

CONSTRUCTION CONTRACT

THIS CONSTRUCTION CONTRACT (“Contract”) is made and entered into on the date of the last city signature set forth below, by and between the **City of Littleton**, a municipal corporation within the State of Colorado (the “city”), and **E&M Concrete LLC**, a Colorado limited liability company (the “Contractor”). The Contractor and the city are referred to as a “Party” or collectively the “Parties.”

RECITALS AND REPRESENTATIONS

WHEREAS the city issued a solicitation for bids no. IFB-0006-2024, and the Contractor submitted a bid to perform the work; and

WHEREAS the city has elected to accept the Contractor’s bid.

NOW, THEREFORE, in consideration of the mutual covenants herein set forth, the Parties agree as follows:

1.1 **Contract Documents and Exhibits.** The term “Contract Documents” consist of this Contract together with the following:

Exhibit A	Scope of Work
Exhibit B	Bid Schedule
Exhibit C	General Conditions
Exhibit D	Construction Contract Forms
Exhibit E	Drawings and Specifications & Special Conditions

All exhibits referred to in this Contract are attached hereto and are, by reference, incorporated herein for all purposes. In the event any matter, term, provision, or condition that is the subject of this Contract requires clarification or is in dispute, or is the subject of a difference of opinion, the purpose and intent of the Contract shall be first ascertained by reference to the Contract Documents in their entirety. In the event of any dispute or differences between the respective documents that constitute the Contract Documents, then the Contractor shall secure the written instructions from the city before proceeding with the performance of the services affected by such conflicts, omissions or discrepancies.

1.2 **Project.** The Contractor shall commence and complete the Scope of Work (“Work”), **Exhibit A**, in accordance with the Contract Documents, as defined herein. The Contractor agrees to perform and complete the Work in a proper and workmanlike manner, consistent with the highest standards of professional and construction practices and in full compliance with, and as required by or pursuant to, this Contract, and with the greatest economy, efficiency, and expedition consistent therewith, with only new, undamaged and first quality equipment, materials and supplies. The Contractor shall, at its own expense, furnish all labor, materials, tools, supplies, machinery, utilities, permits, licenses, and other equipment that may be necessary for the completion of the Work, as outlined in the Contract

Documents. No work shall commence until a Notice to Proceed has been issued, and if required by the city, until after approval by the city council in accordance with the city charter and city code.

- 1.3 **Commencement and Completion of the Project.** The Contractor understands and agrees that all Work required under this Contract shall be fully completed, as set forth in the Contract Documents, within **90** calendar days of the date of the Notice to Proceed. The Contractor acknowledges and understands that it is an essential term of this Contract that Contractor maintain a rate of progress in the Work that will result in completion of the Work in accordance with the Contract Documents, and to that end, Contractor agrees to proceed with all due diligence to complete the Work in a timely manner in accordance with the Contract Documents.
- 1.4 **Contract Price.** The city accepts the Contractor's bid for the estimated quantities and costs as set forth in the Bid Schedule, **Exhibit B**, in the total amount of **\$1,024,033.00**. The city shall make payment(s) to Contractor in the manner and at such times as set forth in the General Conditions of such amounts as are required by the Contract Documents. The city shall deduct and retain five (5) percent from the total amount of each approved invoice, including Change Orders. The city may also deduct in addition to retainage as stated above, the additional amount(s) of any and all outstanding claims pursuant to Colorado Revised Statute ("C.R.S.") §38-26-107 from each approved invoice. The city has appropriated sufficient funds for the completion of this work.
- 1.5 **Payments to Constitute Current Expenditures.**
 - 1.5.1 Notwithstanding any other term, provision, or condition herein, all financial obligations of the city are contingent on funds for that purpose being appropriated, budgeted and otherwise made available by the city council. The city's obligations under the Contract shall not constitute a multiple-fiscal year direct or indirect debt or other financial obligation of the city within the meaning of Article X, Section 20 of the Colorado Constitution.
 - 1.5.2 Further, pursuant to 103.6(2) of Article 91, Title 24, C.R.S., no Change Order, Amendment, or other form of order or directive by the city which requires additional compensable work to be performed, and which work causes the aggregate amount payable under this Contract to exceed the amount appropriated for the original Contract, shall be executed, or shall work be performed by the Contractor, unless the city provides written assurances to the Contractor that lawful appropriations to cover the costs of such additional work have been made or unless such work is covered under a remedy-granting provision of this Contract. For purposes of this paragraph, "remedy-granting provision" shall be defined as set forth in C.R.S. §24-91-103.6(4).
- 1.6 **Confidentiality.** Notwithstanding any provision in the Contract Documents to the contrary, the city is obligated to comply with the Colorado Open Records Act (C.R.S. §§24-72-101 *et seq.*), which may require the city to disclose all or a portion of

