 1.52 | | 1.52 | | 1.52 | | (1.91) | | H 1.52 | | H 1.52E | · |
| 009 | (2.67E) | | 1.52 | | 1.52 | | (1.91) | | (2.67) | | (2.67) | • | (2.67E) | |
| 750 | H 1.91E | H 1.52 | 1.91 | H 1.52 | 1.91 | H 1.52 | (2.67) | H 1.52 | (2.67) | H 1.52 | H 1.91E | H 1.52 | H 1.91E | H 1.52 |
| 006 | (3.43E) | H 1.52E | 1.91 | H 1.52 | (2.67) | H 1,52 | (2.67) | H 1.52 | (3.43) | H 1,52 | H 1.91E | H 1.52 | H 1,91E | H 1.52E |
| 1050 | 2.67E | (1.91) | 2.67 | 1.52 | 2.67 | 1.52 | 2.67 | 1.52 | 2.67 | (1.91) | 2.67E | 2.67 | 2.67E | (2.67E) |
| 1200 | 2.67E | (1.91) | 2.67 | 1.52 | 2.67 | 1.52 | 2.67 | (1.91) | 2.67 | (2.67) | 2.67E | (2.67E) | 2.67E | (3.43E) |
| 1350 | 2.67E | (2.67) | 2.67 | 1.52 | 2.67 | 1,52 | 2.67 | (1.91) | 2.67 | (2.67) | 2.67E | (2.67E) | (3.43E) | (3.43E) |
| 1500 | 3.43E | (2.67) | 3.43 | 1.52 | 3.43 | (1.91) | 3.43 | (2.67) | 3.43 | (2.67) | 3.43E | (3.43E) | (4.17E) | (3.43E) |
| 1650 | 4.17E | (2.67) | 4,17 | 1.52 | 4.17 | (1.91) | 4.17 | (2.67) | 4.17 | (3.43) | 4.17E | (3.43E) | H 4.17E | (3.43E) |
| 1800 | 4.17E | (2.67) | 4.17 | 1.52 | 4.17 | (1.91) | 4.17 | (2.67) | 4.17 | (3.43) | H 4.17E | (3.43E) | H 4.17E | (4.17E) |
| 1950 | | (3.43) | | 1.91 | | (2.67) | | (2.67) | | (3.43) | | (3.43E) | | (4.17E) |
| 2100 | | (3.43) | | 2.67 | | 2.67 | | (3.43) | | (3.43) | | (4.17E) | | (4.17E) |
| 2250 | | (3.43) | | 2,67 | | 2.67 | | (3.43) | | (3.43) | | (4.17E) | | (4.17E) |
| 2400 | | (3.43) | | 2.67 | | 2.67 | | (3.43) | | (3.43) | | (4.17E) | | H 3.43E |
| 2550 | | 3.432 | | 3,43 | | 3.43 | | 3.43 | | (4.17) | | (4.17E) | | H 3.43E |
| 2700 | | 3.43Z | | 3,43 | | 3,43 | | 3,43 | | (4.17) | | (4.17E) | | H 4.17E |
| 2850 | | 4.17Z | | 4.17 | | 4.17 | | 4.17 | | 4.17 | | H 4.17E | | H 4.17E |
| 3000 | | 4.17Z | | 4.17 | | 4.17 | | 4.17 | | 4.17 | | H 4.17E | | |
| Aloboot | | | | | | | | | | | | | | |

Notes:
Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.
A thickness preceded by an "H" indicates only helical seam fabrication is allowed.
E Elongation according to Article 542.04(e), the elongation requirement for Type 1 fill heights may be eliminated for fills above 450 mm,
Z 450 mm Minimum fill

| | 17 13 1-6" n.ns4 n.ns4 n.ns4 | | 71 15 | \$0.00 \$1.00 | | 35 24 1'-6" (0.079) (0.079) (0.079) | | 42 29 0.064 0.064 0.064 | | 49 33 | (50.10) (61.00) (61.00) | 57 38 53 41 53 41 1-5" 0 100 000 0010 0 10 | | 64 43 60 46 60 46 1'-6" 0.109 0.109 0.164 0.075) 0.109 0.079 0.164 0.060 0.109 0.109 0.164 | 91 142 | Equivalent Round 5 2 2 2 3 4 5 5 5 5 5 6 6 5 5 5 5 6 6 5 5 5 5 5 6 6 6 5 5 5 5 6 6 6 5 5 5 6 6 6 6 5 5 6 | Corrug Stee Alum Pipe 2 2/3" (in.)* 17 24 28 35 49 64 64 64 64 64 64 64 64 64 64 64 64 64 | gated el & inum Arch x 1/2" x 1/2" x 1/2" 13 15 15 20 20 24 47 47 57 57 | | Arch Arch (in.) Rise (in.) 855 55 55 55 55 55 55 55 55 55 55 55 55 | Corrugated Steel & Min. Fill Height Fi | ated ell (in.) 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 | Min. Cover Steel & Auminum 1:6" 1:6" 1:6" 1:6" 1:6" 1:6" 1:6" 1:6" | 2 223" x 1/2" x 0.064 0.064 0.0679) 0.0779) 0.0779 0.109 0.109 0.109 0.108 0.168 | 3. 2 Steel 3."x1" 3."x1" (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) (0.109) | Height Height Height Height Height 10.09) 0.109) 0.109 0.109 0.109 0.109 0.109 0.109 0.108 0.108 0.138 0.138 | | -1- 0.00 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 | Greate 2 223" x 112" 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.068 0.068 0.109 0.109 0.109 0.108 0.168 | Fill Fill Fill (0.079 0.079 0.079 0.079 (0.109) (0.109) 0.138 0.138 0.138 | Profession of the second of th | Alumir 2 2/3" x 1/2" 0.060 0.075 0.075 0.075 0.105 0.1 | m "x/" "x/1" 0.060 0.060 0.060 0.075 | Gree 12.2/3" x 1/2" | Steel 3"x1" Steel (0.109) (0.1 | 10' not e 10' not | Alumi Alumi 1/2" x 1/2" x 1/2" 0.060 0.060 0.065 0.105 0.105 0.105 0.105 0.105 | 15' 3"'X1" 3"'X1" 0.060 0.060 0.075 0.075 0.075 0.105 0.105 0.105 0.105 |
|---|---|--|---|---|---|---|---|--|---|---|---|--|--|---|--|--|--|---|--------|--|--|--|--|---|--|--|------------------|--|---|---|--|--|--|---|--|---|---|---|
| Corrugated Steel & | Corrugated Steel & Stee | Corrugated Steel & | Corrugated Steel & | Corrugated Steel & | Corrugated Steel & | Steal & Stea | Steel & Stee | Steel & Stee | Steel & Stee | Steel & Stee | Steel & Stee | Speal & Steel & Stee | Sheel & Skeel & Skee | Steel & Stee | Street Range Stre | | | | | | | | | | - | | | | | | I | | Ì | | | | | |
| Steel & Steel & Steel & Steel & Steel & Steel & Span Rise Span | Steel & Steel & Aluminum Pipe Arch Span Rise Span Rise (in.)* (in.) Steel & Span Rise (in.)* (in.) Fill Height: Fill Height:< | Steel & | Steel & Aluminum Pipe Arch (in.) (in.) (in.) (in.) (in.) (in.) (in.) (in.) Steel & Ste | Steel & | Steel & Steel & Aluminum Pipe Arch (in.) (i | Steel & Steel & Aluminum Pipe Arch (in.) * (in. | Steel & | Steel & Steel & Aluminum Pipe Arch (in.) * (in. | Steel & | Steel & Stee | Steel & Steel & Corngated Aluminum Aluminum Pipe Arch | Steel & Steel & Steel & Steel & Span Rise Steel & Span Rise Steel & Stee | Steel & Stee | Steel & Stee | Siesi Sies | | | nated | Corn | aated | | - | | | | ype 1 | | | | Ĺ | ype 2 | | | | | Type 3 | | |
| Span Rise Span | Span Rise Span Rise Span Rise Span Rise Steel & Steel | Span Rise Span | Span Rise Span | Span Rise Span | Span Rise Span | Span Rise Span | Span Rise Span Rise Span Rise Span Rise Span Rise Steel & Stee | Span Rise Span Rise Span Rise Span Rise Steel R 11-6" 0.064 11 | Span Rise Span | Span Rise Span Rise Span Rise Span Rise Span Rise Steel R 11-6" 0.064 11-6" 0.075 11-6" 0.075 11-6" 0.075 11-6" 0.064 11-6" 0.075 11-6" 0.064 11-6" | Span Rise Span Rise Span Rise Span Rise Span Rise Steel & Stee | Span Rise Span Rise Span Rise Span Rise Steel R 11-6" 0.064 11 | Span Rise Span | Span Rise Span | Pige Arch Pige | | Ste | el & inum | | el & | Corrug- Stee | ated aled | Min. | | Ē | Height: | | | | Œ | Height: | | | | ţ. | iii Heigh | ند | |
| Span Rise Span Rise Steel & Steel & (in.)* (in.) Aluminum 2 2/3" x 3"x1" 3"x1" 2 2/3" x 3"x1" 3"x1" 5" x 1" 2 2/3" x 3"x1" 3"x1" 5" x 1" 2 2/3" x 3"x1" 3"x1" 5" x 1" 2 2/3" x 3"x1" 5" x 1" 1/2" x 3"x1" 1/2" x 3"x1" 5" x 1" 1/2" x 3"x1" 5" x 1" 1/2" x 3"x1" 1/2" x 3"x1" 5" x 1" 1/2" x 3"x1" 1/2" x 3"x1 | Span Rise Span Rise Span Rise Steel & Steel & Aluminum 2 2/3" x 3"x1" 4 1/2" 3"x1" 5" x 1" 4 1/2" 4 1/2" | Span Rise Span Rise Span Rise Steel & Steel & To now on the fin.) Steel & To now on the fin.) Aluminum (in.) Steel & To now on the fin.) Aluminum (in.) Steel & To now on the fin. Aluminum (in.) Steel & To now on the fin. Aluminum (in.) Steel & To now on the fin. Aluminum (in.) Steel & To now on the fin. Aluminum (in.) Steel & To now on the fin. Aluminum (in.) Steel & To now on the fin. Aluminum (in.) Steel & To now on the fin. Aluminum (in.) Aluminum (in.) Steel & To now on the fin. Aluminum (in.) Aluminu | Span Rise Span Rise Span Rise Steel & Steel | Span Rise Span Rise Steel (in.)* Aluminum Steel Aluminum Steel Aluminum Steel Aluminum Steel Aluminum Steel Aluminum Steel Aluminum Aluminu | Span Rise Span Rise Span Rise Steel & Steel (in.) Steel (in.) Aluminum 2 2/3" x 1/2" 3"x1" 2 2/3" x 1/2" 3"x1" 2 2/3" x 1/2" 3"x1" 3"x | Span Rise Span Rise Span Rise Steel & Span Rise Steel & Aluminum Aluminum Steel & Aluminum Aluminum Steel & Aluminum Aluminum Steel & Aluminum Alu | Span Rise Span Rise Steel & | Span Rise Span Rise Span Rise Steel & Steel & Aluminum Aluminum Steel & Aluminum Aluminum Steel & Aluminum Aluminum <td>Span Rise Span Rise Steel & Steel &</td> <td>Span Rise Span Rise Span Rise Steel & Steel & Aluminum Aluminum Steel & Aluminum Aluminum Steel & Aluminum Aluminum Steel & Aluminum Alum</td> <td>Span Rise Span Rise Steel & S</td> <td>Span Rise Span Rise Aluminum 22/3" x 3"x1" 3"x1</td> <td>Span Rise Span Rise Steel & S</td> <td>Span Rise Steel & Span Rise Steel & S</td> <td> Fig. Spart Fig. Spart Fig. Spart Fig. Steel Steel </td> <td></td> <td>Pipe 2 2/3"</td> <td>Arch × 1/2"</td> <td></td> <td>Arch "1"</td> <td>, K</td> <td></td> <td>5</td> <td></td> <td>ຕ</td> <td>and less</td> <td></td> <td></td> <td>Great</td> <td>er than 3</td> <td>not exc</td> <td>eding 1</td> <td>·</td> <td>Greg</td> <td>iter than</td> <td>10' not e</td> <td>xceeding</td> <td><u>15.</u></td> | Span Rise Span Rise Steel & | Span Rise Span Rise Span Rise Steel & Steel & Aluminum Aluminum Steel & Aluminum Aluminum Steel & Aluminum Aluminum Steel & Aluminum Alum | Span Rise Span Rise Steel & S | Span Rise Aluminum 22/3" x 3"x1" 3"x1 | Span Rise Span Rise Steel & S | Span Rise Steel & Span Rise Steel & S | Fig. Spart Fig. Spart Fig. Spart Fig. Steel | | Pipe 2 2/3" | Arch × 1/2" | | Arch "1" | , K | | 5 | | ຕ | and less | | | Great | er than 3 | not exc | eding 1 | · | Greg | iter than | 10' not e | xceeding | <u>15.</u> |
| (in.)* (in.)* (in.) (iii.) (ii | (in.) | (in.)* (in.) | (in.) | (in.)* (in.) | Charle C | (in.) (in.) <th< td=""><td>(in.) (in.) <th< td=""><td> Charle C</td><td> Charle C</td><td> The color of the</td><td>Chall Alse Open (in.) (in.)<</td><td> The color of the</td><td>(in.) (in.) <th< td=""><td> The color of the</td><td> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,</td><td></td><td>200</td><td>o i o</td><td>Span</td><td>o io</td><td>1</td><td>9,0</td><td>Ctool R</td><td></td><td>Steel</td><td></td><td>Alumir</td><td>שחר</td><td></td><td>Steel</td><td></td><td>Alumir</td><td>mn</td><td></td><td>Steel</td><td></td><td>Alumi</td><td>unu</td></th<></td></th<></td></th<> | (in.) (in.) <th< td=""><td> Charle C</td><td> Charle C</td><td> The color of the</td><td>Chall Alse Open (in.) (in.)<</td><td> The color of the</td><td>(in.) (in.) <th< td=""><td> The color of the</td><td> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,</td><td></td><td>200</td><td>o i o</td><td>Span</td><td>o io</td><td>1</td><td>9,0</td><td>Ctool R</td><td></td><td>Steel</td><td></td><td>Alumir</td><td>שחר</td><td></td><td>Steel</td><td></td><td>Alumir</td><td>mn</td><td></td><td>Steel</td><td></td><td>Alumi</td><td>unu</td></th<></td></th<> | Charle C | Charle C | The color of the | Chall Alse Open (in.) (in.)< | The color of the | (in.) (in.) <th< td=""><td> The color of the</td><td> 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,</td><td></td><td>200</td><td>o i o</td><td>Span</td><td>o io</td><td>1</td><td>9,0</td><td>Ctool R</td><td></td><td>Steel</td><td></td><td>Alumir</td><td>שחר</td><td></td><td>Steel</td><td></td><td>Alumir</td><td>mn</td><td></td><td>Steel</td><td></td><td>Alumi</td><td>unu</td></th<> | The color of the | 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, | | 200 | o i o | Span | o io | 1 | 9,0 | Ctool R | | Steel | | Alumir | שחר | | Steel | | Alumir | mn | | Steel | | Alumi | unu |
| | 7,1 | 17 13 1-6" n.ns.4 n.ns.4 n.ns.4 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 24 18 1-6" (0.079) (0.075) 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 21 15 1-6" 0.064 0.064 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1-6" (0.079) (0.105) 0.064 0.075 0.084 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 1-6" (0.079) (0.105) 0.064 0.075 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 21 15 1-6" 0.064 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1-6" (0.079) (0.105) 0.064 0.075 0.084 47 29 1-6" (0.079) 0.064 0.064 0.075 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 24 18 1-6" 0.064 0.065 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 1-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1-6" (0.079) 0.105 0.064 0.064 0.064 | 17 13 1'-6" 0.064 0.060 0.064 0.064 0.064 21 15 1'-6" 0.064 0.064 0.064 0.064 0.064 28 20 1'-6" (0.079) (0.105) 0.064 0.064 0.064 35 24 1'-6" (0.079) (0.105) 0.064 0.075 0.084 42 29 1'-6" (0.079) 0.105 0.064 0.064 0.064 40 33 1'-6" (0.079) 0.105 0.064 0.064 0.064 | 17 13 1-6" 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.064 0.075 0.064< | 17 13 11-6" 0.064 0.069 0.064 0.064 0.064 0.069 0.064 0.069 | 17 13 1-6" 0.064 0.056 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.060 0.064 0.060 0.064 0.060 0.064 0.060 0.064 0.060 0.064 0.060 0.064 0.066 0.064 0.060 0.064 0.060 0.064 0.060 0.064 0.060 0.064 0.060 0.064< | 17 13 14 14 0.064 0.069 0.064 0.064 0.069 0.064 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.066 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.064 0.066 0.064 0.066 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.065 | 3 | (j.) | (ii) | (in.) | (in.) | | | | 2 2/3" x | — | ÷- | 2.2/3" × | ┼ | 2 2/3" × | ⊢ | | 2 2/3" × | 3"×1" | 2.2/3" × | 3"x1" | 5" × 1" | 2 2/3" x | 3"×1" |
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| | | 17 13 1-6" n.ns.4 n.nsn n.ns.4 n.nsn n.ns.4 | 17 13 1-6" 0.064 0.060 0.064 0.064 | 17 13 1-6" 0.064 0.050 0.054 0.064 24 45" 0.054 0.064 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 | 17 13 1-6" 0.064 0.050 0.054 0.064< | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.060 0.064 28 20 1-6" (0.079) (0.105) 0.054 0.054 0.064 35 24 1-6" (0.079) (0.105) 0.064 0.075 0.084 | 17 13 1-6" 0.064 0.060 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075< | 17 13 1-6" 0.064 0.060 0.064 0.066 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.064 0.064 35 24 1-6" (0.079) (0.105) 0.064 0.075 0.064 47 29 1-6" 0.079 0.064 0.075 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064< | 17 13 1-6" 0.064 0.060 0.064 0.066 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.064 0.064 35 24 1-6" (0.079) (0.105) 0.064 0.075 0.064 42 29 1-6" (0.079) 0.105 0.064 0.065 0.064 40 33 1-6" (0.079) 0.105 0.064 0.065 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.066 0.064 0.064 0.066 0.064 0.075 0.064< | 17 13 1-6" 0.064 0.066 0.064 0.064 0.066 0.064 0.066 0.064 0.060 0.064 0.075 0.064 0.075< | 17 13 14 14-6" 0.064 0.066 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.060 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.060 0.064 0.064 0.064 0.066 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 <td>17 13 1.5 0.064<!--</td--><td>1</td><td>(ju)</td><td>(jii)</td><td>j.</td><td>(in.)</td><td></td><td><u> </u></td><td></td><td>2 2/3" ×</td><td></td><td>× +</td><td>2 2/3" × 1/2"</td><td></td><td>2 2/3" × 1/2"</td><td>_</td><td></td><td>2 2/3" × 1/2"</td><td>3"x1" (</td><td>2.2/3" x</td><td>3"x1"</td><td>5" x 1"</td><td>2 2/3" x 1/2"</td><td>3"×1"</td></td> | 17 13 1.5 0.064 </td <td>1</td> <td>(ju)</td> <td>(jii)</td> <td>j.</td> <td>(in.)</td> <td></td> <td><u> </u></td> <td></td> <td>2 2/3" ×</td> <td></td> <td>× +</td> <td>2 2/3" × 1/2"</td> <td></td> <td>2 2/3" × 1/2"</td> <td>_</td> <td></td> <td>2 2/3" × 1/2"</td> <td>3"x1" (</td> <td>2.2/3" x</td> <td>3"x1"</td> <td>5" x 1"</td> <td>2 2/3" x 1/2"</td> <td>3"×1"</td> | 1 | (ju) | (jii) | j. | (in.) | | <u> </u> | | 2 2/3" × | | × + | 2 2/3" × 1/2" | | 2 2/3" × 1/2" | _ | | 2 2/3" × 1/2" | 3"x1" (| 2.2/3" x | 3"x1" | 5" x 1" | 2 2/3" x 1/2" | 3"×1" |
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| Span Kise Span Span Span Span Kise S | Span Kise Span K | Span Kise Span Span Span Kise Span K | Span Kise Span K | Span Kise Span K | Span Kise Span K | Span Kise Span | Span Kise Span | Span Kise Span | Span Kise Span | Span Kise Span | Span Kise Span | Span Kise Sixti | Span Kise Size Span Kise | Span Kise Span | This | | L, | i | _ (| i | | ì | i | | Steel | | Alumir | mnr | | Steel | | Alumir | mnr | | Steel | | Alumi | unu |
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| 112" 3 X 1/2" 3 X 1/2 | 112" 3XI 12" 3XI 12" 3XI 112" 3XI 112" 3XI 115" 3XI 115" 3XI 115" 3XI 115" 3XI 115" | 17 13 17-8" 0.054 0.056 0.054 0.056 0.054 0.056 0.056 | 17 13 17 13 | 17 13 145" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 112" 3×1 3×1 112" 3×1 3×1 112" 3×1 | 17 13 14-6" 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.066 | 17 13 1/2" 3 XI 1/2 | 17 13 17e* 3×1 | 17 13 1/2" 3 XI 1/2 | 17 13 172" 3 XI 172 | 17 13 172" 3 XI 172 | 17 13 172" 3 XI 3 XI 172" 3 X | 17 13 172" 3 × 1 3 × 1 172" 3 × 1 3 × 1 172" 3 × 1 3 × 1 3 × 1 3 × 1 3 × 1 3 × 1 3 × 1 3 × 1 3 × 1 <t< td=""><td>17 13 172" 3 XI 3 X</td><td>17 13 172" 3 XI 3 XI 3 XI 172" 3 XI 3 X</td><td> 17 13 13 14 15 15 15 15 15 15 15</td><td></td><td>(in.)*</td><td>(<u>i</u></td><td>ji.</td><td>(iii)</td><td></td><td>_</td><td></td><td>2 2/3" ×</td><td></td><td>÷</td><td>2 Z/3" ×</td><td></td><td>2 2/3 ×</td><td>_</td><td></td><td>2 2/3 X</td><td>1,671,6</td><td>× 522</td><td>110,00</td><td>E 4"</td><td>7 2/3 X</td><td>211,410</td></t<> | 17 13 172" 3 XI 3 X | 17 13 172" 3 XI 3 XI 3 XI 172" 3 XI 3 X | 17 13 13 14 15 15 15 15 15 15 15 | | (in.)* | (<u>i</u> | ji. | (iii) | | _ | | 2 2/3" × | | ÷ | 2 Z/3" × | | 2 2/3 × | _ | | 2 2/3 X | 1,671,6 | × 522 | 110,00 | E 4" | 7 2/3 X | 211,410 |
| 1/2" 1/2 | 1/2 1/2 1/2 1/2 | 17 13 11-6" 0.054 0.054 0.064 0.064 | 17 13 11-6" 0.064 0.060 0.064 0.064 0.064 | 17 13 14 14 15 14 16 0.064 17 0.064 16 0.064 17 0.064 17 0.064 16 0.064 16 0.064 16 0.064 16 0.064 17 0.064 16 0.064 16 0.064 16 0.064 17 0.064 16 0.064 16 0.064 16 0.064 17 0.064 18 0.064 19 0.064 10 0.064 15 0.064 16 0.064 16 0.064 17 0.064 18 0.064 19 0.064 10 0.064 16 0.064 17 0.064 18 0.064 19 0.064 10 0.064 10 0.064 10 0.064 10 0.064 10 0.064 10 0.064 < | 17 13 11-6" 0.064 0.060 0.064 0.060 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 | 17 13 1-6" 0.064< | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 24 18 1-6" 0.064 0.065 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 1-6" (0.079) 0.064 0.075 0.064 | 17 13 1-6" 0.064 0.050 0.054 0.064 0.064 21 15 1-6" 0.064 0.069 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1-6" (0.079) (0.105) 0.064 0.075 0.084 | 17 13 11-6" 0.064 0.065 0.064 0.064 0.066 21 15 11-6" 0.064 0.060 0.064 0.064 0.064 24 18 11-6" 0.064 0.064 0.064 0.060 0.064 28 20 11-6" (0.079) (0.105) 0.064 0.065 0.064 47 29 11-6" (0.079) 0.064 0.064 0.075 0.064 47 29 11-6" (0.079) 0.064 0.064 0.075 0.064 | 17 13 1-6" 0.064 0.065 0.064 0.064 0.064 21 15 1-6" 0.064 0.069 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 1-6" (0.079) (0.105) 0.064 0.075 0.064 42 29 1-6" (0.079) 0.105 0.064 0.075 0.064 | 17 13 11-6" 0.064 0.065 0.064 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.064 0.066 0.064 | 17 13 1-6" 1/2 | 17 13 172 | 17 13 14 16 16 16 16 17< | 17. 13. 17. <td>_</td> <td>-</td> <td>}</td> <td>}</td> <td>-</td> <td></td> <td>Ť</td> <td>-</td> <td></td> <td></td> <td>÷-</td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td></td> <td>×</td> <td></td> <td>×</td> <td>2 ×</td> <td>9</td> <td>×</td> | _ | - | } | } | - | | Ť | - | | | ÷- | | | | _ | | | × | | × | 2 × | 9 | × |
| 711 711 711 711 711 | 7), 7) 7) 7) 7) 7) 7) | 17 13 11-6" n.ne4 n.nen n.nen n.nen n.nen n.nen | 17 13 11-6" 0.064 0.060 0.064 0.060 0.064 | 17 13 17 13 14-6" 0.064 0.064 0.064 0.064 0.064 0.064 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 0.064 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 0.064 0.064 21 15 1-6" 0.064 0.064 0.064 0.064 0.064 24 18 1-6" (0.079) (0.075) 0.064 0.064 0.064 | 17 13 11-6" 0.064 0.060 0.064 0.064 0.064 21 15 11-6" 0.064 0.060 0.064 0.064 0.064 24 18 11-6" 0.064 0.064 0.064 0.064 0.064 28 20 11-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 11-6" (0.079) (0.105) 0.064 0.075 0.084 | 17 13 11-6" 0.064 0.060 0.064 0.064 0.064 21 15 11-6" 0.064 0.064 0.064 0.064 24 18 11-6" (0.079) (0.075) 0.064 0.064 0.064 28 20 11-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 11-6" (0.079) (0.105) 0.064 0.075 (0.079) | 17 13 11-6" 0.064 0.060 0.064 0.064 0.064 21 15 11-6" 0.064 0.069 0.064 0.064 0.064 0.064 24 18 11-6" 0.064 0.064 0.060 0.064 0.064 0.064 28 20 11-6" (0.079) (0.105) 0.064 0.075 0.084 47 29 11-6" (0.079) 0.064 0.075 0.064 47 29 11-6" (0.079) 0.064 0.075 0.064 | 17 13 11-6" 0.064 0.060 0.064 0.064 0.064 21 15 11-6" 0.064 0.064 0.064 0.064 24 18 11-6" 0.064 0.064 0.064 0.064 28 20 11-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 11-6" (0.079) (0.105) 0.064 0.075 0.064 42 29 11-6" (0.079) 0.105 0.064 0.064 0.064 | 17 13 11-6" 0.064 0.060 0.064 0.064 0.064 21 15 11-6" 0.064 0.069 0.064 0.064 0.064 0.064 28 20 11-6" (0.079) (0.105) 0.064 0.064 0.064 35 24 11-6" (0.079) (0.105) 0.064 0.075 0.064 42 29 11-6" (0.079) 0.105 0.064 0.105 0.064 40 33 11-6" (0.079) 0.105 0.064 0.065 0.064 | 17 13 1-6" 0.064 0.060 0.064 0.064 0.064 21 15 1-6" 0.064 0.064 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.064 0.064 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 1-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1-6" 0.079 0.105 0.064 0.064 49 33 1-6" 0.109 0.105 0.064 0.064 | 17 13 11-6" 0.064 0.060 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.069 0.069 0.069 0.069 0.069 0.069 0.069 0.060 | 17 13 11-6" 0.064 0.060 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.066 0.066 0.064 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 | 1. 1. 1. 1. 1. 1. 1. 1. | _ | | | | | | _ | | | - | - × | 101 | × | 20,7 | _ | _ × | | - > | 5 | - > | - < | 2 | - > |
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| 17 13 14-6" 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 | 21 15 1-6" 0.064 0.064 0.064 | 21 15 1-6" 0.064 0.064 0.064 | ************************************** | 1000 | | 28 20 (0.079) (0.105) 0.064 0.075 0.084 | 28 20 1'-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1'-6" (0.079) (0.105) 0.064 | 28 20 1'-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) | 28 20 1'-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 47 29 1'-6" 0.075 0.064 0.075 0.064 | 28 20 1'-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.105 0.064 0.105 0.064 | 28 20 1'-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.105 0.064 0.105 0.064 40 33 1'-6" 0.405 0.405 0.405 0.405 | 28 20 1'-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.105 0.064 0.105 0.064 49 33 1'-6" 0.109 0.105 (0.109) 0.105 (0.109) | 28 20 1*-6" (0.079) (0.105) 0.064 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.064 0.075 0.064 0.075 0.064 0 | 28 20 1-6" (0.079) (0.105) (0.105) 0.064 0.075 0.075 0.075 0.075 0.0165 0.064 0.064 0.075 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.064 0.064 0.065 0.064 0.064 0.065 0.065 0.064 0.065 0.065 0.064 0.065 0.065 0.065 0.065 0.065 0.065 0.065 0.065 0.065 0.075 0.065 0.079 0.075 0.075 0.079 0.079 0.075 0.075 0.075 0.075 0.079 0.075 <th< td=""><td>28 20 42 22 42 42 23 42 42 42 42 42 42 42 42 42 42 42 42 42 42 42 43 42<</td><td>7</td><td>47</td><td>2</td><td></td><td></td><td></td><td>_</td><td><u>ٻ</u></td><td>0.064</td><td></td><td>_</td><td>(0.075)</td><td></td><td>0.064</td><td>-</td><td></td><td>0.060</td><td>_</td><td>0.054</td><td></td><td></td><td>0.060</td><td></td></th<> | 28 20 42 22 42 42 23 42 42 42 42 42 42 42 42 42 42 42 42 42 42 42 43 42< | 7 | 47 | 2 | | | | _ | <u>ٻ</u> | 0.064 | | _ | (0.075) | | 0.064 | - | | 0.060 | _ | 0.054 | | | 0.060 | |
| 17 13 1-6" 0.064 0.064 0.064 0.064 0.064 21 15 1-6" 0.064 0.069 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.060 0.064 | 21 15 15 1-6" 0.064 0.064 0.064 0.064 0.064 0.064 | 21 15 1-6" 0.064 0.069 0.064 0.064 0.064 24 18 1-6" 0.064 0.069 0.060 0.064 | 24 18 11-6" 0.064 (0.075) 0.064 0.060 0.064 | 24 18 1-6" 0.064 0.064 0.060 0.064 | 24 (3 0.064 0.064 0.064 0.064 0.064 | 28 20 (0.079) (0.105) 0.064 0.075 0.084 | 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.064 35 24 1-6" (0.079) (0.105) 0.064 0.075 (0.079) | 28 20 1'-6" (0.079) (0.105) 0.054 0.075 0.084 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) | 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1-6" (0.079) (0.105) 0.064 0.075 (0.079) 47 29 1-6" (0.079) 0.064 0.075 0.064 | 28 20 1°-6" (0.079) (0.105) 0.054 0.075 0.084 35 24 1°-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1°-6" (0.079) 0.105 0.064 0.105 0.064 | 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.105 0.064 0.105 0.064 49 33 1'-6" 0.405 0.405 0.405 0.405 | 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.084 35 24 1-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1-6" (0.079) 0.105 0.064 0.105 0.064 49 33 1-6" 0.109 0.105 (0.109) 0.105 (0.109) | 28 20 1°-6" (0.079) (0.105) 0.064 0.075 0.084 0.075 35 24 1°-6" (0.079) (0.105) 0.064 0.064 0.075 (0.079) (0.105) 42 29 1°-6" (0.079) 0.105 0.064 0.064 0.064 0.064 49 33 1°-6" 0.109 0.105 0.064 0.105 0.064 0.105 57 38 53 41 1°-6" 0.106 0.106 0.106 0.106 0.106 | 28 20 1-6° (0.079) (0.105) 0.064 0.075 0. | 28 20 4 0.054 0.064 0.064 0.064 0.064 0.075 0.075 0.064 0.064 0.075 0.075 0.075 0.075 0.075 0.075 0.076 0.075 0.076 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>-</td> <td></td> <td>ľ</td> <td>ĺ</td> <td></td> <td> </td> <td> </td> <td>ĺ</td> <td>ľ</td> <td></td> <td></td> <td> </td> <td>l</td> <td></td> <td></td> <td></td> <td></td> | | | | | | | - | | ľ | ĺ | | | | ĺ | ľ | | | | l | | | | |
| 17 13 1-6" 0.064< | 21 15 1-6" 0.064 0.050 0.064 0.064 0.064 0.064 24 18 1-6" 0.064 (0.075) 0.064 0.060 0.064 | 21 15 1-6" 0.064 0.050 0.064 0.064 0.064 0.064 0.064 24 18 1-6" 0.064 0.060 0.060 0.064 | 24 18 11-6" 0.064 (0.075) 0.064 0.060 0.064 | 24 18 1-6" 0.064 (0.075) 0.064 0.060 0.064 | Z4 (3 0.064 0.064 0.064 0.060 0.064 | | 35 24 1'-6" (ODZ9) | 35 24 (0.079) (0.105) (0.105) (0.079) | 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.064 | 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.105 0.064 0.064 | 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.105 0.064 0.105 0.064 40 33 1'-6" 0.405 0.405 0.405 0.405 | 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.105 0.064 0.105 0.064 49 33 1'-6" 0.109 0.105 (0.109) 0.105 (0.109) | 35 24 1*-6" (0.079) (0.105) 0.064 0.075 (0.079) (0.105) 42 29 1*-6" (0.079) 0.105 0.064 0.105 0.064 0.105 0.064 0.105 0.064 0.105 0.064 0.105 | 35 24 1-6" (0.079) (0.105) 0.064 0.054 0.075 0.064 0.105 0.064 0.105 0. | 35 24 35 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° (0.079) 41-6° 0.106 0.109 0.106 0.106 0.106 0.106 0.106 0.109 | 24 | 8 | 50 | | | | | φ | (6/0/0) | | _ | (0,105) | | 0.064 | | | 0.075 | | 0.064 | | | 0.075 | |
| 17 13 1-6" 0.064 0.064 0.060 0.064< | 21 15 1-6" 0.064 0.064 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.064 0.064 28 20 1'-6" (0.079) (0.105) 0.084 0.075 0.064 | 21 15 1-6" 0.064 0.060 0.064 0.064 0.064 0.064 0.064 24 18 1-6" 0.064 0.064 0.064 0.064 0.064 28 20 1-6" (0.079) (0.0105) 0.064 0.075 0.064 | 24 18 11-6" 0.064 128 20 11-6" (0.079) 128 20 | 24 18 1-6" 0.064 0.065 0.064 0.060 0.064 28 20 1-6" (0.079) (0.105) 0.064 0.075 0.064 | 28 20 (0.075) 0.064 0.064 0.064 0.064 | | 35 24 0 075 (0079) | 35 24 (0.079) (0.105) 0.064 0.075 (0.079) | 35 24 (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1-6" (0.079) 0.105 0.064 | 35 24 1°-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1°-6" (0.079) 0.105 0.064 0.105 0.064 | 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.105 0.064 0.105 0.064 49 33 1'-6" 0.405 0.405 0.405 0.405 | 35 24 1'-6" (0.079) (0.105) 0.064 0.075 (0.079) 42 29 1'-6" (0.079) 0.105 0.064 0.105 0.064 49 33 1'-6" 0.109 0.105 (0.109) 0.105 (0.109) | 35 24 (°.079) (°.105) 0.064 0.075 (°.079) (°.105) 42 29 1'-6" (°.079) 0.105 0.064 0.105 0.064 0.105 49 33 1'-6" 0.109 0.105 0.105 0.105 0.105 0.105 57 38 53 41 1'-6" 0.109 0.115 0.109 0.105 0.105 0.105 | 35 24 1-6" (0.079) (0.079) (0.105) 0.064 0.064 0.075 (0.079) (0.105) 42 29 1-6" (0.079) 0.105 0.064 | 1.5 | | | _ | | _ | | | | | | | | | | | | | | | | | | |