communications relating to the Contract, or terms of same, or of any transaction under the Contract, and other related matters. The Contractor shall familiarize itself with the Colorado Open Records Act. In no event shall the city be liable to the Contractor for the disclosure of all or a portion of communications, or relating documents, or electronic imaging, including all documents and exhibits that may be included as part of this Contract.

1.7 Insurance.

1.7.1 The Contractor shall not commence work, and shall not allow any subcontractor to commence work, until it has obtained all insurance required herein and such insurance has been approved by city. For the duration of the Contract, the Contractor must maintain the insurance coverage required in this section. The city's acceptance of a certificate of insurance or other proof of insurance that does not comply with all insurance requirements set forth in this Contract shall not act as a waiver of the Contractor's breach of Contract or of any of the city's rights or remedies under this Contract.

1.7.2 The Contractor shall not be relieved of any liability, claims, demands, or other obligations assumed pursuant to the Contract Documents by reason of its failure to procure or maintain insurance, or by reason of its failure to procure or maintain insurance in sufficient amounts, durations, or types.

1.7.3 The Contractor shall procure and maintain at its own cost and shall cause each subcontractor of the Contractor to procure and maintain at its own cost (or shall insure the activity of Contractor's subcontractors in Contractor's own policy with respect to), the minimum insurance coverages listed below. Such coverages shall be procured and maintained with forms and insurers acceptable to the city. All coverages shall be continuously maintained from the date of commencement of the Work. In the case of any claims-made policy, the necessary retroactive dates and extended reporting periods shall be procured to maintain such continuous coverage.

1. Workers' Compensation and Employers' Liability insurance with minimum limits of FIVE HUNDRED THOUSAND DOLLARS (\$500,000) each accident, FIVE HUNDRED THOUSAND DOLLARS (\$500,000) disease - policy limit, and FIVE HUNDRED THOUSAND DOLLARS (\$500,000) disease - each employee. The policy shall cover obligations imposed by the Workers' Compensation Act of Colorado and any other applicable laws for any employee engaged in the performance of Work.
2. Commercial General Liability insurance with minimum combined single limits of ONE MILLION DOLLARS (\$1,000,000) each occurrence and TWO MILLION DOLLARS (\$2,000,000) aggregate. The policy shall be applicable to all premises and operations. The policy shall include coverage for bodily injury, broad form property damage (including completed operations),

personal injury (including coverage for contractual and employee acts), blanket contractual, independent contractors, products, and completed operations. The policy shall include coverage for explosion, collapse, and underground hazards. The policy shall contain a severability of interests provision.

3. Comprehensive Automobile Liability insurance with a minimum combined single limit for bodily injury and property damage of ONE MILLION DOLLARS (\$1,000,000) with respect to each of Contractor's owned, hired and/or non-owned vehicles assigned to or used in performance of the Work. The policy shall contain a severability of interests provision.

- 1.7.4 The policies required above, except for the Workers' Compensation and Employers' Liability insurance, shall be endorsed to include the City of Littleton as additional insured. Every policy required above shall be primary insurance, and any insurance carried by the city, its officers, or its employees, shall be excess and not contributory insurance to that provided by Contractor. The additional insured endorsement for the Commercial General Liability insurance required above shall not contain any exclusion for bodily injury or property damage arising from completed operations. The Contractor shall be solely responsible for any deductible losses under each of the policies required above.
- 1.7.5 Certificates of insurance shall be completed by the Contractor's insurance company as evidence that policies providing the required coverages, conditions, and minimum limits are in full force and effect, and shall be subject to review and approval by the city. The certificate cannot contain "endeavor to" language in the portion of the certificate addressing cancellation. The city reserves the right to request and receive a certified copy of any policy and any endorsement thereto.
- 1.7.6 The coverages afforded under the policies shall not be cancelled, terminated or materially changed until at least thirty (30) days' prior written notice has been given to the city. Failure on the part of the Contractor to procure or maintain policies providing the required coverages, conditions, and minimum limits shall constitute a material breach of Contract upon which the city may immediately terminate the Contract, or at its discretion may procure or renew any such policy or any extended reporting period thereto and may pay any and all premiums in connection therewith, and all monies so paid by the city shall be repaid by Contractor to the city upon demand, or the city may offset the cost of the premiums against any monies due to Contractor from the city.
- 1.7.7 The Parties hereto understand and agree that the city is relying on, and does not waive or intend to waive by any provision of this Contract, the monetary limitations (presently \$387,000 per person and \$1,093,000 per occurrence) or any other rights, immunities, and protections provided by the Colorado Governmental Immunity

Act, C.R.S. § 24-10-101 et seq., as from time to time amended, or otherwise available to the city, its officers, or its employees.

- 1.8 **Taxes.** The City of Littleton is not subject to taxation. The Contractor shall not invoice the city for any state, federal or local taxes whatsoever. Upon written notification by the city, the Contractor shall reimburse the city in a timely manner for any taxes erroneously paid by the city.
- 1.9 **Waiver of Breach.** A waiver by any Party to the Contract or the breach of any term or provision of the Contract shall not operate or be construed as a waiver of any subsequent breach by either Party.
- 1.10 **No Third-Party Beneficiaries.** It is expressly understood and agreed that enforcement of the terms and conditions of this Contract, and all rights of action relating to such enforcement, shall be strictly reserved to the city and the Contractor and nothing contained in this Contract shall give or allow any such claim or right of action to any other third-party on this Contract. It is the express intention of the city and the Contractor that any person other than the city or the Contractor receiving services or benefits under this Contract shall be deemed to be an incidental beneficiary only.
- 1.11 **Independent Contractor.** The Contractor shall perform the Work as an independent contractor and shall not be deemed by virtue of this Contract to have entered into any partnership, joint venture, employer/employee or other relationship with the city other than as a contracting party and independent contractor.
- 1.12 **Non-Discrimination.** In connection with the performance of the Work, the Contractor will not discriminate against any employee or applicant for employment because of race, color, religion, national origin, ethnicity, citizenship, immigration status, sex, gender, age, sexual orientation, gender identity or gender expression, marital status, source of income, military status, protective hairstyle, genetic information, pregnancy, or disability, or any other status protected by applicable law. The Contractor will take affirmative action to ensure applicants are employed, and employees are treated during employment, without regard to their race, color, religion, national origin, ethnicity, citizenship, immigration status, sex, gender, age, sexual orientation, gender identity or gender expression, marital status, source of income, military status, protective hairstyle, genetic information, pregnancy, disability, or any other status protected by applicable law. Such action shall include, but not be limited to the following: 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.
- 1.13 **Indemnification.** The Contractor agrees to investigate, defend, indemnify and hold harmless the city, its officers, employees, insurers, and self-insurance pool, from and against all liability, claims and demands on account of any losses, injuries, and damages, including but not limited to, alleged personal injury claims, and/or death claims, or property damage claims, or errors and omissions, which arise solely out of the Contractor's and/or

any of its agents' officers or employees performance of the Contractor's obligations under this Contract. The city is prohibited by Article XI, Section 1, Colorado Constitution, from indemnifying any individual or entity. Therefore, the city does not indemnify the Contractor, successors, or assigns under this Contract. Notwithstanding the foregoing, nothing herein is intended to constitute a covenant, promise, or agreement to indemnify and hold harmless the city from any liability or damages directly caused by or attributable to the city's own negligence, nor is anything herein intended to be nor may be construed as a waiver of the immunities, protections, or limitations on damages provided to the City by the Colorado Governmental Immunity Act, C.R.S. §§24-10-101 et seq., as it may from time to time be amended.