| 17 13 1-6" 0.064< | 21 15 1-6" 0.064 0.050 0.064 0.064 0.060 0.064 0.060 0.064 0.060 0.075< | 21 15 15 1-5 0.064 0.066 0.064 0.064 0.064 0.064 0.064 0.060 0.064 0.064 0.060 0.064 0.060 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.076 0.076 0.076 0.076 0.076 0.076 0.076 0.076 0.076 0.076 0.076 0.079 0.079 0.079 0.079 0.079 0.079 0.079 0.079 0.079 0.079 | 24 18 1-6" 0.064 0.064 0.064 0.064 0.069 0.069 0.069 28 20 1-6" (0.079) (0.105) 0.064 0.064 0.075 0.075 0.075 0.069 42 29 1-6" (0.079) 0.105 0.064 0.064 0.075 0.064 0.065 49 33 41 1-6" 0.109 (0.109) 0.105 0.079 0.105 0.109 | 24 18 24 18 1-6° 0.064 0.065 0.064 0.066 0.066 0.060 0.064 0.075 0.075 0.075 0.075 0.075 0.075 0.060 0.064 0.075 0.064 0.064 0.075 0.064 0.064 0.075 0.064 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.064 0.075 0.064 0.064 0.075 0.064 0.064 0.075 0.064 0.064 0.075 | 28 20 1-5 0.064 0.075 0.064 0.064 0.064 0.064 0.064 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.064 0.075 </td <td>42 29 43 33 57 38 53 64 43 60 46 64 43 64 43 60 46 1-6" (0.109) 0.105 (0.109) (0.109) 0.105 (0.109) 0.105 (0.109) 0.105 (0.109) 0.105 (0.109) 0.106 (0.109) 0.109 (0.109) <</td> <td>42 29 1-6" (0.079) 0.105 0.064 0.105 0.064 0.105 0.10</td> <td>49 33 64 43 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60 <t< td=""><td>49 33 60 46 60 46 1'-6" 0.109 (0.109) 0.105</td><td>57 38 53 41 53 41 1-6" 0.109 (0.109) (0.109) 0.154 (0.075) 0.109 0.079 0.079 0.079 0.079 0.079 0.079 0.079 0.079 0.079 0.090 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.090 0.109 0.090 0.109 0</td><td>57 38 53 41 53 41 1-6" 0.109 (0.109) (0.109) 0.135 0.060 0.109 0.079 0.0</td><td>64 43 60 46 60 46 11-6" 0.109 (0.109) 0.109 (0.005) 0.109 0.009 0.009 0.009 0.009 0.009 0.009 0.009 0.009 0.009 0.009 0.009 0.009</td><td> 64 43 60 46 60 46 1⁻5" 0.109 (0.109) 0.164 (0.075) 0.109 0.079 0.079 0.164 0.080 0.109 (0.109) 0.164 0.080 0.109 (0.109) 0.164 0.080 0.109 0.164 0.080 0.109 0.109 0.164 0.080 0.109 0.109 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| 17 13 1.5 1.5 0.064 <td>21 15 1-6" 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.060 0.064 0.060 0.064 0.064 0.066 0.064<</td> <td>21 15<</td> <td>24 18 1-6" 0.064 0.075 0.064 0.075 0.064 0.064 0.075 0.064 0.064 0.064 0.075 0.064 0.064 0.064 0.075 0.064 0.064 0.075 0.064 0.064 0.075 0.064 0.064 0.075 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.066<</td> <td>24 18 3 11-6" 0.064 3 0.075 3 0.064 3 0.075 3 0.064 3 0.064 3 0.064 3 0.064 3 0.064 3 0.064 3 0.075 3 0.064 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.064 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075</td> <td>28 20 1-50 0.064 0.075 0.064 0.064 0.075 0.064 0.075 0.064 0.075<</td> <td>42 29 33 1-6" (0.79) 0.105 0.064 0.064 0.105<td>42 29 42 29 42 29 43 64 33 44 33 44 33 44 45 33 44 45 33 44 45 33 44 45 34 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44<</td><td>49 33 41 53 41 1'-6" 0.109 0.105 0.009</td><td>49 33 49 33 41 53 41 53 41 1-6" 0.109 (0.109) 0.105 0.009 0.105 0.009 0.</td><td>57 38 53 41 53 41 1-6" 0.109 (0.109) (0.109) 0.105 (0.009) 0.109 0.079 (0.009) 0.009 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109)</td><td>57 38 53 41 53 41 1-6" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.105 0.0109 0.105 0.0164 0.075 0.079</td><td>64 43 60 46 51 1'-6" 0.138 (0.109) 0.164 (0.075) 0.138 0.079 (0.109) 0.164 (0.075) 0.138 (0.075) 0.164 0.079 0.164 0.060 0.138 (0.109) 0.164 0.069 0.164 0.060 0.138 (0.109) 0.164 0.064 0.060 0.138 (0.109) 0.164 0.064</td><td>64 43 60 46 60 46 1-6" 0.109 (0.109) 0.164 (0.075) 0.109 0.079 0.069 0.079 0.069 0.079 0.060 0.019 0.109 0.0164 0.0164 0.079 0.018 0.019 0.109 0.0164 0.0164 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0.066< | 24 18 3 11-6" 0.064 3 0.075 3 0.064 3 0.075 3 0.064 3 0.064 3 0.064 3 0.064 3 0.064 3 0.064 3 0.075 3 0.064 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.064 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 3 0.075 | 28 20 1-50 0.064 0.075 0.064 0.064 0.075 0.064 0.075 0.064 0.075< | 42 29 33 1-6" (0.79) 0.105 0.064 0.064 0.105 <td>42 29 42 29 42 29 43 64 33 44 33 44 33 44 45 33 44 45 33 44 45 33 44 45 34 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44<</td> <td>49 33 41 53 41 1'-6" 0.109 0.105 0.009</td> <td>49 33 49 33 41 53 41 53 41 1-6" 0.109 (0.109) 0.105 0.009 0.105 0.009 0.</td> <td>57 38 53 41 53 41 1-6" 0.109 (0.109) (0.109) 0.105 (0.009) 0.109 0.079 (0.009) 0.009 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 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<td></td> <td></td> <td></td> <td>_</td> <td>100</td> <td></td> <td>1</td> <td></td> <td>1007</td> <td>007</td> <td></td> <td>1</td> | 42 29 42 29 42 29 43 64 33 44 33 44 33 44 45 33 44 45 33 44 45 33 44 45 34 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44 45 44< | 49 33 41 53 41 1'-6" 0.109 0.105 0.009 | 49 33 49 33 41 53 41 53 41 1-6" 0.109 (0.109) 0.105 0.009 0.105 0.009 0. | 57 38 53 41 53 41 1-6" 0.109 (0.109) (0.109) 0.105 (0.009) 0.109 0.079 (0.009) 0.009 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) | 57 38 53 41 53 41 1-6" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.105 0.0109 0.105 0.0164 0.075 0.079 | 64 43 60 46 51 1'-6" 0.138 (0.109) 0.164 (0.075) 0.138 0.079 (0.109) 0.164 (0.075) 0.138 (0.075) 0.164 0.079 0.164 0.060 0.138 (0.109) 0.164 0.069 0.164 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0.0050 0.138 0.0199 0.0164 0.0050 0.138 0.0199 0.0164 0.0050 0.138 0.0199 0.0164 0.0050 0.138 0.0199 0.0164 0.0050 0.0184 0.0164 0.0050 0.0164 <th< td=""><td>71 47 66 51 66 51 1'-6" 0.138 (0.109) 0.164 (0.075) 0.138 0.079 (0.109) 0.164 0.060 0.138 (0.109) 0.109 0.164</td><td>83 57 81 59 81 59 11-6" 0.108 0.109 0.079 (0.109) 0.0105 0.109 0.079 0.079 0.0105</td><td>90</td><td>></td><td>25</td><td>2</td><td>S</td><td>2</td><td>ç</td><td>P</td><td></td><td>(0.109)</td><td>0.109</td><td></td><td>0.075</td><td>0.168</td><td>_</td><td>(0.109)</td><td></td><td>0.075</td><td>_</td><td>(a.10g)</td><td>0.109</td><td></td><td>0,073</td></th<></td></th<></td></td></td> | 21 15 1-6" 0.064 0.060 0.064 0.065 0.064 0.067 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.065 0.064 0.075 0.075 0.075 0.075 0.076 0.075 0.076 0.075 0.076 0.076 0.076 0.076 0.076 0.076 0.076< | 21 15 1-5 0.064 0.065 0.064 0.075 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| 17 13 14-6" 0.064 0.0564 0.0564 0.0564 0.0564 0.0564 0.064 | 21 15 1-6" 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066< | 21 15 15 1-5" 0.064 0.065 0.064 0.066 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.076 0.076 0.076 0.076 0.076 0.076 0.076 0.076 0.076 <td>24 18 1-6" 0.064 0.064 0.064 0.064 0.064 0.064 0.069 0.069 0.069 0.069 0.069 0.069 0.069 0.069 0.069 0.069 0.075 0.069 0.075 0.069 0.075 0.069 0.075<</td> <td>28 10 1-6° 0.0054 0.0054 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.064 0.075 0.064 0.075 0.064 0.064 0.075 0.075 0.064 0.075 0.075 0.075 0.075 0.064 0.075 0.076 0.075 0.075 0.064 0.075 0.075 0.064 0.075 0.075 0.064 0.075 0.075 0.064 0.075 0.075 0.079 0.079 0.079 0.075 0.064 0.075 0.079 0.07</td> <td>28 20 1-50 0.0564 0.0165 0.0564 0.0564 0.0564 0.075 0.0564 0.075</td> <td>42 29 11-6" (0.709) 0.105 0.064 0.105 0.064 0.105 0.064 0.105 0.064 0.105 0.1</td> <td>42 29 42 29 11-6" (0.079) 0.105 0.064 0.064 0.064 0.064 0.065 0.064 0.0165 0.064 0.0165 0.0166<</td> <td>49 33 11-6" 0.109 0.105 0.075</td> <td>49 33 449 33 11-6" 0.109 0.105</td> <td>57 38 53 41 1-6" 0.109 (0.109) 0.135 0.050 0.079</td> <td>57 38 53 41 53 41 1-6" 0.109 (0.109) 0.135 0.060 0.079</td> <td>64 43 60 46 60 46 1-6" 0.109 0.109 0.164 (0.075) 0.109 0.079</td> <td>64 43 60 46 60 46 1-6" 0.109 0.109 0.164 (0.075) 0.109 0.079 0.064 0.079 0.164 0.079 0.109 0.016 0.016 0.0109 0.109 0.0164 0.0075 0.108 0.079 0.016 0.079 0.109 0.016</td> <td>71 47 66 51 1'-6" 0.138 (0.109) 0.144 (0.075) 0.138 0.079 (0.109) 0.164 (0.075) 0.138 0.079 (0.109) 0.168 (0.109) 0.109 0.168 (0.109) 0.109 0.168 (0.109) 0.109 0.105 0.108 0.109</td> <td>103 71 103 71 11-6" 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.104 0.109<td>4.</td><td></td><td></td><td>D C</td><td>6</td><td>c C</td><td>/9</td><td>ņ</td><td></td><td>0.109</td><td>0.109</td><td></td><td>0.105</td><td></td><td>(0.109)</td><td>0.109</td><td></td><td>0.105</td><td></td><td>0.109</td><td>0.109</td><td></td><td>U.105</td></td> | 24 18 1-6" 0.064 0.064 0.064 0.064 0.064 0.064 0.069 0.069 0.069 0.069 0.069 0.069 0.069 0.069 0.069 0.069 0.075 0.069 0.075 0.069 0.075 0.069 0.075< | 28 10 1-6° 0.0054 0.0054 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.064 0.075 0.064 0.075 0.064 0.064 0.075 0.075 0.064 0.075 0.075 0.075 0.075 0.064 0.075 0.076 0.075 0.075 0.064 0.075 0.075 0.064 0.075 0.075 0.064 0.075 0.075 0.064 0.075 0.075 0.079 0.079 0.079 0.075 0.064 0.075 0.079 0.07 | 28 20 1-50 0.0564 0.0165 0.0564 0.0564 0.0564 0.075 0.0564 0.075 | 42 29 11-6" (0.709) 0.105 0.064 0.105 0.064 0.105 0.064 0.105 0.064 0.105 0.1 | 42 29 42 29 11-6" (0.079) 0.105 0.064 0.064 0.064 0.064 0.065 0.064 0.0165 0.064 0.0165 0.0166< | 49 33 11-6" 0.109 0.105 0.075 | 49 33 449 33 11-6" 0.109 0.105 | 57 38 53 41 1-6" 0.109 (0.109) 0.135 0.050 0.079 | 57 38 53 41 53 41 1-6" 0.109 (0.109) 0.135 0.060 0.079 | 64 43 60 46 60 46 1-6" 0.109 0.109 0.164 (0.075) 0.109 0.079 | 64 43 60 46 60 46 1-6" 0.109 0.109 0.164 (0.075) 0.109 0.079 0.064 0.079 0.164 0.079 0.109 0.016 0.016 0.0109 0.109 0.0164 0.0075 0.108 0.079 0.016 0.079 0.109 0.016 | 71 47 66 51 1'-6" 0.138 (0.109) 0.144 (0.075) 0.138 0.079 (0.109) 0.164 (0.075) 0.138 0.079 (0.109) 0.168 (0.109) 0.109 0.168 (0.109) 0.109 0.168 (0.109) 0.109 0.105 0.108 0.109 | 103 71 103 71 11-6" 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.104 0.109 <td>4.</td> <td></td> <td></td> <td>D C</td> <td>6</td> <td>c C</td> <td>/9</td> <td>ņ</td> <td></td> <td>0.109</td> <td>0.109</td> <td></td> <td>0.105</td> <td></td> <td>(0.109)</td> <td>0.109</td> <td></td> <td>0.105</td> <td></td> <td>0.109</td> <td>0.109</td> <td></td> <td>U.105</td> | 4. | | | D C | 6 | c C | /9 | ņ | | 0.109 | 0.109 | | 0.105 | | (0.109) | 0.109 | | 0.105 | | 0.109 | 0.109 | | U.105 |
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| 17 13 13 14 14 15 15 15 16 16 16 16 16 | 21 15 1-5° 0.064 0.065 0.064< | 21 15 11-5° 0.064 0.064 0.064 0.064 0.060 0.064 0.060 0.064 0.060 0.064 0.060 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.075 0.064 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.075 0.064 0.075 0.075 0.064 0.075 | 24 11-61 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0. | 28 20 15° 0.064 0.065 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.065 0.064 0.075 0.064 0.064 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.075 0.064 0.064 0.075 0.075 0.064 0.064 0.075 | 28 20 1-50 0.064 0.064 0.064 0.064 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075< | 42 29 1-6" (0.079) 0.105 0.064 0.105 0.105 0.064 0.105 0.10 | 42 29 11-6° (0.079) 0.105 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.065 0.064 0.065 0.064 0.065 0.064 0.066 0.066 0.066 0.066 0.066 0.069 0.066 0.066 0.066 0.069 0.079 0.0 | 49 33 49 33 41-6° 0.109 0.105 0.105 0.109 0.105 0.105 0.109 | 49 33 49 33 49 33 49 33 49 33 49 33 49 33 49 33 49 33 49 33 49 33 41 1-6" 0.109 (0.109) 0.135 0.079 <t< td=""><td>57 38 53 41 53 41 1-6" 0.109</td><td>57 38 53 41 53 41 1-6" 0.109 (0.109) 0.135 0.050 0.079</td><td>64 43 60 46 60 46 11-6" 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.075 0.109 0.079 0.079 0.079 0.079 0.075 0.109</td><td>64 43 60 46 60 46 60 46 1-5" 0.109 0.109 0.105 0.109 0.079 0.075 0.079 0</td><td>71 47 66 51 66 51 1'-6" 0.138 (0.109) 0.138 (0.075) 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.109 0.109 0.105 0.148 0.079 (0.109) 0.109</td><td>112 75 112 75 114 75 115 75 116* 0.109 (0.138) 0.164 0.109 0.109 (0.138) 0.164 0.109 0.109 (0.138) 0.164 0.109 0.109 (0.138) 0.164 0.109 0.109 (0.138) 0.138</td><td></td><td></td><td></td><td></td><td></td><td></td><td>1</td><td>1</td><td>T</td><td>Ţ</td><td>; ;</td><td>İ</td><td></td><td>Ī</td><td></td><td></td><td>Ī</td><td></td><td>T</td><td></td><td></td><td>Ī</td><td></td></t<> | 57 38 53 41 53 41 1-6" 0.109 | 57 38 53 41 53 41 1-6" 0.109 (0.109) 0.135 0.050 0.079 | 64 43 60 46 60 46 11-6" 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.109 0.075 0.109 0.079 0.079 0.079 0.079 0.075 0.109 | 64 43 60 46 60 46 60 46 1-5" 0.109 0.109 0.105 0.109 0.079 0.075 0.079 0 | 71 47 66 51 66 51 1'-6" 0.138 (0.109) 0.138 (0.075) 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.109 0.109 0.105 0.148 0.079 (0.109) 0.109 | 112 75 112 75 114 75 115 75 116* 0.109 (0.138) 0.164 0.109 0.109 (0.138) 0.164 0.109 0.109 (0.138) 0.164 0.109 0.109 (0.138) 0.164 0.109 0.109 (0.138) 0.138 | | | | | | | 1 | 1 | T | Ţ | ; ; | İ | | Ī | | | Ī | | T | | | Ī | |
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| 17 13 1.5° 0.064 0.060 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064< | 21 15 1-6" 0.064 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.075 0.066 0.066 0.075 0.066 0.066 0.075 0.066 0.066 0.076 0.066 0.075 0.066 0.075 0.075 0.066 0.066 0.076< | 21 15 15 1-6° 0.064 <td>24 11-6 0.0064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.</td> <td>28 20 1-6" 0.064 1-6" 0.075 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.075 0.064 0.075 0.075 0.075 0.076 0.075 0.075 0.064 0.075<!--</td--><td>28 20 1-6 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.075 0.064 0.075 0.064 0.075 0.064 0.075 0.064 0.075 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| 17 13 1-6° 0.064 3 0.064 0.066 0.064 0.066 0.064 0.066 0.067 0.072 0.072 | 21 15 48 48 48 49 60.064 48 60.064 | 21 15 1 1-5° 0.064 1 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.069 0.064 | 28 20 1-5° 0.004 1.5 | 28 30 40< | 28 20 4.00 1.00 0.004 </td <td>42 29 1-6" (0.079) 1-6" 0.105 0.105 0.064 0.105</td> <td>49 33 4.2 16° (0.079) 16° 0.105 16° 0.105 16° 0.105</td> <td>49 33 41 7.5 16° 0.109 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106</td> <td>49 33 48 33 41-6° 6.109</td> <td>57 81 53 41 53 41 1-5° 0.109 0.109 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009</td> <td>57 38 53 41 53 41 1-5" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.105 0.079</td> <td>64 43 60 46 60 46 1-6" 0.109</td> <td>64 43 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60<</td> <td>71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.079 (0.109) 0.164 0.060 0.188 (0.109) 0.109 0.164 0.079 (0.109) 0.164 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.169 0.168 0.169 0.168 0.169 0.168 0.169<</td> <td>128 83 1'-6" 0.138 0.168 0.16</td> <td>102</td> <td></td> <td></td> <td>117</td> <td>2</td> <td>117</td> <td>29</td> <td>-</td> <td></td> <td>0.109</td> <td>(0.138)</td> <td></td> <td>0.164</td> <td></td> <td>0.109</td> <td>0,109</td> <td></td> <td>0.164</td> <td></td> <td></td> <td>(0.138)</td> <td></td> <td>0.164</td> | 42 29 1-6" (0.079) 1-6" 0.105 0.105 0.064 0.105 | 49 33 4.2 16° (0.079) 16° 0.105 16° 0.105 16° 0.105 | 49 33 41 7.5 16° 0.109 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 | 49 33 48 33 41-6° 6.109 | 57 81 53 41 53 41 1-5° 0.109 0.109 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 | 57 38 53 41 53 41 1-5" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.105 0.079 | 64 43 60 46 60 46 1-6" 0.109 | 64 43 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60< | 71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.079 (0.109) 0.164 0.060 0.188 (0.109) 0.109 0.164 0.079 (0.109) 0.164 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.169 0.168 0.169 0.168 0.169 0.168 0.169< | 128 83 1'-6" 0.138 0.168 0.16 | 102 | | | 117 | 2 | 117 | 29 | - | | 0.109 | (0.138) | | 0.164 | | 0.109 | 0,109 | | 0.164 | | | (0.138) | | 0.164 |
| 17 13 1-6° 0.064 0.064 0.0694 0.064 0.064 0.066 0.064 | 21 15 11-6° 0.064 | 21 15 11-5° 0.064 | 24 18 1.5 0.0564 | 24 18 1-5" 0.064 1-5" 0.064 0.054 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.075 0.064 0.064 0.075 0.064 0.075 </td <td>28 20 1-50 0.0054</td> <td>42 29 1-6" (0.079) 0.105 0.064 0.105 0.10</td> <td>42 29 42 29 42 29 43 44 33 44 1-6" (0.079) 0.105 0.064 0.064 0.065 0.064 0.069 0.069 0.069 0.069 0.079</td> <td>49 33 1-5° 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109<</td> <td>49 33 44 33 44 33 44 33 44 45 44 45 44 45 44 45 44 45 44 45 44 53 41 1-5° 6.109 (0.109) 0.135 0.079 <t< td=""><td>57 38 53 41 53 41 1-5° 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109</td><td>57 38 53 41 53 41 1-5" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.135 0.079</td><td>64 43 60 46 6 51 1-6" 0.109</td><td>64 43 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60 60 46 60 60 46 60 60 46 60<</td><td>71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.069 0.164 0.064 0.075 0.164 0.079 (0.103) 0.164 0.060 0.168 (0.109) 0.168 0.079 (0.169) 0.164 0.075 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.169 0.168 0.169<</td><td>128 83 126 83 126 0.138 0.138 0.138 0.138 0.138 0.138 0.138 137 87 136 146 147 91 142 91 146 91 146 91 146 91 0.168 0.168 0.168 0.168 0.168 0.168</td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>_</td><td></td><td></td><td></td></t<></td> | 28 20 1-50 0.0054 | 42 29 1-6" (0.079) 0.105 0.064 0.105 0.10 | 42 29 42 29 42 29 43 44 33 44 1-6" (0.079) 0.105 0.064 0.064 0.065 0.064 0.069 0.069 0.069 0.069 0.079 | 49 33 1-5° 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109 0.105 0.109< | 49 33 44 33 44 33 44 33 44 45 44 45 44 45 44 45 44 45 44 45 44 53 41 1-5° 6.109 (0.109) 0.135 0.079 <t< td=""><td>57 38 53 41 53 41 1-5° 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109</td><td>57 38 53 41 53 41 1-5" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.135 0.079</td><td>64 43 60 46 6 51 1-6" 0.109</td><td>64 43 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60 60 46 60 60 46 60 60 46 60<</td><td>71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.069 0.164 0.064 0.075 0.164 0.079 (0.103) 0.164 0.060 0.168 (0.109) 0.168 0.079 (0.169) 0.164 0.075 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.169 0.168 0.169<</td><td>128 83 126 83 126 0.138 0.138 0.138 0.138 0.138 0.138 0.138 137 87 136 146 147 91 142 91 146 91 146 91 146 91 0.168 0.168 0.168 0.168 0.168 0.168</td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>_</td><td></td><td></td><td></td></t<> | 57 38 53 41 53 41 1-5° 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 (0.109) 0.109 | 57 38 53 41 53 41 1-5" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.135 0.079 | 64 43 60 46 6 51 1-6" 0.109 | 64 43 60 46 60 46 60 46 60 46 60 46 60 46 60 46 60 60 46 60 60 46 60 60 46 60< | 71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.069 0.164 0.064 0.075 0.164 0.079 (0.103) 0.164 0.060 0.168 (0.109) 0.168 0.079 (0.169) 0.164 0.075 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.169 0.168 0.169< | 128 83 126 83 126 0.138 0.138 0.138 0.138 0.138 0.138 0.138 137 87 136 146 147 91 142 91 146 91 146 91 146 91 0.168 0.168 0.168 0.168 0.168 0.168 | | | | | - | | | | | | | | | | | | | | | _ | | | |
| 17 13 14< | 21 15 11-6° 0.064 | 28 20 4 60,064 | 28 20< | 28 20 1-5° 1-6° 0.064 1-6° 0.064 1-6° 0.064 1-6° 0.064 1-6° 0.064 1-6° 0.064 1-6° 0.064 1-6° 0.064 1-6° 0.075 1-6° 0.075 1-6° 0.075 1-6° 0.075 1-6° 0.075 1-6° 0.0763 1-6° 0.0764 1-6° 0.064 1-6° 0.075 1-6° 0.0763 1-6° 0.0764 <t< td=""><td>28 20 1-5 0.084 10.065 0.084<</td><td>42 29 1-6" (0.079) 1-6" (0.105) 0.105 0.064 0.105 0.1</td><td>49 33 44 35 44 35 45 60 46 45 60 46 45 60 45 60 46 47 66 47 60<</td><td>49 33 41 73 1-6" 0.109 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106</td><td>49 33 44 33 44 33 44 33 44 45 44 45 44 45 44 53 44 1-5° 6.109</td><td>57 81 53 41 53 41 1-5" 0.109 0.109 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.109</td><td>57 38 53 41 53 41 1-5" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.135 0.079 0.135 0.079 0.135 0.079 0.135 0.079 0.109 0.109 0.135 0.109</td><td>64 43 60 46 60 46 1-6" 0.109</td><td>64 43 60 46 60 46 60 46 1-5° 0.109 0.109 0.164 (0.075) 0.109 0.079 0.109 0.079 0.109 0.079 0.109 <th< td=""><td>71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.060 0.138 (0.109) 0.164 0.079 (0.109) 0.164 0.079 0.168 0.079 (0.109) 0.164 0.060 0.168 (0.109) 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.16</td><td>137 87 1¹-6" 0.138 0.138 0.138 0.138 0.138 0.138 0.138 142 91 1¹-6" 0.168 0.168 0.168 0.168 0.168</td><td>108</td><td></td><td></td><td>128</td><td>8</td><td>128</td><td>83</td><td>1-e</td><td></td><td>0.138</td><td>0.138</td><td></td><td>•</td><td></td><td>0.138</td><td>0.138</td><td></td><td></td><td></td><td>0.138</td><td>0.138</td><td></td><td></td></th<></td></t<> | 28 20 1-5 0.084 10.065 0.084< | 42 29 1-6" (0.079) 1-6" (0.105) 0.105 0.064 0.105 0.1 | 49 33 44 35 44 35 45 60 46 45 60 46 45 60 45 60 46 47 66 47 60< | 49 33 41 73 1-6" 0.109 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 0.105 0.106 | 49 33 44 33 44 33 44 33 44 45 44 45 44 45 44 53 44 1-5° 6.109 | 57 81 53 41 53 41 1-5" 0.109 0.109 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.136 0.009 0.109 | 57 38 53 41 53 41 1-5" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.135 0.079 0.135 0.079 0.135 0.079 0.135 0.079 0.109 0.109 0.135 0.109 | 64 43 60 46 60 46 1-6" 0.109 | 64 43 60 46 60 46 60 46 1-5° 0.109 0.109 0.164 (0.075) 0.109 0.079 0.109 0.079 0.109 0.079 0.109 <th< td=""><td>71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.060 0.138 (0.109) 0.164 0.079 (0.109) 0.164 0.079 0.168 0.079 (0.109) 0.164 0.060 0.168 (0.109) 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.16</td><td>137 87 1¹-6" 0.138 0.138 0.138 0.138 0.138 0.138 0.138 142 91 1¹-6" 0.168 0.168 0.168 0.168 0.168</td><td>108</td><td></td><td></td><td>128</td><td>8</td><td>128</td><td>83</td><td>1-e</td><td></td><td>0.138</td><td>0.138</td><td></td><td>•</td><td></td><td>0.138</td><td>0.138</td><td></td><td></td><td></td><td>0.138</td><td>0.138</td><td></td><td></td></th<> | 71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.060 0.138 (0.109) 0.164 0.079 (0.109) 0.164 0.079 0.168 0.079 (0.109) 0.164 0.060 0.168 (0.109) 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.168 0.079 0.16 | 137 87 1¹-6" 0.138 0.138 0.138 0.138 0.138 0.138 0.138 142 91 1¹-6" 0.168 0.168 0.168 0.168 0.168 | 108 | | | 128 | 8 | 128 | 83 | 1-e | | 0.138 | 0.138 | | • | | 0.138 | 0.138 | | | | 0.138 | 0.138 | | |
| 17 13 1.5° 0.064< | 21 15 11-5° 0.064 0.066 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.075 0.064 0.066 0.064 0.066 0.064 0.075 0.064 0.066 0.064 0.066 0.066 0.064 0.066 0.064 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.066 0.075 | 21 15 15 1.5° 0.064 0.066 0.064 0.064 0.064 0.064 0.066 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.066 0.064 0.066 0.064 0.066 <td>28 20 1 1 0.0075 0.0064 0.0064 0.0064 0.0064 0.0064 0.0064 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0075 0.0064 0.0075 0.0075 0.0064 0.0075 0.0075 0.0064 0.0075 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0.168</td><td><u>+</u></td><td></td><td></td><td>137</td><td>87</td><td>137</td><td>87</td><td>φ</td><td></td><td>0.138</td><td>0.138</td><td></td><td></td><td></td><td>0.138</td><td>0.138</td><td></td><td></td><td></td><td>0.138</td><td>0.138</td><td></td><td></td></th<> | 71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.060 0.188 (0.109) 0.164 0.079 (0.109) 0.164 0.079 (0.109) 0.164 0.079 0.168 (0.109) 0.169 0.168 (0.109) 0.169 0.168 (0.109) 0.169 0.169 0.079 (0.109) 0.079 (0.109) 0.079 0.169 0.079 0.169 0.079 0.169 0.079 0.169 0.079 0.169 0.079 0.169 0.079 0.169 0.079 | 142 91 11-6" 0.168 0.168 0.168 0.168 0.168 | <u>+</u> | | | 137 | 87 | 137 | 87 | φ | | 0.138 | 0.138 | | | | 0.138 | 0.138 | | | | 0.138 | 0.138 | | |
| 17 13 14 14 0.064 14 0.060 0.064 0.064 0.069 0.069 0.064 0.069 0.069 0.064 0.060 0.069 0.064 0.069 0.069 0.064 0.069 0.069 0.064 0.069 0.069 0.064 0.069 0.069 0.064 0.064 0.069 0.064 0.069 0.064 0.064 0.069 0.064 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.069 0.069 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.069 0.064 0.069 | 21 15< | 21 15 1-6" 0.064 0.069 0.064< | 28 20 1-6° 0.0075 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 0.0075 | 28 20 3 4 4 6 7 6 7 | 28 20 1.05 0.054< | 42 29 42 29 42 29 42 29 42 29 42 29 42 29 42 29 42 29 43 63 41-6° 60.059 43 60.059 60.059 0.079 | 49 33 41 42 42 42 43 42 43 44 43 43 44 43 43 44 43 43 44 43 43 44 43 44 44 43 44 43 44 44 45 44 44 44 43 44 44 44 44 45 44 44 44 45 44 44 44 44 45 44 44 45 44 44 45 46 45 44 45 46 47 47 46 40< | 49 33 41 35 41 53 41 53 41 1-6" 0.109 0.105 0.109 0.07 | 49 33 48 33 49 33 49 33 49 33 49 33 49 33 49 33 41 1-6" 0.109 | 57 38 53 41 53 41 1-5° 0.109 | 57 38 53 41 53 41 1-5" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.105 0.079 | 64 43 60 46 6 46 46 1-6" 0.109 <th< td=""><td>64 43 60 46 60 46 60 46 1-5° 0.109 0.109 0.164 0.075 0.109 0.079 0.109 0.079 0.109 0.079 0.109 0</td><td>71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.060 0.138 (0.109) 0.164 0.075 (0.138) (0.109) 0.164 0.075 0.138 (0.109) 0.109 0.109 0.105 0.109 0.10</td><td>001.0 001.0 001.0 0.10 0.10 0.10 0.10 0</td><td>120</td><td></td><td></td><td>147</td><td>6</td><td>142</td><td>-</td><td>-6-</td><td></td><td>200</td><td>268</td><td></td><td></td><td></td><td>188</td><td>7 188</td><td></td><td>_</td><td></td><td>0.168</td><td>0 168</td><td></td><td></td></th<> | 64 43 60 46 60 46 60 46 1-5° 0.109 0.109 0.164 0.075 0.109 0.079 0.109 0.079 0.109 0.079 0.109 0 | 71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.060 0.138 (0.109) 0.164 0.075 (0.138) (0.109) 0.164 0.075 0.138 (0.109) 0.109 0.109 0.105 0.109 0.10 | 001.0 001.0 001.0 0.10 0.10 0.10 0.10 0 | 120 | | | 147 | 6 | 142 | - | -6- | | 200 | 268 | | | | 188 | 7 188 | | _ | | 0.168 | 0 168 | | |
| 17 13 14.5° 0.064 0.064 0.064 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.066 0.066 0.064 0.066 0.064 0.066 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.066 0.064 0.066 0.064 0.066 0.064 0.066 0.066 0.064 0.066 | 21 15 0.064 15 0.064 0.066 0.064 <th< td=""><td>21 15 1-5° 0.064 0.075 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.075 0.064<</td><td>24 1.5 0.0044 0.0075 0.0044 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075</td><td>28 20 4 11-5° 0.064</td></th<> <td>28 20 1-5 0.0544 0.0554 0.0544 0.0544 0.0544 0.0545 0.0544 0.0545 0.0544 0.0545 0.055 0.0545</td> <td>42 29 1-6" (0.79) 0.105 0.064 0.105 0.075 0.105</td> <td>42 29 42 29 42 29 43 33 44 11-5° (0.109) 43 43 43 43 43 43 43 43 43 43 43 44 43 43 44 43 44 43 44</td> <td>49 33 49 33 49 33 49 33 49 33 49 33 49 33 49 33 49 33 41 53 41 1-6" 0.109 0.135 0.050 0.079</td> <td>49 33 49 33 49 33 49 33 49 49 33 49 49 33 49 33 41 1-6" 0.109 (0.109) 0.105 0.109 0.1</td> <td>57 38 53 41 53 41 1-6" 0.109</td> <td>57 38 53 41 53 41 1-6" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.109 0.109 0.135 0.060 0.109 0.079 0.109</td> <td>64 43 60 46 67<</td> <td>64 43 60 46 60 46 61 61 61 60 40 60 61 61 61 60 61<</td> <td>71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.079 (0.138) (0.109) 0.168 (0.109) 0.168 (0.109) 0.168 (0.109) 0.168 (0.109) 0.168 (0.109) 0.168 (0.109) 0.109 0.075 0.168 0.079 (0.109) 0.169 0.168 (0.109) 0.109</td> <td></td> <td>3</td> <td></td> <td></td> <td>2</td> <td>,</td> <td>Ţ</td> <td>;</td> <td>,</td> <td>_</td> <td>001.0</td> <td>0,500</td> <td></td> <td></td> <td></td> <td>0.100</td> <td>3</td> <td></td> <td></td> <td></td> <td>22.</td> <td>;</td> <td></td> <td></td> | 21 15 1-5° 0.064 0.075 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.064 0.075 0.064< | 24 1.5 0.0044 0.0075 0.0044 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0064 0.0075 0.0064 0.0075 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 0.0064 0.0075 | 28 20 4 11-5° 0.064 | 28 20 1-5 0.0544 0.0554 0.0544 0.0544 0.0544 0.0545 0.0544 0.0545 0.0544 0.0545 0.055 0.0545 | 42 29 1-6" (0.79) 0.105 0.064 0.105 0.075 0.105 | 42 29 42 29 42 29 43 33 44 11-5° (0.109) 43 43 43 43 43 43 43 43 43 43 43 44 43 43 44 43 44 43 44 | 49 33 49 33 49 33 49 33 49 33 49 33 49 33 49 33 49 33 41 53 41 1-6" 0.109 0.135 0.050 0.079 | 49 33 49 33 49 33 49 33 49 49 33 49 49 33 49 33 41 1-6" 0.109 (0.109) 0.105 0.109 0.1 | 57 38 53 41 53 41 1-6" 0.109 | 57 38 53 41 53 41 1-6" 0.109 (0.109) 0.135 0.060 0.109 0.079 0.109 0.109 0.135 0.060 0.109 0.079 0.109 | 64 43 60 46 67< | 64 43 60 46 60 46 61 61 61 60 40 60 61 61 61 60 61< | 71 47 66 51 66 51 1-6" 0.138 (0.109) 0.164 (0.075) 0.138 (0.109) 0.164 0.079 (0.138) (0.109) 0.168 (0.109) 0.168 (0.109) 0.168 (0.109) 0.168 (0.109) 0.168 (0.109) 0.168 (0.109) 0.109 0.075 0.168 0.079 (0.109) 0.169 0.168 (0.109) 0.109 | | 3 | | | 2 | , | Ţ | ; | , | _ | 001.0 | 0,500 | | | | 0.100 | 3 | | | | 22. | ; | | |

Notes:

Auminized Type 2 Steel or Precoated Galvanized Steel shall be required for steel spans up to 42" according to Article 1006.01.

Hinkness are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if felical seam fabrication is utilized. The Type 1 corrugated steel or atuminum pipe arches shall be placed on soil having a minimum bearing capacity of 3 tons per square foot.

The Type 2 and 3 corrugated steel or atuminum pipe arches shall be placed on soil having a minimum bearing capacity of 2 tons per square foot. This minimum bearing capacity will be determined by the Engineer in the field.

| | | | | Ë | Table #A; T FOR | A: THICK FOR THE | HICKNESS FOR CORRUGATED STEEL PIPE ARCHES AND CORRUGATED ALUMINUM ALLOY PIPE ARCHES 3 THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE (Metric) | R CORR TIVE EQ | UGATED | STEEL IT ROUN | PIPE ARCHE ID SIZE OF P (Metric) | CHES AN OF PIPE / Iric) | ID CORR AND FILL | UGATEI HEIGH | S ALUMI TS OVEF | NUM ALI | LOY PIP | E ARCHI IPE | S | | | |
|----------------|------------|----------|--------------------------|------|-------------------------------|----------------------|---|-------------------|--------------------------------------|------------------|--|-------------------------------|---------------------|-----------------|--|---------------|---------|--------------------------|-----------|--------------------------------------|--------------------------|---------------|
| ə | 2 | | | 700 | | | | | | Type 1 | | | | • | Type 2 | | | | | Туре 3 | | |
| zi2 bnu | | | Steel & Aluminum | | Corrugat Steel Pipe Arc | gated sel Arch | Min. Cover | | u. | Fill Height; | נו | | | L. | Fill Height | | | | u. | Fill Height: | | |
| oA Ins (mm) | 68 x 13 mm | | ripe Arcii 75 x 25 mm | | 125 x 25 mm | 25 mm | | | - | 1 m and less | SS | | Great | er than 1 | Greater than 1 m not exceeding 3 m | xceeding | 8 E | Great | er than 3 | Greater than 3 m not exceeding 4.5 m | eeding 4. | S m |
| leviu | Span | <u> </u> | Span | | Span | Zice Gine | S leaf? | | Steel | | Aluminum | שחר | | Steel | | Aluminum | unu | | Steel | | Aluminum | шn |
| b∃ | (mm), | (mm) | | (mm) | | ε | ∢ | | 68 x 13 75 x 25 125 x 25 mm mm mm | 125 x 25 mm | 68 x 13 75 x 25 mm mm | 75 x 25 mm | 68 x 13 mm | 75 × 25 ° | 68 x 13 75 x 25 125 x 25 68 x 13 75 x 25 mm mm mm mm | 68 x 13 mm | | 68 x 13 75 x 25 mm mm | | 125 x 25 mm | 68 x 13 75 x 25 mm mm | 75 x 25 mm |
| 375 | 430 | 330 | | | | | 0.5 m | 1.63 | | | 1.52 | | 1.63 | | | 1.52 | | 1,63 | | | 1.52 | |
| 450 | 530 | 380 | | | | | 0.5 m | 1.63 | | | 1,52 | | 1,63 | | | 1.52 | | 1,63 | | | 1.52 | |
| 525 | 610 | 460 | | | | | 0.5 m | 1.63 | | | (1.91) | | 1.63 | | | 1.52 | | 1.63 | | | 1.52 | |
| 900 | 710 | 510 | | | | | 0,5 m | (2.01) | | | (2.67) | | 1,63 | | | 1.91 | | 1.63 | | | 1.91 | |
| 750 | 870 | 630 | | | | | 0,5 m | (2.01) | | | (2.67) | | 1.63 | | | 1,91 | | (2.01) | | | (2.67) | |
| 8 | 1060 | 740 | | | | | 0.5 m | (2.01) | | | 2.67 | | 1.63 | | | 2.67 | | 1.63 | | | 2.67 | |
| 1050 | 1240 | 840 | | | | | 0.5 m | 2.77 | | | 2.67 | | (2.77) | | | 2.67 | | (2.77) | | | 2.67 | |
| 1200 | 1440 | 970 | 1340 | 1050 | 1340 | 1050 | 0,5 m | 2.77 | (2.77) | (2.77) | 3.43 | 1.52 | 2.77 | 2.01 | 2.01 | 3,43 | 1.52 | 2.77 | 2.01 | (2.77) | 3,43 | 1.52 |
| 1350 | 1620 | 1100 | 1520 | 1170 | 1520 | 1170 | 0,5 m | 2.77 | (2.77) | 2.77 | 4.17 | (1.91) | 2.77 | 2.01 | 2.01 | 4.17 | 1.52 | 2.77 | (2.77) | 2.77 | 4.17 | (1.91) |
| 1500 | 1800 | 1200 | 1670 | 1300 | 1670 | 1300 | 0.5 m | 3.51 | (2.77) | 2.77 | 4.17 | (1.91) | 3.51 | 2.01 | (2.77) | 4 17 | 1.52 | 3.51 | (2.77) | 2.77 | 4.17 | (1.91) |
| 1650 | 1950 | 1320 | 1850 | 1400 | 1850 | 1400 | 0.5 m | 4.27 | (2.77) | 2.77 | | 1.91 | 4.27 | 2.01 | (2.77) | | 1,91 | 4.27 | (2.77) | 2.77 | | 1.91 |
| 1800 | 2100 | 1450 | 2050 | 1500 | 2050 | 1500 | 0.5 m | 4.27 | (2.77) | 2.77 | | 2.67 | 4.27 | 2.01 | (2.77) | | 2.67 | 4.27 | (2.77) | 2.77 | | 2.67 |
| 1950 | | | 2200 | 1620 | 2200 | 1620 | 0.5 m | | 2.77 | 2.77 | | 2.67 | | (2.77) | 2.77 | | 2.67 | | 2.77 | 2.77 | | 2.67 |
| 2100 | | | 2400 | 1720 | 2400 | 1720 | 0.5 m | | 2.77 | 2,77 | | 2.67 | | (2.77) | 2.77 | | 2.67 | | 2.77 | 2.77 | | 2.67 |
| 2250 | | | 2600 | 1820 | 2600 | 1820 | 0.5 m | | 2.77 | 2.77 | | 3.43 | | (2.77) | 2.77 | - | 3.43 | | 2.77 | 2.77 | | 3,43 |
| 2400 | | | 2840 | 1920 | 2840 | 1920 | 0,5 m | | 2.77 | (3.51) | | 4.17 | | 2.77 | 2.77 | | 4.17 | | 2.77 | (3.51) | | 4.17 |
| 2550 | | | 2970 | 2020 | 2970 | 2020 | 0,5 m | | 2.77 | (3.51) | | 4.17 | | 2.77 | 2.77 | | 4.17 | | 2.77 | (3.51) | | 4.17 |
| 2700 | | | 3240 | 2120 | 3240 | 2120 | 0.5 m | | 3.51 | 3.51 | | | | 3.51 | 3,51 | | | | 3.51 | 3.51 | | |
| 2850 | | | 3470 | 2220 | 3470 | 2220 | 0.5 m | | 3.51 | 3.51 | | | | 3.51 | 3.51 | | | | 3,51 | 3.51 | | |
| 3000 | | | 3600 | 2320 | 3600 | 2320 | 0.5 m | | 4.27 | 4.27 | | | | 4.27 | 4.27 | | | | 4.27 | 4.27 | | |
| Notos | ċ | | | | | | | | | | | | | | | | | | | | | |

Notes:

* Aluminized Type 2 Steel or Precoated Galvanized Steel shall be required for steel spans up to 1060 mm according to Article 1006.01.
Thicknesses are based on longitudinal riveted seam fabrication, values in "()" can be reduced by one gage thickness if helical seam fabrication is utilized.
The Type 1 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 290 kN per square meter.
The Type 2 and 3 corrugated steel or aluminum pipe arches shall be placed on soil having a minimum bearing capacity of 192 kN per square meter.
This minimum bearing capacity will be determined by the Engineer in the field.

| | e 3 | eight: an 10' not ing 15' | Arch | A-IV | A-IV | ∀- I< | A-IV | A-IV | A-IV | A-IV | A-1V | 1450 | 1460 | 1470 | 1480 | 1480 |
|---|--------|---|-------------|--------|--------|--------------|--------|--------|--------------|---------|---------|--------|--------|---------|-------|---------|
| CH PIPE F PIPE | Type 3 | Fill Height: Greater than 10' not exceeding 15' | HE | HE-IV | HE-IV | HE-IV | HE-IV | HE-IV | HE-IV | HE-IV | HE-IV | 1460 | 1460 | 1460 | 1470 | 1470 |
| CRETE AR(THE TOP O | Type 2 | Fill Height: Greater than 3' not exceeding 10' | Arch | H-III | A-III | H-∀ | A-III | H-A | A-III | A-III | H-III | H-⊞ | A-III | A-III | A-III | A-III |
| CED CONTEST OVER T | άλ⊥ | Fill H Greater tl exceec | 캐 | HE-III | HE-III | 二出 | HE-III | III-3H | HHH | HE-III | HE-II | HE-III | HE-III | -#H | HE-11 | HH |
| D REINFOF FILL HEIGH | e 1 | ill Height: 3' and less | Arch | A-111 | A-III | A-III | A-III | H-H | ∃- -∀ | A-II | H-H | H-H | A-II | H-H | H-H | A-II |
| TICALL AN PIPE AND | Type | Fill Height: 3' and les | 빞 | =- | HE-II | HE-III | HE-III | HE-III | 一一一 | HE-H | HE-I | 出 | HE-I | HE-I | HE | 무- |
| ASSES OF REINFORCED CONCRETE ELLIPTICALL AND REINFORCED CONCRETE ARCH PIPE ESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE | | Minimum Cover | RCCP HE & A | 1,-0,, | 1, -0, | 1, -0." | 10. | 1, -0, | 1, O | -0- | ا, -0, | o | 10." | 1, -0,, | - | 1, -0,, |
| FORCED C | | Reinforced Concrete Arch pipe (in.) | Rise | 11 | 13 1/2 | 15 1/2 | 18 | 22 1/2 | 22 1/2 | 26 5/8 | 31 5/16 | 36 | 40 | 45 | 54 | 54 |
| S OF REIN | | Reinf Cond Arch pi | Span | 18 | 22 | 56 | 28 1/2 | 36 1/4 | 36 1/4 | 43 3/4 | 51 1/8 | 58 1/2 | 65 | 73 | 88 | 88 |
| 3: CLASSE HE RESPE | 7 | Keinforced Concrete Elliptical pipe (in.) | Rise | 14 | 14 | 19 | 19 | 22 | 24 | 29 | 34 | 38 | 43 | 48 | 53 | 58 |
| Table IIB: CLA FOR THE RE | | Con | Span | 23 | 23 | 30 | 30 | 34 | 38 | 45 | 23 | 9 | 89 | 76 | 83 | 91 |
| | | Equivalent Round Size (in.) | | 15 | 18 | 21 | 24 | 27 | 30 | 36 | 42 | 48 | 54 | 09 | 99 | 72 |

Notes:
A number indicates the D-Load for the diameter and depth of fill and that a special design is required.
Design assumptions; Water filled pipe, AASHTO Type 2 installation per AASHTO LRFD Table 12.10.2.1-1

| | | | | _ | | | | | | _ | | | | | | $\overline{}$ | |
|---|--------|---|-------------|-------|--------|-------|--------|-------|--------|--------|-------------|-------|--------|-------|-------|---------------|-------|
| | e 3 | eight: an 3 m not ig 4.5 m | Arch | A-IV | A-!< | A-I< | A-IV | A-1V | A-1V | A-IV | A-IV | 70 | 70 | 2 | 20 | 70 | |
| W | Type 3 | Fill Height: Greater than 3 m not exceeding 4.5 m | 빞 | HE-IV | 무무 | HE-IV | HE-IV | HE-IV | HE-IV | HE-IV | HE-IV | 70 | 70 | 70 | 70 | 70 | |
| E ARCH PIP TOP OF PIPE | e 2 | eight: In 1 m not ng 3 m | Arch | H-III | H-H | A-III | A-III | Η-ΙΙ | H-H | A-III | ₩-₩ | A-III | A-III | A-III | A-III | A-III | |
| ED CONCRET OVER THE 1 | Type 2 | Fill Height: Greater than 1 m not exceeding 3 m | HE | HE | HE-III | HE-H | HE-III | H | H-H- | HE-III | ≡- ₩ | 出出 | HE-III | HH | Ħ-≡ | HE-11 | |
| REINFORCE ILL HEIGHTS | 9.1 | aight: d less | Arch | H-H | A-III | A-III | A-111 | H-H | H-III | A-II | A-II | H-A | A-II | A-II | A-II | A-II | |
| PTICALL AND: PIPE AND F ic) | Type 1 | Fill Height: 1 m and less | 퐈 | 里里 | 里里 | H-H | HE-III | 무 | HE-III | HE-II | <u>-</u> # | 量 | HE- | HE-I | 开 | HE-1 | |
| Table IIB: CLASSES OF REINFORCED CONCRETE ELLIPTICALL AND REINFORCED CONCRETE ARCH PIPE FOR THE RESPECTIVE EQUIVALENT ROUND SIZE OF PIPE AND FILL HEIGHTS OVER THE TOP OF PIPE (Metric) | | Minimum Cover | RCCP HE & A | 0.3 m | 0.3 m | 0.3 m | 0.3 m | 0.3 m | 0.3 m | 0.3 m | m 8.0 | 0.3 m | 0.3 m | m 8.0 | 0.3 m | 0.3 m | |
| EQUIVALEN | | orced arete be (mm) | Rise | 279 | 343 | 394 | 457 | 572 | 572 | 676 | 795 | 914 | 1016 | 1143 | 1372 | 1372 | |
| ASSES OF R ESPECTIVE | | Reinforced Concrete Arch pipe (mm) | Span | 457 | 559 | 099 | 724 | 921 | 921 | 1111 | 1299 | 1486 | 1651 | 1854 | 2235 | 2235 | |
| Table IIB: CL/ FOR THE RI | | Reinforced Concrete Elliptical pipe (mm) | Rise | 356 | 356 | 483 | 483 | 559 | 610 | 737 | 864 | 965 | 1092 | 1219 | 1346 | 1473 | |
| F | | Reir Cor Elliptical | Span | 584 | 584 | 762 | 762 | 864 | 965 | 1143 | 1346 | 1524 | 1727 | 1930 | 2108 | 2311 | |
| | | Equivalent Round Size (mm) | | 375 | 450 | 525 | 909 | 989 | 750 | 006 | 1050 | 1200 | 1350 | 1500 | 1676 | 1800 | Notes |

Notes: A number indicates the D-Load for the diameter and depth of fill and that a special design is required. Design assumptions; Water filled pipe, AASHTO Type 2 installation per AASHTO LRFD Table 12.10.2.1-1

| | | an 15',)' | СРР | Ϋ́ | ΑN | × | Ϋ́ | Ϋ́ | ΥN | ΑN | NA | NA | NA | |
|--|--------|--|--------|----|----|----|----|----------|----|-----|----|--------|----|---|
| | e 4 | eater the | 되 되 | × | × | ž | × | Ϋ́ | × | × | × | × | × | |
| | Type 4 | Fill Height: Greater than 15', not exceeding 20' | CPVC | × | × | × | × | × | × | × | × | NA | NA | |
| | | 뿔 | PVC | × | × | × | × | × | × | × | × | × | × | |
| | | | CPP | ¥ | × | × | × | ¥ | ΑN | × | Ϋ́ | ΑN | NA | |
| E PIPE | | han 10', 15' | CPE | × | ΝA | ΑĀ | ¥ | Α̈́ | ΑN | Α̈́ | AA | Α̈́ | ΑN | |
| OF TH | Type 3 | sight: Greater than not exceeding 15' | m m | × | × | ž | × | Ϋ́ | ΝΑ | × | × | × | × | |
| TABLE IIIA: PLASTIC PIPE PERMITTED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE | _ | Fill Height: Greater than 10' not exceeding 15' | CPVC | × | × | × | × | × | × | × | × | ¥ | ¥. | |
| TABLE IIIA: PLASTIC PIPE PERMITTED DIAMETER AND FILL HEIGHT OVER TH | | | PVC | × | × | × | × | × | × | × | × | × | × | |
| PIPE PI | _ | | CPP | ¥ | × | × | × | A A | × | × | × | ΑĀ | ¥ | |
| LASTIC ID FILL | | han 3', 10' | CPE | | × | × | × | ¥. | × | × | × | ¥ | ¥ | |
| IIIA: P TER AN | Type 2 | reater t | H . | × | × | ¥ | × | <u> </u> | × | × | × | × | × | erior I height |
| TABLE | Ty | Fill Height: Greater than 3' not exceeding 10' | | | × | - | × | | ~ | | | A A | ¥ | with a smooth interior (CPVC) pipe with a smooth interior smooth interior pipe with a smooth interior P) pipe with a smooth interior ihe given pipe diameter and fill height |
| I PIPE | | Η̈́ | CPVC | Ĺ | ^ | Ĺ | _ | _ | _ | _ | ^ | z | z | terior h a sm oth inte mooth iamete |
| GIVER | | | PVC | × | × | × | × | × | × | × | × | × | × | ooth in ipe wit terior a smo ith a si pipe di |
| FOR A | | | CPP | ¥ | × | × | × | ž | × | × | × | ž | × | with a smooth interior (CPVC) pipe with a smooth in smooth interior pipe with a smooth interior P) pipe with a smooth interior ihe given pipe diameter and fi |
| | | nd less in | CPE | × | × | × | × | ξ | × | × | × | × | × | pipe wil oride (C ith a sm (PE) pi e (CPP) |
| | Type 1 | ight: 3' and with 1' min | 9 E | × | × | ž | × | ¥ | × | × | × | × | × | (PVC) nyl Chl pipe w hylene opylen be use |
| | | Fill Height: 3' and less, with 1' min | CPVC | × | × | × | × | × | × | × | × | ΑN | Ϋ́ | Polyvinyl Chloride (PVC) pipe with a smooth interior Corrugated Polyvinyl Chloride (CPVC) pipe with a si Polyethylene (PE) pipe with a smooth interior Corrugated Polyethylene (PE) pipe with a smooth in Corrugated Polypropylene (CPP) pipe with a smooth This material may be used for the given pipe diamet Not Available |
| | | | PVC | × | × | × | × | × | × | × | × | × | × | Polyvinyl Chi Corrugated F Polyethylene Corrugated F Corrugated F This material |
| A. Halla | | Nominal Diameter | | 5 | 12 | 15 | 18 | 21 | 24 | 30 | 36 | 42 | 48 | Notes: PVC Pol CPVC CO CPE CO CPP CO NA THI |

| | | an 4.5 m | CPP | ΑĀ | NA | × | Ϋ́ | NA | ΑN | Ϋ́ | Ν | ΑN | NA | |
|--|--------|--|------------------|-----|-----|-----|-----|--------|-----|-----|-----|------|------|--------|
| | 4 | ater the | 퓚 | × | × | NA | × | NA | × | × | × | × | × | |
| | Type 4 | Fill Height: Greater than 4.5 m, not exceeding 6 m | CPVC | × | × | × | × | × | × | × | × | NA | ΝA | |
| | | Fill He | PVC | × | × | × | × | × | × | × | × | × | × | |
| | | n, | СРР | ΑΝ | × | × | × | NA | NA | × | ΝA | NA | NA | |
| 무 PIPE | | r than 3 n 4.5 m | CPE | × | ΑĀ | ΑN | ΑN | NA | NA | Ϋ́ | NA | AN | Ϋ́ | |
| 0 OF T | Type 3 | eight: Greater than not exceeding 4.5 m | 묎 | × | × | ¥ | × | NA | ΑN | × | × | × | × | |
| TABLE IIIA: PLASTIC PIPE PERMITTED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE (Metric) | | Fill Height: Greater than 3 m not exceeding 4.5 m | CPVC | × | × | × | × | × | × | × | × | ΑN | ž | |
| ERMITT T OVER | | Ē | PVC | × | × | × | × | × | × | × | × | × | × | |
| STIC PIPE F FILL HEIGH (Metric) | | ئ- | СРР | ¥ | × | × | × | A A | × | × | × | ¥ | Ϋ́ | |
| PLASTI ND FIL (Me | | than 1 n 3 m | CPE | × | × | × | × | ΑN | × | × | × | ¥ | Ϋ́ | |
| TABLE IIIA: PLASTIC PIPE PERMITTED DIAMETER AND FILL HEIGHT OVER TH (Metric) | Type 2 | eight: Greater I | 뮖 | × | × | ΑN | × | A N | × | × | × | × | × | |
| TAB IPE DIAN | | Fill Height: Greater than 1 m, not exceeding 3 m | CPVC | × | × | × | × | × | × | × | × | Ą | ž | |
| 3IVEN P | | 臣 | PVC | × | × | × | × | × | × | × | × | × | × | |
| FOR A | | | CPP | ¥ | × | × | × | ΑĀ | × | × | × | ΑĀ | × | |
| | | ind less | CPE | × | × | × | × | ΑN | × | × | × | × | × | |
| | Type 1 | I Height: 1 m and les with 0.3 m min. cover | PE | × | × | ΑĀ | × | ΑĀ | × | × | × | × | × | |
| : | | Fill Height: 1 m and less, with 0.3 m min. cover | CPVC | × | × | × | × | × | × | × | × | ¥ | ž | |
| | | | PVC | × | × | × | × | × | × | × | × | × | × | |
| | | Nominal | Diameter (mm) | 250 | 300 | 375 | 450 | 525 | 009 | 750 | 006 | 1000 | 1200 | Notes. |