- 1.14 **Governing Law and Venue.** The Contract shall be governed by the laws of the State of Colorado. Venue for any action arising under the Contract or for the enforcement of the Contract shall be in the appropriate court for Arapahoe County, Colorado.
- 1.15 **Additional Documents or Action.** The Parties agree to execute any additional documents and to take any additional action that is necessary to carry out this Contract.
- 1.16 **Binding Effect.** This Contract shall inure to the benefit of, and be binding upon, the Parties, their respective legal representatives, successors, heirs, and assigns; provided, however, that nothing in this paragraph shall be construed to permit the assignment of this Contract except as otherwise expressly authorized herein.
- 1.17 **Integration, Amendment, and Severability.** This Contract represents the entire agreement between the Parties and there are no oral or collateral agreements or understandings. This Contract may be amended only by an instrument in writing signed by the Parties or as otherwise provided herein. If any other provision of this Contract is held invalid or unenforceable, no other provision shall be affected by such holding, and all of the remaining provisions of this Contract shall continue in full force and effect.
- 1.18 **Binding Authority.** The Contractor represents and affirms that the signature page hereof accurately states the full legal name of Contractor (whether as a corporation, partnership, limited liability company, sole proprietorship, or other), contains all requisite signature(s) on behalf of Contractor, has been properly acknowledged by attestation, notary acknowledgment, or both, and in all other respects is effective to bind Contractor, in accordance with all applicable statutes, regulations, resolutions, rules, bylaws, agreements, or similar sources of authority or limitation. This Contract may be executed in counterpart(s), each of which shall be deemed to be an original, and all of which, taken together, shall constitute one instrument.
- 1.19 **Subject to Legislative Approval and Compliance with Law.** The Contractor acknowledges and agrees that if a Change Order is required under the terms of the Contract, the city shall not incur any liability whatsoever for claims of payment, compensation, damages, or adjustment of any kind by the Contractor due to any delays for the required approvals and execution under Section 1.3 of the General Conditions, **Exhibit C**. The Contractor further acknowledges and agrees that this Contract's execution may be

contingent upon approval by the city council, in compliance with all applicable provisions of the city charter and city code. The city shall not incur any liability whatsoever if this Contract is not approved by city council.

1.20 **Notices.** All notices required under this Contract shall be in writing and shall be sent by registered or certified mail, return receipt requested, to the addresses of the Parties herein set forth. A Party may change its mailing address by giving written notice of such change of address to other Party.

Notice to city:	City of Littleton City Manager 2255 West Berry Avenue Littleton, CO 80120
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Notice to Contractor:	E&M Concrete LLC 615 East 77 th Avenue Denver, CO 80229
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1.21 **Electronic Signatures and Electronic Records.** The Contractor consents to the use of electronic signatures by the city. The Contract, and any other documents requiring a signature hereunder, may be signed electronically by the city in the manner specified by the city. The Parties agree not to deny the legal effect or enforceability of the Contract solely because it is in electronic form or because an electronic record was used in its formation. The Parties agree not to object to the admissibility of the Contract in the form of an electronic record, or a paper copy of an electronic document, or a paper copy of a document bearing an electronic signature, on the ground that it is an electronic record or electronic signature or that it is not in its original form or is not an original.

DATED this ____ day of _____, 2024.

CITY OF LITTLETON, COLORADO

ATTEST

Kyle Schlachter
MAYOR

Colleen Norton
CITY CLERK

APPROVED AS TO FORM:

Reid Betzing
CITY ATTORNEY

CONTRACTOR:
E&M Concrete LLC



Erick Espinoza
Owner/President

Date

Exhibit A Scope of Work

A. SCOPE OF WORK AND TECHNICAL REQUIREMENTS:

This project consists of furnishing all labor, equipment, and some materials necessary to remove, repair or replace significantly damaged concrete throughout the City of Littleton. The anticipated work includes concrete curb, gutter, sidewalks, cross pans, and curb ramps, as well as asphalt patching as needed and landscape restoration in order to restore adjacent landscaping to pre-existing or better conditions.

The Contractor shall also be responsible for traffic control. Some work will occur on the Colorado Department of Transportation (“CDOT”) right-of-way and Santa Fe Drive (US 85) where lane closure durations are restricted.

The Contractor shall be responsible for notifying affected businesses, tenants, and property owners prior to mobilization, and shall be responsible for coordinating access to property and use of property for staging as applicable.

Work shall be completed within 90 days of receiving the Notice to Proceed from the city.

B. SUSTAINABILITY:

The city is committed to protecting the environment, and the health of the community and its employees, and city departments are directed to procure cost-competitive products and services that minimize resource consumption and negative impacts on the environment and human health. Unless otherwise expressly agreed in writing, the Contractor will, to the extent applicable, follow standards and recommendations of the United States Environmental Protection Agency Environmentally Preferable Purchasing (“EPP”) program, the Green Seal organization, and standards and practices specified by the U.S. Green Building Council, including the Leadership in Energy and Environmental Design (LEED) program, as applicable.