Notes:
PVC Polyvinyl Chloride (PVC) pipe with a smooth interior
CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior
PE Polyethylene (PE) pipe with a smooth interior
CPE Corrugated Polypthylene (PE) pipe with a smooth interior
CPP Corrugated Polypropylene (CPP) pipe with a smooth interior
X This material may be used for the given pipe diameter and fill height
NA Not Available

| | 'HE PIPE | Type 7 | Fill Height: Greater than 30', not exceeding 35' | CPVC | × | × | × | ×: | × | ×: | ×: | × | - NA | NA | |
|------------------------------------|--|--------|--|----------|----|----|----|--------|----|----|-------------|----|------|----|--|
| E PERMITTED | FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE | Туре б | Fill Height: Greater than 25', not exceeding 30' | Ų | | | | | | | | | | , | |
| TABLE IIIB: PLASTIC PIPE PERMITTED | WETER AND FILL HEI | Ty | Fill Height: Greater th | PVC CPVC | × | × | × | × × | × | × | × ~ × | × | X | × | |
| TAB | FOR A GIVEN PIPE DIAL | ype 5 | , not exceeding 25' | | | | | | | | | | | | |
| | | Typ | Greater than | CPVC | × | × | × | × | × | × | × | × | Ϋ́ | Ϋ́ | |
| | | | Fill Height: | PVC | × | × | × | × | × | × | × | × | × | × | |
| | | | Nominal Diameter | (ln.) | 10 | 12 | 15 | 85 | 21 | 24 | 30 | 36 | 42 | 48 | |

Notes:
PVC Polyvinyl Chloride (PVC) pipe with a smooth interior
CPVC Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior
X This material may be used for the given pipe diameter and fill height
NA Not Available

| не ріре | Type 7 | Fill Height: Greater than 9 m, not exceeding 10.5 m | CPVC | × | × | × | × | X | × | × | × | NA | AA |
|--|--------|---|------|-----|-----|-----|-----|-----|-----|-----|-----|---------|------|
| TABLE IIIB: PLASTIC PIPE PERMITTED FOR A GIVEN PIPE DIAMETER AND FILL HEIGHT OVER THE TOP OF THE PIPE (metric) | Туре б | Fill Height: Greater than 7.5 m, not exceeding 9 m | | | | | | | | | *** | | |
| LASTIC PI ID FILL HE (metric) | Tyj | reater than | CPVC | × | × | × | × | × | × | × | × | ΑΝ | ž |
| TABLE IIIB: P E DIAMETER AN | | Fill Height: G | PVC | × | × | × | × | × | × | × | × | × | × |
| FOR A GIVEN PIPE | | ı, not exceeding 7.5 m | | | | | | | | | | | |
| | Type 5 | eater than 6 m | CPVC | × | × | × | × | × | × | × | × | NA A | AN |
| | | Fill Height: Greater than 6 m, not | PVC | × | × | × | × | × | × | × | × | × | × |
| | | Nominal | (mm) | 250 | 300 | 375 | 450 | 525 | 009 | 750 | 006 | 1000 | 1200 |

Polyvinyl Chloride (PVC) pipe with a smooth interior Corrugated Polyvinyl Chloride (CPVC) pipe with a smooth interior Polyethylene (PE) pipe with a smooth interior This material may be used for the given pipe diameter and fill height Not Available" Notes: PVC CPVC PE X NA

Revise the first sentence of the first paragraph of Article 542.04(c) of the Standard Specifications to read:

"Compacted aggregate, at least 4 in. (100 mm) in depth below the pipe culvert, shall be placed the entire width of the trench and for the length of the pipe culvert, except compacted impervious material shall be used for the outer 3 ft (1 m) at each end of the pipe culvert."

Revise the seventh paragraph of Article 542.04(d) of the Standard Specifications to read:

"PVC, PE and CPP pipes shall be joined according to the manufacturer's specifications."

Replace the third sentence of the first paragraph of Article 542.04(h) of the Standard Specifications with the following:

"The total cover required for various construction loadings shall be the responsibility of the Contractor."

Delete "Table IV: Wheel Loads and Total Cover" in Article 542.04(h) of the Standard Specifications.

Revise the first and second paragraphs of Article 542.04(i) of the Standard Specifications to read:

"(i) Deflection Testing for Pipe Culverts. All PE, PVC and CPP pipe culverts shall be tested for deflection not less than 30 days after the pipe is installed and the backfill compacted. The testing shall be performed in the presence of the Engineer.

For PVC, PE, and CPP pipe culverts with diameters 24 in. (600 mm) or smaller, a mandrel drag shall be used for deflection testing. For PVC, PE, and CPP pipe culverts with diameters over 24 in. (600 mm), deflection measurements other than by a mandrel shall be used."

Revise Articles 542.04(i)(1) and (2) of the Standard Specifications to read:

- "(1) For all PVC pipe: as defined using ASTM D 3034 methodology.
- (2) For all PE and CPP pipe: the average inside diameter based on the minimum and maximum tolerances specified in the corresponding ASTM or AASHTO material specifications."

Revise the second sentence of the second paragraph of Article 542.07 of the Standard Specifications to read:

"When a prefabricated end section is used, it shall be of the same material as the pipe culvert, except for polyethylene (PE), polyvinylchloride (PVC), and polypropylene (PP) pipes which shall have metal end sections."

Revise the first paragraph of Article 1040.03 of the Standard Specifications to read:

"1040.03 Polyvinyl Chloride (PVC) Pipe. Acceptance testing of PVC pipe and fittings shall be accomplished during the same construction season in which they are installed. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements."

Delete Articles 1040.03(e) and (f) of the Standard Specifications.

Revise Articles 1040.04(c) and (d) of the Standard Specifications to read:

- "(c) PE Profile Wall Pipe for Insertion Lining. The pipe shall be according to ASTM F 894. When used for insertion lining of pipe culverts, the pipe liner shall have a minimum pipe stiffness of 46 psi (317 kPa) at five percent deflection for nominal inside diameters of 42 in. (1050 mm) or less. For nominal inside diameters of greater than 42 in. (1050 mm), the pipe liner shall have a minimum pipe stiffness of 32.5 psi (225 kPa) at five percent deflection. All sizes shall have wall construction that presents essentially smooth internal and external surfaces.
- (d) PE Pipe with a Smooth Interior. The pipe shall be according to ASTM F 714 (DR 32.5) with a minimum cell classification of PE 335434 as defined in ASTM D 3350. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties and the resin used to manufacture the pipe meets or exceeds the minimum cell classification requirements."

Add the following to Section 1040 of the Standard Specifications:

"1040.08 Polypropylene (PP) Pipe. Storage and handling shall be according to the manufacturer's recommendations, except in no case shall the pipe be exposed to direct sunlight for more than six months. Acceptance testing of the pipe shall be accomplished during the same construction season in which it is installed. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements.

- (a) Corrugated PP Pipe with a Smooth Interior. The pipe shall be according to AAHSTO M 330 (nominal size 12 to 60 in. (300 to 1500 mm)). The pipe shall be Type S or D.
- (b) Perforated Corrugated PP Pipe with A Smooth Interior. The pipe shall be according to AASHTO M 330 (nominal size 12 to 60 in. (300 to 1500 mm)). The pipe shall be

Type SP. In addition, the top centerline of the pipe shall be marked so that it is readily visible from the top of the trench before backfilling, and the upper ends of the slot perforations shall be a minimum of ten degrees below the horizontal."

LRFD STORM SEWER BURIAL TABLES (BDE)

Effective: November 1, 2013 | Revised: November 1, 2014

Revise Article 550.02 of the Standard Specifications to read as follows:

| "Item | Article Section |
|---|-----------------|
| (a) Clay Sewer Pipe | 1040.02 |
| (b) Extra Strength Clay Pipe | |
| (c) Concrete Sewer, Storm Drain, and Culvert Pipe | |
| (d) Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe | 1042 |
| (e) Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe (Note | 1) 1042 |
| (f) Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe (Note 1) | 1042 |
| (g) Polyvinyl Chloride (PVC) Pipe | 1040.03 |
| (h) Corrugated Polyvinyl Chloride (PVC) Pipe with a Smooth Interior | 1040.03 |
| (i) Corrugated Polypropylene (CPP) Pipe with Smooth Interior | 1040.07 |
| (j) Rubber Gaskets and Preformed Flexible Joint Sealants for Concrete Pipe | |
| (k) Mastic Joint Sealer for Pipe(l) External Sealing Band | 1055 |
| (I) External Sealing Band | 1057 |
| (m) Fine Aggregate (Note 2) | 1003.04 |
| (n) Coarse Aggregate (Note 3) | 1004.05 |
| (o) Reinforcement Bars and Welded Wire Fabric | |
| (p) Handling Hole Plugs | |
| (q) Polyethylene (PE) Pipe with a Smooth Interior | 1040.04 |
| (r) Corrugated Polyethylene (PE) Pipe with a Smooth Interior | 1040.04 |

- Note 1. The class of elliptical and arch pipe used for various storm sewer sizes and heights of fill shall conform to the requirements for circular pipe.
- Note 2. The fine aggregate shall be moist.
- Note 3. The coarse aggregate shall be wet."

Revise the table for permitted materials in Article 550.03 of the Standard Specifications as follows:

| "Class | Materials |
|--------|---|
| Α | Rigid Pipes: |
| | Clay Sewer Pipe |
| | Extra Strength Clay Pipe |
| | Concrete Sewer, Storm Drain, and Culvert Pipe |
| # | Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |
| | Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe |
| | Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe |
| В | Rigid Pipes: |
| | Clay Sewer Pipe |
| | Extra Strength Clay Pipe |
| | Concrete Sewer, Storm Drain, and Culvert Pipe |
| | Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |
| | Reinforced Concrete Elliptical Culvert, Storm Drain, and Sewer Pipe |
| | Reinforced Concrete Arch Culvert, Storm Drain, and Sewer Pipe |
| | Flexible Pipes: |
| | Polyvinyl Chloride (PVC) Pipe |
| 1 | Corrugated Polyvinyl Chloride Pipe (PVC) with a Smooth Interior |
| | Polyethylene (PE) Pipe with a Smooth Interior |
| | Corrugated Polyethylene (PE) Pipe with a Smooth Interior |
| | Corrugated Polypropylene (CPP) Pipe with a Smooth Interior" |

Replace the storm sewers tables in Article 550.03 of the Standard Specifications with the following:

| | | | | FOR | KIN A GIVEN | STORM SEWERS KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF | TERIAL P METERS | STORM FERMITTI | STORM SEWERS ERMITTED AND S AND FILL HEIGHT | S STRENG: 4TS OVEF | TH REQUIRED THE TOP OF | | THE PIPE | | | | |
|---|---------------------|------------|--------|---------------|-------------------------|---|--------------------|-------------------|---|--------------------------|---------------------------|--------|------------|-------------|----|-----|--------|
| Fill Height: 3' and less | | | | | Type | 1 | | | | | | | Type | 2 | | | |
| CSP | Nominal Diameter | | | Fill | Height: 3 h 1' minim | and less | | | | | | HIII H | eight: Gre | ater than (| 3, | | |
| | ≦ | RCCP | SP | ESCP | PVC | CPVC | PE | CPE | CPP | RCCP | CSP | ESCP | PVC | CPVC | Я | SPE | СРР |
| | 10 | MA | 3 | × | × | × | × | × | ΨN | ¥ | - | × | × | × | × | × | ΑĀ |
| | 12 | _ ≥ | × | × | × | × | × | × | × | = | - | × | × | × | × | × | × |
| | 15 | : ≥ | × | ¥ | × | × | ¥ | × | × | = | _ | ¥ | × | × | NA | × | × |
| | 18 | 2 | ¥ | AN | × | × | × | × | × | = | 2 | × | × | × | × | × | × |
| | 21 | : = | ž | ¥ | × | × | ¥ | ¥ | Α̈́ | = | 2 | × | × | × | ž | ¥. | ¥ |
| | 24 | = | ž | ¥ | × | × | × | × | × | = | 7 | × | × | × | × | × | × |
| N | 27 | | ¥ | ¥ | ¥ | ž | ¥ | ¥ | ¥N | _ | က | × | NA N | ΑN | Ϋ́ | ΑN | N A |
| | S S | ≥ | ž | ž | × | × | × | × | × | = | m | × | × | × | × | × | × |
| | 33 | : = | ¥ | ¥ | × | ž | ¥ | ¥ | ¥. | = | ΑĀ | × | NA | ΝA | ΑN | ΑN | Ϋ́ |
| | 36 | | ¥ | XX | × | × | × | × | × | = | ΝA | × | × | × | × | × | × |
| | 42 | = | ¥ | × | × | ¥ | × | × | Α̈́ | = | ž | × | × | Α̈́ | × | ¥ | Ϋ́ |
| | 48 | = | ¥ | × | × | Ϋ́Z | × | × | × | = | ΑN | × | × | VΑ | × | ΑN | ¥ |
| HAN NA NA NA NA NA NA NA NA NA NA NA NA N | 54 | = | ž | ΑN | NA NA | Ϋ́ | ¥ | AM | ¥ | = | ΝΑ | NA | NA | ΑΝ | ΑN | Ϋ́ | Ϋ́ |
| | 09 | = | ¥ | Ϋ́ | × | ¥N V | ¥ | ¥ | × | = | ž | ΑN | Ν | ΑΝ | Ϋ́ | ž | × |
| II NA NA NA NA NA NA NA NA NA NA NA NA NA | 99 | = | ¥ | Ϋ́ | Ϋ́ | ¥ | Ϋ́ | ¥ | Ϋ́ | = | NA | NA | ΑN | A | ΑM | W | ¥ |
| NA NA NA NA NA NA NA NA NA NA NA NA NA N | 72 | = | ¥ | ¥ | AM | AN | ¥ | AA | NA | = | Α× | ΑĀ | Ϋ́ | Ϋ́ | ¥ | ž | ¥ |
| II NA NA NA NA NA NA III NA NA NA NA NA NA NA NA NA NA NA NA NA | 78 | = | ¥ | ¥ | Ϋ́ | Ϋ́Z | ¥ | ¥ | ž | = | AN | ¥ | ¥ | Ϋ́ | ž | ¥ | ¥ |
| II NA NA NA NA NA NA NA NA NA NA NA NA NA | 84 | = | Ϋ́ | ∀ Z | ¥ | Ϋ́ | ¥ | ž | Ϋ́ | = | ΑN | NA | Ν | ΑΝ | ۸ | ž | ≨ |
| II NA NA NA NA NA NA NA NA NA NA NA NA NA | 06 | = | ¥ | ΑN | ¥ | ΑN | AA | AN | ¥ | = | ΑN | Ϋ́ | ¥ | ₹ Z | ž | ž | ¥ |
| NA NA NA NA NA NA NA NA NA NA NA NA NA N | 96 | = | ¥ | ¥ | ¥ | Ϋ́ | ž | ž | ¥ | = | ≨ Ž | Ϋ́ | ž | ₹ | ž | ž | ¥ |
| AN AN AN AN AN AN AN AN AN AN AN AN AN A | 102 | = | ž | ž | ž | ž | Ϋ́ | ž | ž | = | Ϋ́ | Ϋ́ | ¥ | ¥ | ž | ž | ¥ |
| | 108 | = | ¥ Y | ¥ | ¥ | ž | × | ž | ž | = | ¥ | NA | Α | ΑN | ¥ | ¥ | ₹ |

P Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
Concrete Sewer, Storm drain, and Culvert Pipe
Polyvinyl Chloride Pipe
C Corrugated Polyvinyl Chloride Pipe
P Extra Strength Clay Pipe
Polyethylene Pipe with a Smooth Interior
Corrugated Polyethylene Pipe with a Smooth Interior
Corrugated Polypropylene Pipe with a Smooth Interior

RCCP CSP PVC CPVC ESCP CPE CPE

This material may be used for the given pipe diameter and fill height. This material is Not Acceptable for the given pipe diameter and fill height. May also use Standard Strength Clay Pipe

| STORM SEWERS (Metric) AL PERMITTED AND STRENGTH REQUIRED ERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE | Type 2 | Fill Height: Greater than 1 m not exceeding 3 m | CPF CPP RCCP CSP ESCP PVC CPVC PE CPE CPP | × × × | × × × × × × × × × × × × × × × × × × × | X | X | NA II 2 X X X NA NA NA | X | NA II 3 X NA NA NA NA | × × × × × × × × × | NA II NA X NA NA NA NA | X X X X X X X X X X X X X X X X X X X | NA NA X NA NA NA NA NA NA NA NA NA NA NA NA NA | X NA X NA NA NA NA NA NA NA NA NA NA NA NA NA | NA II NA NA NA NA NA NA | X II NA NA NA NA NA NA | NA II NA NA NA NA NA | NA II NA NA NA NA NA | NA II NA NA NA NA NA NA | NA II NA NA NA NA NA NA | NA II NA NA NA NA NA | NA III NA NA NA NA NA | AZ AZ AZ AZ AZ AZ AZ | | | | | | | | | | | | | | | |
|--|--------|--|---|---------------------|---------------------------------------|----------------------|----------------------|------------------------|---------------------|-----------------------|----------------------|------------------------|---------------------------------------|--|---|--------------------------|------------------------|----------------------|----------------------|-------------------------|-------------------------|----------------------|-----------------------|----------------------|---|---|---|---|---|----|---|---|----|---|---|----|---|---|--|
| STORM STORM (KIND OF MATERIAL PERMI VEN PIPE DIAMETERS AND | _ | III Height: 1 m and less a 300 mm minimum cover | CPVC PE | + | | | × | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| KIND OF FOR A GIVEN PIPE | Type 1 | ight: 1 m | PVC | × | × | × | × | × | × | ž | × | Ą | × | × | × | Ϋ́ | ¥ | ¥ | ΑΝ | Ϋ́ | Ϋ́ | ΑN | ¥ | ¥ | | | | | | | | | | | | | | | |
| | | Fill He With 300 | Fill He With 300 | Fill He With 300 | Fill Hei With 300 | Fill Hei With 300 | Fill Hei With 300 | Fill He With 300 | Fill He With 300 | Fill He With 300 | Fill Hei With 300 | Fill Hei With 300 | Fill He With 300 | Fill Hei With 300 | Fill Heig With 300 r | Fill Heigl With 300 m | ESCP | × | × | ¥ | Ϋ́ | Ϋ́ | ž | Α× | ¥ | ¥ | ¥ | × | × | Ϋ́ | Ą | ¥ | ΑΝ | ¥ | ¥ | ΑN | Š | ž | |
| | | | CSP | 3 | ž | × | AA | AA | ¥ | Ϋ́ | ¥ | Ϋ́ | AA | Α | ¥ | ΑĀ | ¥ | Ž | ¥ | ¥ | ž | Ϋ́ | ¥ | ¥ | | | | | | | | | | | | | | | |
| | | No. of Control of Cont | RCCP | ¥ | 2 | ≥ | 2 | = | = | = | > | = | | = | = | = | = | = | _ | = | = | = | = | = | | | | | | | | | | | | | | | |
| | | Nominal Diameter | = | 250 | 300 | 375 | 450 | 525 | 009 | 675 | 750 | 825 | 006 | 1050 | 1200 | 1350 | 1500 | 1650 | 1800 | 1950 | 2100 | 2250 | 2400 | 2550 | | | | | | | | | | | | | | | |

Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
Concrete Sewer, Storm drain, and Culvert Pipe
Polyvinyl Chloride Pipe
Corrugated Polyvinyl Chloride Pipe
Extra Strength Clay Pipe
Polyethylene Pipe with a Smooth Interior
Corrugated Polypropylene Pipe with a Smooth Interior
Corrugated Polypropylene pipe with a Smooth Interior
This material may be used for the given pipe diameter and fill height.
This material is Not Acceptable for the given pipe diameter and fill height.
May also use Standard Strength Clay Pipe

| r | | | | 1 | | | | | | _ | | | _ | | _ | | | _, | _ | | | | | | | | | | | | | | | |
|--|--------|--|------|----|--------|--------|-----|-----|----|----|----|----|----|--------|--------|---------|----|----|----|---------|----|------|------|------|------|-----------------------------|----|----|---|------------|---|----|---|---|
| | | | СРР | Ϋ́ | ž | × | Ϋ́ | Ϋ́ | ٧ | ΑN | ž | ΑN | A | Ϋ́ | N | ΑN | ž | AA | Α× | X X | Ϋ́ | ž | ž | ž | ž | | | | | | | | | |
| STORM SEWERS KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE | | | g. | × | × | Ä | × | Ϋ́ | × | NA | × | A | × | × | × | Ϋ́ | ž | ΑN | ¥ | ž | Ν | ž | Ϋ́ | Ϋ́ | Ϋ́ | | | | | | | | | |
| | Type 4 | Fill Height: Greater than 15' not exceeding 20' | CPVC | × | × | × | × | × | × | NA | × | ΑN | × | Ϋ́ | AA | ΑΝ | Š | NA | ¥ | Ϋ́ | NA | Ϋ́ | Ϋ́Z | Ϋ́ | NA | | | | | | | | | |
| | | | PVC | × | × | × | × | × | × | NA | × | NA | × | × | × | ΑN | × | NA | ΑA | Ą | NA | Ϋ́ | Ϋ́ | Ϋ́ | NA | | | | | | | | | |
| | | -ill Height: not ex | ESCP | × | ¥ Z | ¥ | ΝΑ | Α̈́ | ΑĀ | AA | ¥ | NA | NA | Ϋ́ | NA | ΑĀ | Ν | NA | ΑN | Ϋ́ | NA | ¥ | ¥ | ž | NA | | | | | | | | | |
| | | <u></u> | CSP | 3 | Α | ΑĀ | ΑĀ | ΑĀ | Ϋ́ | ΑN | ¥ | Ϋ́ | AA | ¥ | ΑĀ | ¥ | ¥ | NA | NA | ΑĀ | NA | Ϋ́ | ž | ¥ | NA | | | | | | | | | |
| | | | RCCP | ¥ | 2 | ≥ | 2 | ≥ | ≥ | 2 | ≥ | > | 2 | 2 | 2 | 2 | ≥ | 2 | ۸۱ | 2 | 2 | 1680 | 1690 | 1700 | 1710 | | | | | | | | | |
| | | Fill Height: Greater than 10' not exceeding 15' | CPP | ¥ | × | × | × | ž | ž | AN | × | ¥ | ΑZ | Z Z | ΑN | AN | AN | NA | AN | ¥ | NA | AN. | ΑN | ¥ | A | | | | | | | | | |
| | | | CPE | × | ¥ | Š | ΑÑ | Ϋ́ | ž | AN | × | ¥ | AN | ¥ | Ā | ¥ | ¥ | ž | ΑN | ¥ | ¥ | ΑĀ | ¥ | ž | ΝĀ | | | | | | | | | |
| STI AL PERI TERS AN | 3 | | ם | × | × | X X | × | ¥ | × | A | × | ¥ | × | × | × | AA | ¥ | ¥ | Ϋ́ | × | ¥ | ۷V | ž | Ϋ́ | Ν | edi | | | | | | | | |
| F MATER E DIAMEI | | | CPVC | × | × | × | × | × | × | ΑĀ | × | ¥ | × | Š | Ϋ́ | ΑN | ¥ | ž | ΑĀ | ž | ž | NA | Ϋ́ | ¥ | ΝA | Storm Drain, and Sewer Pipe | | | | | | | | |
| KIND OF FOR A GIVEN PIPE | Type 3 | | | | | | PVC | × | × | × | × | × | × | Ϋ́ | × | A A | × | × | × | NA N | ¥ | ¥ | ¥ | ¥ | Ϋ́ | NA | ¥ | Ϋ́ | ¥ | Orain, and | | | | |
| | | | | | | | | | | | | | | | ESCP | × | × | × | × | ¥ | ¥ | ¥ | ž | ž | ¥ | Ϋ́ | Ϋ́ | ΝA | ¥ | Ϋ́ | ¥ | ΑN | ž | ¥ |
| | | | CSP | 2 | 2 | က | Ν | ž | ¥ | ΑA | ž | Ϋ́ | ¥ | ¥ | Z Y | NA A | Ž | ΑX | ¥ | Ϋ́ | ¥ | ¥ | ¥ | Ϋ́ | Ϋ́ | rete Culvert. | | | | | | | | |
| | | | RCCP | ¥ | = | = | = | = | = | = | Ξ | Ξ | | = | = | Ξ | ≡ | Ξ | ≡ | = | = | = | = | = | 1360 | Reinforced Concrete | | | | | | | | |
| | | Nominal Diameter | į | 10 | 12 | 15 | 18 | 21 | 24 | 27 | 93 | 33 | 36 | 42 | 84 | 54 | 90 | 99 | 72 | 78 | 84 | 06 | 96 | 102 | 108 | RCCP Reinf | | | | | | | | |

RCCP CSP PVC CPVC CPE CPP CPP NA NOte

Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
Concrete Sewer. Storm drain, and Culvert Pipe
Concrete Sewer. Storm drain, and Culvert Pipe
Polyvinyl Chloride Pipe
Corrugated Polyvinyl Chloride Pipe
Extra Strength Clay Pipe
Extra Strength Clay Pipe
Polyvethylene Pipe with a Smooth Interior
Corrugated Polypropylene Pipe with a Smooth Interior
Corrugated Polypropylene Pipe with a Smooth Interior
This material is Not Acceptable for the given pipe diameter and fill height.
This material is Not Acceptable for the given pipe diameter and fill height.
May also use Standard Strength Clay Pipe
RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the D-load to produce a 0.01 in crack.

| STORM SEWERS (metric) KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE | Type 4 | Fill Height: Greater than 4.5 m not exceeding 6 m | PVC CPVC PE CPP | × | × × | X | × - × - | × | × | NA NA | × × | AN AN | × | | X | NA NA | NA NA | NA NA | NA NA | AN AN | NA NA NA | - AN - | AN AN | NA NA | NA NA | | | | | | | | | |
|---|--------|--|-----------------|-------|--------|------|---------|------|-----|-------|----------|-------|-------|------|------|-------|-------|--------|-------|--------|----------|--------|----------|-------|-------|-----------------------------|---|--|-------|--|---|---|---|---|
| | | Fill Heigh not | CSP ESCP | | | | | | | | | | | | | | | | | | NA NA | | | | | | | | | | | | | |
| | | | CPP RCCP | F | | | L | | | | | _ | _ | | | | | _ | | | NA IV | | | | | | | | | | | | | |
| | | | CPE | × | Ą. | Ϋ́ | ΑΝ | ž | ž | Ϋ́ | ¥ | Ϋ́ | ¥ | ¥ | ž | ΑN | ¥. | Α | ΑΝ | X X | N A | AN | ¥ | Ϋ́ | Ϋ́ | | | | | | | | | |
| | | r than 3 m 4.5 m | CPVC PE | × | | | _ | | | | | | | | | | | | | | NA | | | | | Original Disco | | | | | | | | |
| | Type 3 | Fill Height: Greater than 3 m not exceeding 4.5 m | b PVC | × | × | × | × | × | × | ΑN | × | ¥ | × | × | × | AN | ž | N A | ΑΝ | ¥ | ΝΑ | - AN | ≨ — | ž | ž | Ctorm Drain and Course Ding | | | | | | | | |
| | | Ē | Ē | HIIIH | H | Fill | HIIH | Fill | | I E | CSP ESCP | - | × | | | | | | | | _ | | | | | | _ | | NA NA | | _ | _ | _ | 1 |
| | | | RCCP | Ϋ́ | = | | | = | | | | = | | | = | | Ξ | | | | = | | | | | Conference Construction | | | | | | | | |
| | | Nominal Diameter | 250 | 300 | 375 | 450 | 525 | 009 | 675 | 750 | 825 | 006 | 1050 | 1200 | 1350 | 1500 | 1650 | 1800 | 1950 | 2100 | 2250 | 2400 | 2550 | 2700 | 31,10 | | | | | | | | | |

CSP CPVC CPVC CPE CPE NA Note

| | | | | _ | | | | | - 1 | | | _ | | | $\overline{}$ | | | | | | | | | | | |
|--|--------|--|-----------------------------|---------|----|-----|----|----|-----|--------|----|---------|----|----|---------------|--------|----|----|----|--------|------|--------|--------|----------|------|--|
| JIRED OP OF THE PIPE | Type 7 | Fill Height: Greater than 30' not exceeding 35' | CPVC | × | × | × | × | × | × | Ϋ́ | × | NA A | × | Ϋ́ | NA | Ϋ́ | Ą | NA | Ϋ́ | A N | NA | A N | N N | NA NA | NA | |
| | Tyj | | Fill Height: Gr not exce | RCCP | NA | > 1 | > | > | > | > | > | > | > | > | > | ^ | > | > | ^ | > | 2730 | 2740 | 2750 | 2750 | 2760 | 2770 |
| NGTH REC VER THE 1 | | r than 25° 30′ | OAdO | × | × | × | × | × | × | ₹ Z | × | ΝΑ | × | Ϋ́ | AN | N A | Ϋ́ | NA | Ϋ́ | Ϋ́ | NA | Ϋ́ | ΥZ | ¥ Z | Å | |
| STORM SEWERS KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE | Туре 6 | Fill Height: Greater than 25' not exceeding 30' | PVC | × | × | × | × | × | × | ΑN | × | NA | × | × | × | NA | ¥ | NA | NA | ¥ | NA | Ϋ́ | ¥ | ¥ | NA | rer Pipe |
| | | Fill Heigh | RCCP | ΑA | > | > | ^ | > | > | > | > | ^ | > | > | > | ۸ | > | > | ۸ | 2370 | 2380 | 2390 | 2400 | 2410 | 2410 | n, and Sew |
| SI ERIAL PEF AETERS AI | | than 20° 25' | CPVC | × | × | × | × | × | × | NA | × | AN | × | Ϋ́ | Ϋ́ | ΑN | ۲ | Ϋ́ | ΑN | Ϋ́ | ¥ | NA | Ϋ́ | Ä | NA | Storm Drai |
| O OF MATI | Type 5 | Fill Height: Greater than 20 not exceeding 25' | PVC | × | × | × | × | × | × | NA | × | Ϋ́ | × | × | × | Ä | ¥ | ¥ | A | ¥ | ¥ | NA | ¥ | Ϋ́ | NA | e Culvert, |
| KING R A GIVEN | | Fill Height not e | RCCP | NA A | ≥ | ≥ | 2 | ≥ | ≥ | ≥ | 2 | 2 | 2 | > | ≥ | 2 | ≥ | ≥ | > | 2020 | 2020 | 2030 | 2040 | 2050 | 2060 | Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe |
| FO | | Nominal Diameter | ₫ | 10 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 | 42 | 48 | 54 | 09 | 99 | 72 | 78 | 84 | 06 | 96 | 102 | 108 | RCCP Reinfor |

Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
Polyvinyt Chloride Pipe
Corrugated Polyvinyl Chloride Pipe
Extra Strength Clay Pipe
Extra Strength Clay Pipe
This material may be used for the given pipe diameter and fill height.
This material is Not Acceptable for the given pipe diameter and fill height.
RCCP with a number instead of a Roman numeral shall be furnished according to AASHTO M170 Section 6. This number represents the D-load to produce a 0.01 in crack. RCCP PVC CPVC X NA Note

| STORM SEWERS (metric) KIND OF MATERIAL PERMITTED AND STRENGTH REQUIRED FOR A GIVEN PIPE DIAMETERS AND FILL HEIGHTS OVER THE TOP OF THE PIPE | | Fill Height: Greater than 30' not exceeding 35' | | | | | | •• | | | | | | | | | | | | | | -" | | | |
|---|----------------------------|--|------|----|-----|-----|-----|-----|---|-----|-----|--------|--------|------|--------|------|------|------|----------|------|------|------|------|------|------|
| | Type 7 | | CPVC | × | × | × | × | × | × | ΑN | × | Ϋ́ | × | ž | Ϋ́ | ΑN | ž | NA | ¥Χ | Ϋ́ | NA | ΑN | ¥ | Ϋ́ | ΝA |
| | | | RCCP | AN | > | > | > | > | > | ۸ | > | > | ^ | > | > | ^ | > | > | > | 130 | 130 | 130 | 130 | 130 | 130 |
| | Type 6 | Fill Height: Greater than 25' not exceeding 30' | CPVC | × | × | × | × | × | × | NA | × | Ϋ́ | × | Ϋ́ | N N | ΑΝ | Ϋ́ | Ϋ́ | AN | Ϋ́ | Ϋ́ | ΑN | ¥ | Ϋ́ | ΝΑ |
| | | | PVC | × | × | × | × | × | × | ΑN | × | Υ V | × | × | × | ΨN | Ϋ́ | Ϋ́ | AN AN | Ϋ́ | NA | ΝA | ¥ | Ϋ́ | A |
| | | | RCCP | ¥ | > | > | > | > | > | > | > | > | > | > | > | > | > | > | > | 110 | 110 | 110 | 120 | 120 | 120 |
| | Туре 5 | Fill Height: Greater than 20' not exceeding 25' | CPVC | × | × | × | × | × | × | ΑN | × | ¥ | × | ¥ | ¥ | ΑĀ | ¥ | ¥ | Ϋ́ | Ϋ́ | Ν | NA | ¥ | ž | ¥ |
| | | | PVC | × | × | × | × | × | × | ΝΑ | × | ΝA | × | × | × | NA | × | ¥ | AM | Ϋ́ | Ϋ́ | ¥ | ž | ž | Ϋ́ |
| | | | RCCP | AM | ≥ | ≥ | 2 | ≥ | ≥ | 2 | 2 | ≥ | ≥ | ≥ | ≥ | 2 | ≥ | 2 | > | 100 | 100 | 100 | 100 | 100 | 100 |
| FO | Nominal Diameter in. | | | | 300 | 375 | 450 | 525 | 8 | 675 | 750 | 825 | 006 | 1050 | 1200 | 1350 | 1500 | 1650 | 1800 | 1950 | 2100 | 2250 | 2400 | 2550 | 2700 |

RCCP PVC CPVC X X NA NA

Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe
Polyvinyl Chloride Pipe
Corrugated Polyvinyl Chloride Pipe
Extra Strengt Polyvinyl Chloride Pipe
Extra Strengt Polyvinyl Chloride Pipe
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Revise the sixth paragraph of Article 550.06 of the Standard Specifications to read:

"PVC, PE and CPP pipes shall be joined according to the manufacturer's specifications."

Revise the first and second paragraphs of Article 550.08 of the Standard Specifications to read:

"550.08 Deflection Testing for Storm Sewers. All PVC, PE, and CPP storm sewers shall be tested for deflection not less than 30 days after the pipe is installed and the backfill compacted. The testing shall be performed in the presence of the Engineer.

For PVC, PE, and CPP storm sewers with diameters 24 in. (600 mm) or smaller, a mandrel drag shall be used for deflection testing. For PVC, PE, and CPP storm sewers with diameters over 24 in. (600 mm), deflection measurements other than by a mandrel shall be used."

Revise the fifth paragraph of Article 550.08 to read as follows.

"The outside diameter of the mandrel shall be 95 percent of the base inside diameter. For all PVC pipe the base inside diameter shall be defined using ASTM D 3034 methodology. For all PE and CPP pipe, the base inside diameter shall be defined as the average inside diameter based on the minimum and maximum tolerances specified in the corresponding ASTM or AASHTO material specifications."

Revise the first paragraph of Article 1040.03 of the Standard Specifications to read:

"1040.03 Polyvinyl Chloride (PVC) Pipe. Acceptance testing of PVC pipe and fittings shall be accomplished during the same construction season in which they are installed. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements."

Delete Articles 1040.03(e) and (f) of the Standard Specifications.

Revise Articles 1040.04(c) and (d) of the Standard Specifications to read:

- "(c) PE Profile Wall Pipe for Insertion Lining. The pipe shall be according to ASTM F 894. When used for insertion lining of pipe culverts, the pipe liner shall have a minimum pipe stiffness of 46 psi (317 kPa) at five percent deflection for nominal inside diameters of 42 in. (1050 mm) or less. For nominal inside diameters of greater than 42 in. (1050 mm), the pipe liner shall have a minimum pipe stiffness of 32.5 psi (225 kPa) at five percent deflection. All sizes shall have wall construction that presents essentially smooth internal and external surfaces.
- (d) PE Pipe with a Smooth Interior. The pipe shall be according to ASTM F 714 (DR 32.5) with a minimum cell classification of PE 335434 as defined in ASTM D 3350. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written

certification that the material meets those properties and the resin used to manufacture the pipe meets or exceeds the minimum cell classification requirements."

Add the following to Section 1040 of the Standard Specifications:

"1040.08 Polypropylene (PP) Pipe. Storage and handling shall be according to the manufacturer's recommendations, except in no case shall the pipe be exposed to direct sunlight for more than six months. Acceptance testing of the pipe shall be accomplished during the same construction season in which it is installed. The section properties shall be according to the manufacturer pre-submitted geometric properties on file with the Department. The manufacturer shall submit written certification that the material meets those properties. The pipe shall meet the following additional requirements.

- (a) Corrugated PP Pipe with a Smooth Interior. The pipe shall be according to AAHSTO M 330 (nominal size 12 to 60 in. (300 to 1500 mm)). The pipe shall be Type S or D.
- (b) Perforated Corrugated PP Pipe with A Smooth Interior. The pipe shall be according to AASHTO M 330 (nominal size – 12 to 60 in. (300 to 1500 mm)). The pipe shall be Type SP. In addition, the top centerline of the pipe shall be marked so that it is readily visible from the top of the trench before backfilling, and the upper ends of the slot perforations shall be a minimum of ten degrees below the horizontal."

PROGRESS PAYMENTS (BDE)

Effective: November 2, 2013

Revise Article 109.07(a) of the Standard Specifications to read:

"(a) Progress Payments. At least once each month, the Engineer will make a written estimate of the quantity of work performed in accordance with the contract, and the value thereof at the contract unit prices. The amount of the estimate approved as due for payment will be vouchered by the Department and presented to the State Comptroller for payment. No amount less than \$1000.00 will be approved for payment other than the final payment.

Progress payments may be reduced by liens filed pursuant to Section 23(c) of the Mechanics' Lien Act, 770 ILCS 60/23(c).

If a Contractor or subcontractor has defaulted on a loan issued under the Department's Disadvantaged Business Revolving Loan Program (20 ILCS 2705/2705-610), progress payments may be reduced pursuant to the terms of that loan agreement. In such cases, the amount of the estimate related to the work performed by the Contractor or subcontractor, in default of the loan agreement, will be offset, in whole or in part, and vouchered by the Department to the Working Capital Revolving Fund or designated escrow account. Payment for the work shall be considered as issued and received by the Contractor or subcontractor on the date of the offset voucher. Further, the amount of the offset voucher shall be a credit against the Department's obligation to pay the Contractor, the Contractor's obligation to pay the subcontractor, and the Contractor's or subcontractor's total loan indebtedness to the Department. The offset shall continue until such time as the entire loan indebtedness is satisfied. The Department will notify the Contractor and Fund Control Agent in a timely manner of such offset. The Contractor or subcontractor shall not be entitled to additional payment in consideration of the offset.

The failure to perform any requirement, obligation, or term of the contract by the Contractor shall be reason for withholding any progress payments until the Department determines that compliance has been achieved."

REINFORCEMENT BARS (BDE)

Effective: November 1, 2013

Revise the first and second paragraphs of Article 508.05 of the Standard Specifications to read:

"508.05 Placing and Securing. All reinforcement bars shall be placed and tied securely at the locations and in the configuration shown on the plans prior to the placement of concrete. Manual welding of reinforcement may only be permitted or precast concrete products as indicated in the current Bureau of Materials and Physical Research Policy Memorandum "Quality Control / Quality Assurance Program for Precast Concrete Products", and for precast prestressed concrete products as indicated in the Department's current "Manual for Fabrication of Precast Prestressed Concrete Products". Reinforcement bars shall not be placed by sticking or floating into place or immediately after placement of the concrete.

Bars shall be tied at all intersections, except where the center to center dimension is less than 1 ft (300 mm) in each direction, in which case alternate intersections shall be tied. Molded plastic clips may be used in lieu of wire to secure bar intersections, but shall not be permitted in horizontal bar mats subject to construction foot traffic or to secure longitudinal bar laps. Plastic clips shall adequately secure the reinforcement bars, and shall permit the concrete to flow through and fully encase the reinforcement. Plastic clips may be recycled plastic, and shall meet the approval of the Engineer. The number of ties as specified shall be doubled for lap splices at the stage construction line of concrete bridge decks when traffic is allowed on the first completed stage during the pouring of the second stage."

Revise the fifth paragraph of Article 508.05 of the Standard Specifications to read:

"Supports for reinforcement in bridge decks shall be metal. For all other concrete construction the supports shall be metal or plastic. Metal bar supports shall be made of cold-drawn wire, or other approved material and shall be either epoxy coated, galvanized or plastic tipped. When the reinforcement bars are epoxy coated, the metal supports shall be epoxy coated. Plastic supports may be recycled plastic. Supports shall be provided in sufficient number and spaced to provide the required clearances. Supports shall adequately support the reinforcement bars, and shall permit the concrete to flow through and fully encase the reinforcement. The legs of supports shall be spaced to allow an opening that is a minimum 1.33 times the nominal maximum aggregate size used in the concrete. Nominal maximum aggregate size is defined as the largest sieve which retains any of the aggregate sample particles. All supports shall meet the approval of the Engineer."

Revise the first sentence of the eighth paragraph of Article 508.05 of the Standard Specifications to read:

"Epoxy coated reinforcement bars shall be tied with plastic coated wire, epoxy coated wire, or molded plastic clips where allowed."

Add the following sentence to the end of the first paragraph of Article 508.06(c) of the Standard Specifications:

"In addition, the total slip of the bars within the splice sleeve of the connector after loading in tension to 30 ksi (207 MPa) and relaxing to 3 ksi (20.7 MPa) shall not exceed 0.01 in. (254 microns)."

Revise Article 1042.03(d) of the Standard Specifications to read:

"(d) Reinforcement and Accessories: The concrete cover over all reinforcement shall be within ±1/4 in. (±6 mm) of the specified cover.

Welded wire fabric shall be accurately bent and tied in place.

Miscellaneous accessories to be cast into the concrete or for forming holes and recesses shall be carefully located and rigidly held in place by bolts, clamps, or other effective means. If paper tubes are used for vertical dowel holes, or other vertical holes which require grouting, they shall be removed before transportation to the construction site."

SIDEWALK, CORNER, OR CROSSWALK CLOSURE (BDE)

Effective: January 1, 2015 Revised: April 1, 2015

Revise the first sentence of Article 1106.02(m) of the Supplemental Specifications to read:

"The top and bottom panels shall have alternating white and orange stripes sloping 45 degrees on both sides."

WEEKLY DBE TRUCKING REPORTS (BDE)

Effective: June 2, 2012

The Contractor shall provide a weekly report of Disadvantaged Business Enterprise (DBE) trucks hired by the Contractor or subcontractors (i.e. not owned by the Contractor or subcontractors) that are used on the jobsite; or used for the delivery and/or removal of equipment/material to and from the jobsite. The jobsite shall also include offsite locations, such as plant sites or storage sites, when those locations are used solely for this contract.

The report shall be submitted on the form provided by the Department within ten business days following the reporting period. The reporting period shall be Monday through Sunday for each week reportable trucking activities occur. The report shall be submitted to the Engineer and a copy shall be provided to the district EEO Officer.

Any costs associated with providing weekly DBE trucking reports shall be considered as included in the contract unit prices bid for the various items of work involved and no additional compensation will be allowed.

WORKING DAYS (BDE)

Effective: January 1, 2002

The Contractor shall complete the work within 20 working days.

SEGMENTAL CONCRETE BLOCK WALL

Effective: January 7, 1999 Revised: October 30, 2012

<u>Description.</u> This work shall consist of furnishing the design computations, shop plans, materials, equipment and labor to construct a Segmental Concrete Block Retaining Wall to the limits shown on the plans.

General. The wall shall consist of a leveling pad, precast concrete blocks (either dry-cast or wet cast), select fill and, if required by the design, soil reinforcement. The wall shall be designed and constructed according to the lines, grades, and dimensions shown on the contract plans and approved shop plans.

<u>Submittals</u>. The wall supplier shall submit design computations and shop plans to the Engineer according to Article 1042.03(b) of the Standard Specifications. No work or ordering of materials for the structure shall be done by the Contractor until the submittal has been approved in writing by the Engineer. The shop plans shall be sealed by an Illinois Licensed Structural Engineer and shall include all details, dimensions, quantities, and cross sections necessary to construct the wall and shall include, but not be limited to, the following items:

- (a) Plan, elevation, and cross section sheet(s) for each wall showing the following:
 - (1) A plan view of the wall indicating the offsets from the construction centerline to the first course of blocks at all changes in horizontal alignment. These shall be calculated using the offsets to the front face of the block shown on the contract plans and the suppliers proposed wall batter. The plan view shall indicate bottom (and top course of block when battered), the excavation and select fill limits as well as any soil reinforcing required by the design. The centerline of any drainage structure or pipe behind or passing through/under the wall shall also be shown.
 - (2) An elevation view of the wall, indicating the elevation and all steps in the top course of blocks along the length of the wall. The top of these blocks shall be at or above the theoretical top of block line shown on the contract plans. This view shall also show the steps and proposed top of leveling pad elevations as well as the finished grade line at the wall face specified on the contract plans. These leveling pad elevations shall be located at or below the theoretical top of leveling line shown on the contract plans. The location, size, and length of any soil reinforcing connected to the blocks shall be indicated.
 - (3) Typical cross section(s) showing the limits of the select fill, soil reinforcement if used in the design. The right-of-way limits shall be indicated as well as the proposed excavation, cut slopes, and the elevation relationship between existing ground conditions and proposed grades.
 - (4) All general notes required for constructing the wall.

- (b) All details for the leveling pads, including the steps, shall be shown. The theoretical top of the leveling pad shall either be below the anticipated frost depth or 1.5 ft. (450 mm) below the finished grade line at the wall face, whichever is greater; unless otherwise shown on the plans. The minimum leveling pad thickness shall be 6 in. (152 mm)
- (c) Cap blocks shall be used to cover the top of the standard block units. The top course of blocks and cap blocks shall be stepped to satisfy the top of block line shown on the contract plans.
- (d) All details of the block and/or soil reinforcement placement around all appurtenances located behind, on top of, or passing through the wall shall be clearly indicated. Any modifications to the design of these appurtenances to accommodate a particular design arrangement shall also be submitted.
- (e) All details of the blocks, including color and texture shall be shown. The exterior face shall preferably be straight, textured with a "split rock face" pattern, and dark gray in color unless otherwise stated on the plans.
- (f) All block types (standard, cap, corner, and radius turning blocks) shall be detailed showing all dimensions.
- (g) All blocks shall have alignment/connection devices such as shear keys, leading/trailing lips, or pins. The details for the connection devices between adjacent blocks and the block to soil reinforcement shall be shown. The block set back or face batter shall be limited to 20 degrees from vertical, unless otherwise shown by the plans.

Materials. The materials shall meet the following requirements:

- (a) Dry-Cast Concrete Block: Dry-cast concrete block proposed for use shall be pre-cast and produced according Article 1042.02 and the requirements of ASTM C1372 except as follows:
 - 1. Fly ash shall be according to Articles 1010.01 and 1010.02(b).
 - 2. Ground granulated blast-furnace slag shall be according to Articles 1010.01 and 1010.05.
 - 3. Aggregate shall be according to Articles 1003.02 and 1004.02, with the exception of gradation.
 - 4. Water shall be according to Section 1002.
 - Testing for freeze-thaw durability will not be required. However, unsatisfactory field performance as determined by the Department will be cause to prohibit the use of the block on Department projects.

- (b) Wet-cast Concrete Block: Wet-cast concrete block proposed for use shall be pre-cast and produced according to Section 1020 and Article 1042.02. The concrete shall be Class PC with a minimum compressive strength of at least 3000 psi (31 MPa) at 28 days.
- (c) Select fill: The select fill, defined as the material placed in the reinforced volume behind the wall, shall be according to Sections 1003 and 1004 of the Standard Specifications and the following:
 - (1) Select Fill Gradation. Either a coarse aggregate or a fine aggregate may be used. For coarse aggregate, gradations CA 6 thru CA 16 may be used. For fine aggregate, gradations FA 1, FA 2, or FA 20 may be used.
 - (2) Select Fill Quality. The coarse or fine aggregate shall have a maximum sodium sulfate (Na₂SO₄) loss of 15 percent according to Illinois Modified AASHTO T 104.
 - (3) Select Fill Internal Friction Angle. The effective internal friction angle for the coarse or fine aggregate shall be a minimum 34 degrees according to AASHTO T 236 on samples compacted to 95 percent density according to Illinois Modified AASHTO T 99. The AASHTO T 296 test with pore pressure measurement may be used in lieu of AASHTO T 236. If the vendor's design uses a friction angle higher than 34 degrees, as indicated on the approved shop drawings, this higher value shall be taken as the minimum required.
 - (4) Select Fill and Geosynthetic Reinforcing. When geosynthetic reinforcing is used, the select fill pH shall be 4.5 to 9.0 according to Illinois Modified AASHTO T 289.
 - (5) Test Frequency. Prior to start of construction, the Contractor shall provide internal friction angle and pH test results to show the select fill material meets the specification requirements. However, the pH will be required only when geosynthetic reinforcing is used. All test results shall not be older than 12 months. In addition, a sample of select fill material will be obtained for testing and approval by the Department. Thereafter, the minimum frequency of sampling and testing at the jobsite will be one per 40,000 tons (36,300 metric tons) of select fill material. Testing to verify the internal friction angle will only be required when the wall design utilizes a minimum effective internal friction angle greater than 34 degrees, or when crushed coarse aggregate is not used.

When a fine aggregate is selected, the rear of all block joints shall be covered by a non-woven needle punch geotextile filter material according to Article 1080.05 of the Standard Specifications and shall have a minimum permeability according to ASTM D4491 of 0.008 cm/sec. All fabric overlaps shall be 6 in. (150 mm) and non-sewn. As an alternative to the geotextile, a coarse aggregate shall be placed against the back face of the blocks to create a minimum 12 in. (300 mm) wide continuous gradation filter to prevent the select fill material from passing through the block joints.

(d) Leveling pad: The material shall be either Class SI concrete according to Article 1020.04 or compacted coarse aggregate according to Articles 1004.04, (a) and (b). The compacted coarse aggregate gradation shall be CA 6 or CA 10. (e) Soil Reinforcement: If soil reinforcement is required by the approved design, the Contractor shall submit a manufacturer's certification for the soil reinforcement properties which equals or exceeds those required in the design computations. The soil reinforcement shall be manufactured from high density polyethylene (HDPE) uniaxial or polypropylene biaxial resins or high tenacity polyester fibers with a PVC coating, stored between -20 and 140° F (-29 and 60° C). The following standards shall be used in determining and demonstrating the soil reinforcement capacities:

ASTM D638 Test Method for Tensile Properties of Plastic

ASTM D1248 Specification for Polyethylene Plastics Molding and Extrusion Materials

ASTM D4218 Test Method for Carbon Black Content in Polyethylene Compounds

ASTM D5262 Test Method for Evaluating the Unconfined Tension Creep Behavior of Geosynthetics

GG1-Standard Test Method for Geogrid Rib Tensile Strength

GG2-Standard Test Method for Geogrid Junction Strength

GG4-Standard Practice for Determination of the Long Term Design Strength of Geogrid

GG5-Standard Practice for Evaluating Geogrid Pullout Behavior

<u>Design Criteria</u>. The design shall be according to AASHTO Specifications and commentaries for Earth Retaining Walls or FHWA Publication No. HI-95-038, SA-96-071 and SA-96-072. The wall supplier shall be responsible for all internal stability aspects of the wall design.

Internal stability design shall insure that adequate factors of safety against overturning and sliding are present at each level of block. If required by design, soil reinforcement shall be utilized and the loading at the block/soil reinforcement connection as well as the failure surface must be indicated. The calculations to determine the allowable load of the soil reinforcement and the factor of safety against pullout shall also be included. The analysis of settlement, bearing capacity, and overall slope stability are the responsibility of the Department.

External loads such as those applied through structure foundations, from traffic or railroads, slope surcharge etc., shall be accounted for in the internal stability design. The presence of all appurtenances behind, in front of, mounted upon, or passing through the wall volume such as drainage structures, utilities, structure foundation elements, or other items shall be accounted for in the internal stability design of the wall.

Construction Requirements. The Contractor shall obtain technical assistance from the supplier during wall erection to demonstrate proper construction procedures and shall include all costs related to this technical assistance in the unit price bid for this item.

The foundation material for the leveling pad and select fill volume shall be graded to the design elevation and compacted according to Article 205.05, except the minimum required compaction shall be 95 percent of the standard laboratory density. The Engineer will perform one density test per 1500 ft (450 m) of the entire length of foundation material through both cut and fill areas. Any foundation soils found to be unsuitable shall be removed and replaced as directed by the Engineer and shall be paid for according to Article 109.04.

The select fill lift placement shall closely follow the erection of each course of blocks. All aggregate shall be swept from the top of the block prior to placing the next block lift. If soil reinforcement is used, the select fill material shall be leveled and compacted before placing and attaching the soil reinforcement to the blocks. The soil reinforcement shall be pulled taut, staked in place, and select fill placed from the rear face of the blocks outward. The lift thickness shall be the lesser of 10 in. (255 mm) loose measurement or the proposed block height.

The select fill shall be compacted according to Article 205.05, except the minimum required compaction shall be 95 percent of the standard laboratory density. Compaction shall be achieved using a minimum of 3 passes of a lightweight mechanical tamper, roller, or vibratory system. The Engineer will perform one density test per 5000 cu yd (3800 cu m) and not less than one test per 2 ft (0.6m) of lift. The top 12 in. (300 mm) of backfill shall be a cohesive, impervious material capable of supporting vegetation, unless other details are specified on the plans.

The blocks shall be maintained in position as successive lifts are compacted along the rear face of the block. Vertical, horizontal, and rotational alignment tolerances shall not exceed 0.5 in. (12 mm) when measured along a 10 ft. (3 m) straight edge.

<u>Method of Measurement</u>. Segmental Concrete Block Wall will be measured by the square foot (square meter) of wall face from the top of block line to the theoretical top of the leveling pad for the length of the wall in a vertical plane, as shown on the contract plans.

Basis of Payment. This work will be paid for at the contract unit price per square foot (square meter) for SEGMENTAL CONCRETE BLOCK WALL.

REQUIRED CONTRACT PROVISIONS FEDERAL-AID CONSTRUCTION CONTRACTS

- General
- II. Nondiscrimination
- III. Nonsegregated Facilities
- IV. Davis-Bacon and Related Act Provisions
- V. Contract Work Hours and Safety Standards Act Provisions
- VI. Subletting or Assigning the Contract
- VII. Safety: Accident Prevention
- VIII. False Statements Concerning Highway Projects
- IX. Implementation of Clean Air Act and Federal Water Pollution Control Act
- X. Compliance with Governmentwide Suspension and Debarment Requirements
- XI. Certification Regarding Use of Contract Funds for Lobbying

ATTACHMENTS

A. Employment and Materials Preference for Appalachian Development Highway System or Appalachian Local Access Road Contracts (included in Appalachian contracts only)

I. GENERAL

1. Form FHWA-1273 must be physically incorporated in each construction contract funded under Title 23 (excluding emergency contracts solely intended for debris removal). The contractor (or subcontractor) must insert this form in each subcontract and further require its inclusion in all lower tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services).

The applicable requirements of Form FHWA-1273 are incorporated by reference for work done under any purchase order, rental agreement or agreement for other services. The prime contractor shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Form FHWA-1273 must be included in all Federal-aid design-build contracts, in all subcontracts and in lower tier subcontracts (excluding subcontracts for design services, purchase orders, rental agreements and other agreements for supplies or services). The design-builder shall be responsible for compliance by any subcontractor, lower-tier subcontractor or service provider.

Contracting agencies may reference Form FHWA-1273 in bid proposal or request for proposal documents, however, the Form FHWA-1273 must be physically incorporated (not referenced) in all contracts, subcontracts and lower-tier subcontracts (excluding purchase orders, rental agreements and other agreements for supplies or services related to a construction contract).

- 2. Subject to the applicability criteria noted in the following sections, these contract provisions shall apply to all work performed on the contract by the contractor's own organization and with the assistance of workers under the contractor's immediate superintendence and to all work performed on the contract by piecework, station work, or by subcontract.
- 3. A breach of any of the stipulations contained in these Required Contract Provisions may be sufficient grounds for withholding of progress payments, withholding of final payment, termination of the contract, suspension / debarment or any other action determined to be appropriate by the contracting agency and FHWA.
- 4. Selection of Labor: During the performance of this contract, the contractor shall not use convict labor for any purpose within the limits of a construction project on a Federal-aid highway unless it is labor performed by convicts who are on parole, supervised release, or probation. The term Federal-aid highway does not include roadways functionally classified as local roads or rural minor collectors.

II. NONDISCRIMINATION

The provisions of this section related to 23 CFR Part 230 are applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more. The provisions of 23 CFR Part 230 are not applicable to material supply, engineering, or architectural service contracts.

In addition, the contractor and all subcontractors must comply with the following policies: Executive Order 11246, 41 CFR 60, 29 CFR 1625-1627, Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The contractor and all subcontractors must comply with: the requirements of the Equal Opportunity Clause in 41 CFR 60-1.4(b) and, for all construction contracts exceeding \$10,000, the Standard Federal Equal Employment Opportunity Construction Contract Specifications in 41 CFR 60-4.3.

Note: The U.S. Department of Labor has exclusive authority to determine compliance with Executive Order 11246 and the policies of the Secretary of Labor including 41 CFR 60, and 29 CFR 1625-1627. The contracting agency and the FHWA have the authority and the responsibility to ensure compliance with Title 23 USC Section 140, the Rehabilitation Act of 1973, as amended (29 USC 794), and Title VI of the Civil Rights Act of 1964, as amended, and related regulations including 49 CFR Parts 21, 26 and 27; and 23 CFR Parts 200, 230, and 633.

The following provision is adopted from 23 CFR 230, Appendix A, with appropriate revisions to conform to the U.S. Department of Labor (US DOL) and FHWA requirements.

- 1. Equal Employment Opportunity: Equal employment opportunity (EEO) requirements not to discriminate and to take affirmative action to assure equal opportunity as set forth under laws, executive orders, rules, regulations (28 CFR 35, 29 CFR 1630, 29 CFR 1625-1627, 41 CFR 60 and 49 CFR 27) and orders of the Secretary of Labor as modified by the provisions prescribed herein, and imposed pursuant to 23 U.S.C. 140 shall constitute the EEO and specific affirmative action standards for the contractor's project activities under this contract. The provisions of the Americans with Disabilities Act of 1990 (42 U.S.C. 12101 et seq.) set forth under 28 CFR 35 and 29 CFR 1630 are incorporated by reference in this contract. In the execution of this contract, the contractor agrees to comply with the following minimum specific requirement activities of EEO:
- a. The contractor will work with the contracting agency and the Federal Government to ensure that it has made every good faith effort to provide equal opportunity with respect to all of its terms and conditions of employment and in their review of activities under the contract.
- b. The contractor will accept as its operating policy the following statement:
 - "It is the policy of this Company to assure that applicants are employed, and that employees are treated during employment, without regard to their race, religion, sex, color, national origin, age or disability. Such action shall include: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship, pre-apprenticeship, and/or onthe-job training."
- 2. EEO Officer: The contractor will designate and make known to the contracting officers an EEO Officer who will have the responsibility for and must be capable of effectively administering and promoting an active EEO program and who must be assigned adequate authority and responsibility to do so.

- 3. Dissemination of Policy: All members of the contractor's staff who are authorized to hire, supervise, promote, and discharge employees, or who recommend such action, or who are substantially involved in such action, will be made fully cognizant of, and will implement, the contractor's EEO policy and contractual responsibilities to provide EEO in each grade and classification of employment. To ensure that the above agreement will be met, the following actions will be taken as a minimum:
- a. Periodic meetings of supervisory and personnel office employees will be conducted before the start of work and then not less often than once every six months, at which time the contractor's EEO policy and its implementation will be reviewed and explained. The meetings will be conducted by the EEO Officer.
- b. All new supervisory or personnel office employees will be given a thorough indoctrination by the EEO Officer, covering all major aspects of the contractor's EEO obligations within thirty days following their reporting for duty with the contractor.
- c. All personnel who are engaged in direct recruitment for the project will be instructed by the EEO Officer in the contractor's procedures for locating and hiring minorities and women.
- d. Notices and posters setting forth the contractor's EEO policy will be placed in areas readily accessible to employees, applicants for employment and potential employees.
- e. The contractor's EEO policy and the procedures to implement such policy will be brought to the attention of employees by means of meetings, employee handbooks, or other appropriate means.
- **4. Recruitment:** When advertising for employees, the contractor will include in all advertisements for employees the notation: "An Equal Opportunity Employer." All such advertisements will be placed in publications having a large circulation among minorities and women in the area from which the project work force would normally be derived.
- a. The contractor will, unless precluded by a valid bargaining agreement, conduct systematic and direct recruitment through public and private employee referral sources likely to yield qualified minorities and women. To meet this requirement, the contractor will identify sources of potential minority group employees, and establish with such identified sources procedures whereby minority and women applicants may be referred to the contractor for employment consideration.
- b. In the event the contractor has a valid bargaining agreement providing for exclusive hiring hall referrals, the contractor is expected to observe the provisions of that agreement to the extent that the system meets the contractor's compliance with EEO contract provisions. Where implementation of such an agreement has the effect of discriminating against minorities or women, or obligates the contractor to do the same, such implementation violates Federal nondiscrimination provisions.
- c. The contractor will encourage its present employees to refer minorities and women as applicants for employment. Information and procedures with regard to referring such applicants will be discussed with employees.
- **5. Personnel Actions:** Wages, working conditions, and employee benefits shall be established and administered, and personnel actions of every type, including hiring, upgrading, promotion, transfer, demotion, layoff, and termination, shall be taken without regard to race, color, religion, sex, national origin, age or disability. The following procedures shall be followed:
- a. The contractor will conduct periodic inspections of project sites to insure that working conditions and employee facilities do not indicate discriminatory treatment of project site personnel.
- b. The contractor will periodically evaluate the spread of wages paid within each classification to determine any evidence of discriminatory wage practices.
- c. The contractor will periodically review selected personnel actions in depth to determine whether there is evidence of discrimination. Where evidence is found, the contractor will promptly take corrective action. If

the review indicates that the discrimination may extend beyond the actions reviewed, such corrective action shall include all affected persons.

d. The contractor will promptly investigate all complaints of alleged discrimination made to the contractor in connection with its obligations under this contract, will attempt to resolve such complaints, and will take appropriate corrective action within a reasonable time. If the investigation indicates that the discrimination may affect persons other than the complainant, such corrective action shall include such other persons. Upon completion of each investigation, the contractor will inform every complainant of all of their avenues of appeal.

6. Training and Promotion:

- a. The contractor will assist in locating, qualifying, and increasing the skills of minorities and women who are applicants for employment or current employees. Such efforts should be aimed at developing full journey level status employees in the type of trade or job classification involved.
- b. Consistent with the contractor's work force requirements and as permissible under Federal and State regulations, the contractor shall make full use of training programs, i.e., apprenticeship, and on-the-job training programs for the geographical area of contract performance. In the event a special provision for training is provided under this contract, this subparagraph will be superseded as indicated in the special provision. The contracting agency may reserve training positions for persons who receive welfare assistance in accordance with 23 U.S.C. 140(a).
- c. The contractor will advise employees and applicants for employment of available training programs and entrance requirements for each.
- d. The contractor will periodically review the training and promotion potential of employees who are minorities and women and will encourage eligible employees to apply for such training and promotion.
- **7. Unions:** If the contractor relies in whole or in part upon unions as a source of employees, the contractor will use good faith efforts to obtain the cooperation of such unions to increase opportunities for minorities and women. Actions by the contractor, either directly or through a contractor's association acting as agent, will include the procedures set forth below:
- a. The contractor will use good faith efforts to develop, in cooperation with the unions, joint training programs aimed toward qualifying more minorities and women for membership in the unions and increasing the skills of minorities and women so that they may qualify for higher paying employment.
- b. The contractor will use good faith efforts to incorporate an EEO clause into each union agreement to the end that such union will be contractually bound to refer applicants without regard to their race, color, religion, sex, national origin, age or disability.
- c. The contractor is to obtain information as to the referral practices and policies of the labor union except that to the extent such information is within the exclusive possession of the labor union and such labor union refuses to furnish such information to the contractor, the contractor shall so certify to the contracting agency and shall set forth what efforts have been made to obtain such information.
- d. In the event the union is unable to provide the contractor with a reasonable flow of referrals within the time limit set forth in the collective bargaining agreement, the contractor will, through independent recruitment efforts, fill the employment vacancies without regard to race, color, religion, sex, national origin, age or disability; making full efforts to obtain qualified and/or qualifiable minorities and women. The failure of a union to provide sufficient referrals (even though it is obligated to provide exclusive referrals under the terms of a collective bargaining agreement) does not relieve the contractor from the requirements of this paragraph. In the event the union referral practice prevents the contractor from meeting the obligations pursuant to Executive Order 11246, as amended, and these special provisions, such contractor shall immediately notify the contracting agency.

- 8. Reasonable Accommodation for Applicants / Employees with Disabilities: The contractor must be familiar with the requirements for and comply with the Americans with Disabilities Act and all rules and regulations established there under. Employers must provide reasonable accommodation in all employment activities unless to do so would cause an undue hardship.
- 9. Selection of Subcontractors, Procurement of Materials and Leasing of Equipment: The contractor shall not discriminate on the grounds of race, color, religion, sex, national origin, age or disability in the selection and retention of subcontractors, including procurement of materials and leases of equipment. The contractor shall take all necessary and reasonable steps to ensure nondiscrimination in the administration of this contract.
- a. The contractor shall notify all potential subcontractors and suppliers and lessors of their EEO obligations under this contract.
- b. The contractor will use good faith efforts to ensure subcontractor compliance with their EEO obligations.

10. Assurance Required by 49 CFR 26.13(b):

- a. The requirements of 49 CFR Part 26 and the State DOT's U.S. DOT-approved DBE program are incorporated by reference.
- b. The contractor or subcontractor shall not discriminate on the basis of race, color, national origin, or sex in the performance of this contract. The contractor shall carry out applicable requirements of 49 CFR Part 26 in the award and administration of DOT-assisted contracts. Failure by the contractor to carry out these requirements is a material breach of this contract, which may result in the termination of this contract or such other remedy as the contracting agency deems appropriate.
- 11. Records and Reports: The contractor shall keep such records as necessary to document compliance with the EEO requirements. Such records shall be retained for a period of three years following the date of the final payment to the contractor for all contract work and shall be available at reasonable times and places for inspection by authorized representatives of the contracting agency and the FHWA.
 - a. The records kept by the contractor shall document the following:
- (1) The number and work hours of minority and nonminority group members and women employed in each work classification on the project;
 - (2) The progress and efforts being made in cooperation with unions, when applicable, to increase employment opportunities for minorities and women; and
 - (3) The progress and efforts being made in locating, hiring, training, qualifying, and upgrading minorities and women;
- b. The contractors and subcontractors will submit an annual report to the contracting agency each July for the duration of the project, indicating the number of minority, women, and non-minority group employees currently engaged in each work classification required by the contract work. This information is to be reported on Form FHWA-1391. The staffing data should represent the project work force on board in all or any part of the last payroll period preceding the end of July. If on-the-job training is being required by special provision, the contractor will be required to collect and report training data. The employment data should reflect the work force on board during all or any part of the last payroll period preceding the end of July.

III. NONSEGREGATED FACILITIES

This provision is applicable to all Federal-aid construction contracts and to all related construction subcontracts of \$10,000 or more.

The contractor must ensure that facilities provided for employees are provided in such a manner that segregation on the basis of race, color,

religion, sex, or national origin cannot result. The contractor may neither require such segregated use by written or oral policies nor tolerate such use by employee custom. The contractor's obligation extends further to ensure that its employees are not assigned to perform their services at any location, under the contractor's control, where the facilities are segregated. The term "facilities" includes waiting rooms, work areas, restaurants and other eating areas, time clocks, restrooms, washrooms, locker rooms, and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing provided for employees. The contractor shall provide separate or singleuser restrooms and necessary dressing or sleeping areas to assure privacy between sexes.

IV. Davis-Bacon and Related Act Provisions

This section is applicable to all Federal-aid construction projects exceeding \$2,000 and to all related subcontracts and lower-tier subcontracts (regardless of subcontract size). The requirements apply to all projects located within the right-of-way of a roadway that is functionally classified as Federal-aid highway. This excludes roadways functionally classified as local roads or rural minor collectors, which are exempt. Contracting agencies may elect to apply these requirements to other projects.

The following provisions are from the U.S. Department of Labor regulations in 29 CFR 5.5 "Contract provisions and related matters" with minor revisions to conform to the FHWA-1273 format and FHWA program requirements.

1. Minimum wages

a. All laborers and mechanics employed or working upon the site of the work, will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the contractor and such laborers and mechanics.

Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph 1.d. of this section; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period, are deemed to be constructively made or incurred during such weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR 5.5(a)(4). Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: Provided, That the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph 1.b. of this section) and the Davis-Bacon poster (WH-1321) shall be posted at all times by the contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

b.(1) The contracting officer shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefore only when the following criteria have been met:

- (i) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (ii) The classification is utilized in the area by the construction industry; and
- (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (2) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- (3) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Wage and Hour Administrator for determination. The Wage and Hour Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.
- (4) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs 1.b.(2) or 1.b.(3) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.
- c. Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- d. If the contractor does not make payments to a trustee or other third person, the contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, Provided, That the Secretary of Labor has found, upon the written request of the contractor, that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

2. Withholding

The contracting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the contractor under this contract, or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments or advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the contractor or any subcontractor the full amount of wages required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work, all or part of the wages required by the contract, the contracting agency may, after written notice to the contractor, take such

action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

3. Payrolls and basic records

- a. Payrolls and basic records relating thereto shall be maintained by the contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address, and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in section 1(b)(2)(B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid. Whenever the Secretary of Labor has found under 29 CFR 5.5(a)(1)(iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in section 1(b)(2)(B) of the Davis-Bacon Act, the contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, and that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.
- (1) The contractor shall submit weekly for each week in which any contract work is performed a copy of all payrolls to the contracting agency. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under 29 CFR 5.5(a)(3)(i), except that full social security numbers and home addresses shall not be included on weekly transmittals. Instead the payrolls shall only need to include an individually identifying number for each employee (e.g., the last four digits of the employee's social security number). The required weekly payroll information may be submitted in any form desired. Optional Form WH-347 is available for this purpose Wage and Hour Division Web http://www.dol.gov/esa/whd/forms/wh347instr.htm or its successor site. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors. Contractors and subcontractors shall maintain the full social security number and current address of each covered worker, and shall provide them upon request to the contracting agency for transmission to the State DOT, the FHWA or the Wage and Hour Division of the Department of Labor for purposes of an investigation or audit of compliance with prevailing wage requirements. It is not a violation of this section for a prime contractor to require a subcontractor to provide addresses and social security numbers to the prime contractor for its own records, without weekly submission to the contracting agency..
- (2) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify the following:
 - (i) That the payroll for the payroll period contains the information required to be provided under §5.5 (a)(3)(ii) of Regulations, 29 CFR part 5, the appropriate information is being maintained under §5.5 (a)(3)(i) of Regulations, 29 CFR part 5, and that such information is correct and complete;
 - (ii) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in Regulations, 29 CFR part 3;

- (iii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
- (3) The weekly submission of a properly executed certification set forth on the reverse side of Optional Form WH–347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph 3.b.(2) of this section.
- (4) The falsification of any of the above certifications may subject the contractor or subcontractor to civil or criminal prosecution under section 1001 of title 18 and section 231 of title 31 of the United States Code.
- c. The contractor or subcontractor shall make the records required under paragraph 3.a. of this section available for inspection, copying, or transcription by authorized representatives of the contracting agency, the State DOT, the FHWA, or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the contractor or subcontractor fails to submit the required records or to make them available, the FHWA may, after written notice to the contractor, the contracting agency or the State DOT, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

4. Apprentices and trainees

a. Apprentices (programs of the USDOL).

Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Office of Apprenticeship Training, Employer and Labor Services, or with a State Apprenticeship Agency recognized by the Office, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Office of Apprenticeship Training, Employer and Labor Services or a State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above, shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the contractor's or subcontractor's registered program shall be observed.

Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeymen hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination.

In the event the Office of Apprenticeship Training, Employer and Labor Services, or a State Apprenticeship Agency recognized by the Office, withdraws approval of an apprenticeship program, the contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

b. Trainees (programs of the USDOL).

Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration.

The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration.

Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed.

In the event the Employment and Training Administration withdraws approval of a training program, the contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- c. Equal employment opportunity. The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the equal employment opportunity requirements of Executive Order 11246, as amended, and 29 CFR part 30.
- d. Apprentices and Trainees (programs of the U.S. DOT).

Apprentices and trainees working under apprenticeship and skill training programs which have been certified by the Secretary of Transportation as promoting EEO in connection with Federal-aid highway construction programs are not subject to the requirements of paragraph 4 of this Section IV. The straight time hourly wage rates for apprentices and trainees under such programs will be established by the particular programs. The ratio of apprentices and trainees to journeymen shall not be greater than permitted by the terms of the particular program.

- **5. Compliance with Copeland Act requirements.** The contractor shall comply with the requirements of 29 CFR part 3, which are incorporated by reference in this contract.
- **6. Subcontracts.** The contractor or subcontractor shall insert Form FHWA-1273 in any subcontracts and also require the subcontractors to include Form FHWA-1273 in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.
- **7. Contract termination: debarment.** A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for

debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

- **8. Compliance with Davis-Bacon and Related Act requirements.** All rulings and interpretations of the Davis-Bacon and Related Acts contained in 29 CFR parts 1, 3, and 5 are herein incorporated by reference in this contract.
- **9. Disputes concerning labor standards.** Disputes arising out of the labor standards provisions of this contract shall not be subject to the general disputes clause of this contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the contractor (or any of its subcontractors) and the contracting agency, the U.S. Department of Labor, or the employees or their representatives.

10. Certification of eligibility.

- a. By entering into this contract, the contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- b. No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of section 3(a) of the Davis-Bacon Act or 29 CFR 5.12(a)(1).
- c. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

V. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT

The following clauses apply to any Federal-aid construction contract in an amount in excess of \$100,000 and subject to the overtime provisions of the Contract Work Hours and Safety Standards Act. These clauses shall be inserted in addition to the clauses required by 29 CFR 5.5(a) or 29 CFR 4.6. As used in this paragraph, the terms laborers and mechanics include watchmen and guards.

- 1. Overtime requirements. No contractor or subcontractor contracting for any part of the contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any workweek in which he or she is employed on such work to work in excess of forty hours in such workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times the basic rate of pay for all hours worked in excess of forty hours in such workweek.
- 2. Violation; liability for unpaid wages; liquidated damages. In the event of any violation of the clause set forth in paragraph (1.) of this section, the contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such District or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in paragraph (1.) of this section, in the sum of \$10 for each calendar day on which such individual was required or permitted to work in excess of the standard workweek of forty hours without payment of the overtime wages required by the clause set forth in paragraph (1.) of this section.
- 3. Withholding for unpaid wages and liquidated damages. The FHWA or the contacting agency shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any moneys payable on account of work performed by the contractor or subcontractor under any such

contract or any other Federal contract with the same prime contractor, or any other federally-assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in paragraph (2.) of this section.

4. Subcontracts. The contractor or subcontractor shall insert in any subcontracts the clauses set forth in paragraph (1.) through (4.) of this section and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in paragraphs (1.) through (4.) of this section.

VI. SUBLETTING OR ASSIGNING THE CONTRACT

This provision is applicable to all Federal-aid construction contracts on the National Highway System.

- 1. The contractor shall perform with its own organization contract work amounting to not less than 30 percent (or a greater percentage if specified elsewhere in the contract) of the total original contract price, excluding any specialty items designated by the contracting agency. Specialty items may be performed by subcontract and the amount of any such specialty items performed may be deducted from the total original contract price before computing the amount of work required to be performed by the contractor's own organization (23 CFR 635.116).
- a. The term "perform work with its own organization" refers to workers employed or leased by the prime contractor, and equipment owned or rented by the prime contractor, with or without operators. Such term does not include employees or equipment of a subcontractor or lower tier subcontractor, agents of the prime contractor, or any other assignees. The term may include payments for the costs of hiring leased employees from an employee leasing firm meeting all relevant Federal and State regulatory requirements. Leased employees may only be included in this term if the prime contractor meets all of the following conditions:
- (1) the prime contractor maintains control over the supervision of the day-to-day activities of the leased employees;
 - (2) the prime contractor remains responsible for the quality of the work of the leased employees;
- (3) the prime contractor retains all power to accept or exclude individual employees from work on the project; and
- (4) the prime contractor remains ultimately responsible for the payment of predetermined minimum wages, the submission of payrolls, statements of compliance and all other Federal regulatory requirements.
- b. "Specialty Items" shall be construed to be limited to work that requires highly specialized knowledge, abilities, or equipment not ordinarily available in the type of contracting organizations qualified and expected to bid or propose on the contract as a whole and in general are to be limited to minor components of the overall contract.
- 2. The contract amount upon which the requirements set forth in paragraph (1) of Section VI is computed includes the cost of material and manufactured products which are to be purchased or produced by the contractor under the contract provisions.
- 3. The contractor shall furnish (a) a competent superintendent or supervisor who is employed by the firm, has full authority to direct performance of the work in accordance with the contract requirements, and is in charge of all construction operations (regardless of who performs the work) and (b) such other of its own organizational resources (supervision, management, and engineering services) as the contracting officer determines is necessary to assure the performance of the contract.

- 4. No portion of the contract shall be sublet, assigned or otherwise disposed of except with the written consent of the contracting officer, or authorized representative, and such consent when given shall not be construed to relieve the contractor of any responsibility for the fulfillment of the contract. Written consent will be given only after the contracting agency has assured that each subcontract is evidenced in writing and that it contains all pertinent provisions and requirements of the prime contract.
- 5. The 30% self-performance requirement of paragraph (1) is not applicable to design-build contracts; however, contracting agencies may establish their own self-performance requirements.

VII. SAFETY: ACCIDENT PREVENTION

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

- 1. In the performance of this contract the contractor shall comply with all applicable Federal, State, and local laws governing safety, health, and sanitation (23 CFR 635). The contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions as it determines, or as the contracting officer may determine, to be reasonably necessary to protect the life and health of employees on the job and the safety of the public and to protect property in connection with the performance of the work covered by the contract.
- 2. It is a condition of this contract, and shall be made a condition of each subcontract, which the contractor enters into pursuant to this contract, that the contractor and any subcontractor shall not permit any employee, in performance of the contract, to work in surroundings or under conditions which are unsanitary, hazardous or dangerous to his/her health or safety, as determined under construction safety and health standards (29 CFR 1926) promulgated by the Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C. 3704).
- 3. Pursuant to 29 CFR 1926.3, it is a condition of this contract that the Secretary of Labor or authorized representative thereof, shall have right of entry to any site of contract performance to inspect or investigate the matter of compliance with the construction safety and health standards and to carry out the duties of the Secretary under Section 107 of the Contract Work Hours and Safety Standards Act (40 U.S.C.3704).

VIII. FALSE STATEMENTS CONCERNING HIGHWAY PROJECTS

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

In order to assure high quality and durable construction in conformity with approved plans and specifications and a high degree of reliability on statements and representations made by engineers, contractors, suppliers, and workers on Federal-aid highway projects, it is essential that all persons concerned with the project perform their functions as carefully, thoroughly, and honestly as possible. Willful falsification, distortion, or misrepresentation with respect to any facts related to the project is a violation of Federal law. To prevent any misunderstanding regarding the seriousness of these and similar acts, Form FHWA-1022 shall be posted on each Federal-aid highway project (23 CFR 635) in one or more places where it is readily available to all persons concerned with the project:

18 U.S.C. 1020 reads as follows:

"Whoever, being an officer, agent, or employee of the United States, or of any State or Territory, or whoever, whether a person, association, firm, or corporation, knowingly makes any false statement, false representation, or false report as to the character, quality, quantity, or cost of the material used or to be used, or the quantity or quality of the work performed or to be performed, or the cost thereof in connection with the submission of plans, maps, specifications, contracts, or costs of construction on any highway or related project submitted for approval to the Secretary of Transportation; or

Whoever knowingly makes any false statement, false representation, false report or false claim with respect to the character, quality, quantity, or cost of any work performed or to be performed, or materials furnished or to be furnished, in connection with the construction of any highway or related project approved by the Secretary of Transportation; or

Whoever knowingly makes any false statement or false representation as to material fact in any statement, certificate, or report submitted pursuant to provisions of the Federal-aid Roads Act approved July 1, 1916, (39 Stat. 355), as amended and supplemented;

Shall be fined under this title or imprisoned not more than 5 years or both."

IX. IMPLEMENTATION OF CLEAN AIR ACT AND FEDERAL WATER POLLUTION CONTROL ACT

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts.

By submission of this bid/proposal or the execution of this contract, or subcontract, as appropriate, the bidder, proposer, Federal-aid construction contractor, or subcontractor, as appropriate, will be deemed to have stipulated as follows:

- 1. That any person who is or will be utilized in the performance of this contract is not prohibited from receiving an award due to a violation of Section 508 of the Clean Water Act or Section 306 of the Clean Air Act.
- 2. That the contractor agrees to include or cause to be included the requirements of paragraph (1) of this Section X in every subcontract, and further agrees to take such action as the contracting agency may direct as a means of enforcing such requirements.

X. CERTIFICATION REGARDING DEBARMENT, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION

This provision is applicable to all Federal-aid construction contracts, design-build contracts, subcontracts, lower-tier subcontracts, purchase orders, lease agreements, consultant contracts or any other covered transaction requiring FHWA approval or that is estimated to cost \$25,000 or more — as defined in 2 CFR Parts 180 and 1200.

1. Instructions for Certification – First Tier Participants:

- a. By signing and submitting this proposal, the prospective first tier participant is providing the certification set out below.
- b. The inability of a person to provide the certification set out below will not necessarily result in denial of participation in this covered transaction. The prospective first tier participant shall submit an explanation of why it cannot provide the certification set out below. The certification or explanation will be considered in connection with the department or agency's determination whether to enter into this transaction. However, failure of the prospective first tier participant to furnish a certification or an explanation shall disqualify such a person from participation in this transaction.
- c. The certification in this clause is a material representation of fact upon which reliance was placed when the contracting agency determined to enter into this transaction. If it is later determined that the prospective participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the contracting agency may terminate this transaction for cause of default.
- d. The prospective first tier participant shall provide immediate written notice to the contracting agency to whom this proposal is submitted if any time the prospective first tier participant learns that its certification was erroneous when submitted or has become erroneous by reason of changed circumstances.
- e. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded,"

as used in this clause, are defined in 2 CFR Parts 180 and 1200. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).

- f. The prospective first tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency entering into this transaction.
- g. The prospective first tier participant further agrees by submitting this proposal that it will include the clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transactions," provided by the department or contracting agency, entering into this covered transaction, without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.
- h. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.
- i. Nothing contained in the foregoing shall be construed to require the establishment of a system of records in order to render in good faith the certification required by this clause. The knowledge and information of the prospective participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.
- j. Except for transactions authorized under paragraph (f) of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency may terminate this transaction for cause or default.

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2. Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion – First Tier Participants:

- a. The prospective first tier participant certifies to the best of its knowledge and belief, that it and its principals:
- (1) Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency;
- (2) Have not within a three-year period preceding this proposal been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property;
- (3) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with

commission of any of the offenses enumerated in paragraph (a)(2) of this certification; and

- (4) Have not within a three-year period preceding this application/proposal had one or more public transactions (Federal, State or local) terminated for cause or default.
- b. Where the prospective participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

2. Instructions for Certification - Lower Tier Participants:

(Applicable to all subcontracts, purchase orders and other lower tier transactions requiring prior FHWA approval or estimated to cost \$25,000 or more - 2 CFR Parts 180 and 1200)

- a. By signing and submitting this proposal, the prospective lower tier is providing the certification set out below.
- b. The certification in this clause is a material representation of fact upon which reliance was placed when this transaction was entered into. If it is later determined that the prospective lower tier participant knowingly rendered an erroneous certification, in addition to other remedies available to the Federal Government, the department, or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.
- c. The prospective lower tier participant shall provide immediate written notice to the person to which this proposal is submitted if at any time the prospective lower tier participant learns that its certification was erroneous by reason of changed circumstances.
- d. The terms "covered transaction," "debarred," "suspended," "ineligible," "participant," "person," "principal," and "voluntarily excluded," as used in this clause, are defined in 2 CFR Parts 180 and 1200. You may contact the person to which this proposal is submitted for assistance in obtaining a copy of those regulations. "First Tier Covered Transactions" refers to any covered transaction between a grantee or subgrantee of Federal funds and a participant (such as the prime or general contract). "Lower Tier Covered Transactions" refers to any covered transaction under a First Tier Covered Transaction (such as subcontracts). "First Tier Participant" refers to the participant who has entered into a covered transaction with a grantee or subgrantee of Federal funds (such as the prime or general contractor). "Lower Tier Participant" refers any participant who has entered into a covered transaction with a First Tier Participant or other Lower Tier Participants (such as subcontractors and suppliers).
- e. The prospective lower tier participant agrees by submitting this proposal that, should the proposed covered transaction be entered into, it shall not knowingly enter into any lower tier covered transaction with a person who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this covered transaction, unless authorized by the department or agency with which this transaction originated.
- f. The prospective lower tier participant further agrees by submitting this proposal that it will include this clause titled "Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion-Lower Tier Covered Transaction," without modification, in all lower tier covered transactions and in all solicitations for lower tier covered transactions exceeding the \$25,000 threshold.
- g. A participant in a covered transaction may rely upon a certification of a prospective participant in a lower tier covered transaction that is not debarred, suspended, ineligible, or voluntarily excluded from the covered transaction, unless it knows that the certification is erroneous. A participant is responsible for ensuring that its principals are not suspended, debarred, or otherwise ineligible to participate in covered transactions. To verify the eligibility of its principals, as well as the eligibility of any lower tier prospective participants, each participant may, but is not required to, check the Excluded Parties List System website (https://www.epls.gov/), which is compiled by the General Services Administration.
- h. Nothing contained in the foregoing shall be construed to require establishment of a system of records in order to render in good faith the

certification required by this clause. The knowledge and information of participant is not required to exceed that which is normally possessed by a prudent person in the ordinary course of business dealings.

i. Except for transactions authorized under paragraph e of these instructions, if a participant in a covered transaction knowingly enters into a lower tier covered transaction with a person who is suspended, debarred, ineligible, or voluntarily excluded from participation in this transaction, in addition to other remedies available to the Federal Government, the department or agency with which this transaction originated may pursue available remedies, including suspension and/or debarment.

* * * * *

Certification Regarding Debarment, Suspension, Ineligibility and Voluntary Exclusion--Lower Tier Participants:

- 1. The prospective lower tier participant certifies, by submission of this proposal, that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participating in covered transactions by any Federal department or agency.
- 2. Where the prospective lower tier participant is unable to certify to any of the statements in this certification, such prospective participant shall attach an explanation to this proposal.

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XI. CERTIFICATION REGARDING USE OF CONTRACT FUNDS FOR LOBBYING

This provision is applicable to all Federal-aid construction contracts and to all related subcontracts which exceed \$100,000 (49 CFR 20).

- 1. The prospective participant certifies, by signing and submitting this bid or proposal, to the best of his or her knowledge and belief, that:
- a. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
- b. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions.
- 2. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by 31 U.S.C. 1352. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
- 3. The prospective participant also agrees by submitting its bid or proposal that the participant shall require that the language of this certification be included in all lower tier subcontracts, which exceed \$100,000 and that all such recipients shall certify and disclose accordingly.

MINIMUM WAGES FOR FEDERAL AND FEDERALLY ASSISTED CONSTRUCTION CONTRACTS

This project is funded, in part, with Federal-aid funds and, as such, is subject to the provisions of the Davis-Bacon Act of March 3, 1931, as amended (46 Sta. 1494, as amended, 40 U.S.C. 276a) and of other Federal statutes referred to in a 29 CFR Part 1, Appendix A, as well as such additional statutes as may from time to time be enacted containing provisions for the payment of wages determined to be prevailing by the Secretary of Labor in accordance with the Davis-Bacon Act and pursuant to the provisions of 29 CFR Part 1. The prevailing rates and fringe benefits shown in the General Wage Determination Decisions issued by the U.S. Department of Labor shall, in accordance with the provisions of the foregoing statutes, constitute the minimum wages payable on Federal and federally assisted construction projects to laborers and mechanics of the specified classes engaged on contract work of the character and in the localities described therein.

General Wage Determination Decisions, modifications and supersedes decisions thereto are to be used in accordance with the provisions of 29 CFR Parts 1 and 5. Accordingly, the applicable decision, together with any modifications issued, must be made a part of every contract for performance of the described work within the geographic area indicated as required by an applicable DBRA Federal prevailing wage law and 29 CFR Part 5. The wage rates and fringe benefits contained in the General Wage Determination Decision shall be the minimum paid by contractors and subcontractors to laborers and mechanics.