Exhibit B Bid Schedule

2024 MISCELLANEOUS CONCRETE CITY PROJECT NO. 24-05

ITEM NO.	ITEM	UNIT	ESTIMATED QUANTITY	UNIT COST	EXTENDED COST
202	REMOVAL OF CONCRETE	SY	5,989	\$18.00	\$ 107,802.00
202-00220	REMOVAL OF ASPHALT MAT	SY	3,069	\$24.00	\$ 73,656.00
202	REMOVAL OF DRIVEWAY RAMP	EA	4	\$1,300.00	\$ 5,200.00
208	EROSION CONTROL	LS	1	\$5,000.00	\$ 5,000.00
210	ADJUST MANHOLE	EA	20	\$1,000.00	\$ 20,000.00
210-04050	ADJUST VALVE BOX	EA	20	\$500.00	\$ 10,000.00
304-06007	AGGREGATE BASE COURSE (CLASS 6)	TON	2,711	\$35.00	\$ 94,885.00
403	HOT MIX ASPHALT (PATCHING)(ASPHALT)	TON	1,013	\$120.00	\$ 121,560.00
608-00010	CONCRETE CURB RAMP	SY	1,217	\$110.00	\$ 133,870.00
609	CURB, GUTTER, AND SIDEWALK TYPE 2 (SECTION M5)	SY	4,255	\$60.00	\$ 255,300.00
609	CROSSPAN	SY	516	\$110.00	\$ 56,760.00
626-00000	MOBILIZATION	LS	1	\$20,000.00	\$ 20,000.00
630-00016	TRAFFIC CONTROL	LS	1	\$20,000.00	\$ 20,000.00
700-70010	Force Account	F/A	1	\$ 100,000.00	\$ 100,000.00

TOTAL BID

\$ 1,024,033.00

TOTAL BID IN WRITTEN WORDS: One million twenty-four thousand thirty-three dollars and zero cents.



Exhibit C General Conditions

SECTION 1 SCOPE OF WORK

1.1. PLANS AND SPECIFICATIONS:

- 1.1.1. The Contractor shall perform all items of Work covered and stipulated in the Specifications, Bid Schedule, Contract, General Conditions and Special Provisions, together with any authorized alterations, Extra Work and Change Orders, all in accordance with the Plans. The Contractor shall furnish, unless otherwise provided in the Specifications and/or Special Provisions, all materials, implements, machinery, equipment, tools, supplies, transportation and labor necessary to perform and complete the Work.
- 1.1.2. The Contractor shall be responsible for taking all steps reasonably necessary to ascertain the nature and location of the Work, and the general and local conditions which can affect the Work or the cost of the Work. Failure by the Contractor to do so will not relieve it from responsibility for successfully performing Work without additional expense to the city. The city will not be responsible for any understanding or representations concerning conditions unless such understanding or representations are expressly stated in the Contract.

1.2. **SPECIAL WORK:** Should any construction or conditions which are not thoroughly stipulated or set forth by the Specifications be anticipated on any proposed Project, Special Conditions for such Work may be prepared and attached hereto as **Exhibit E**, and shall be considered as part of the Specifications, the same as though contained fully therein. Should any Special Conditions conflict with the Specifications, the Special Conditions will govern.

1.3. CHANGES AND INCREASED OR DECREASED QUANTITIES OF WORK:

- 1.3.1. Without invalidating the Contract, the Project Manager and/or city reserves and shall have the right, without notice to any Sureties, by written Change Order, to make any changes, from time to time, to the character and quantity of the Work, including but not limited to, the Drawings, Specifications, Plans or Addenda, as may be considered necessary or desirable to complete fully and acceptably the Work in a satisfactory manner. Such Change Order shall set forth with specificity the changed Work to be done and shall set forth any changes or extensions to the time of completion.

1.3.2. *Increase in Cost and Required Approvals.*

- i. Such Change Orders shall not increase the total cost of the Work, based on the original estimate of quantities and unit prices contained in the Bid Schedule, by more than 10% (ten percent) without the approval of the City of Littleton City Manager or authorized designee. Contractor shall be entitled to the cost of said increased units at the original price within the original bid, but not to an adjustment of unit price.
- ii. In the event said Change Order increases the total cost of the Contract based upon the unit price bid by more than 10% (ten percent), an equitable adjustment will be made and the Contract modified accordingly by a written Change Order, to be approved by the City of Littleton City Manager or authorized designee, and subject to city council approval; provided, however, that except for claims based on errors in the Contract, no claim for change hereunder will be allowed for cost incurred more than twenty (20) days before the Contractor gives written notice as herein required; and in the case of errors in the Contract for which the city is responsible, the adjustment will be increased costs, reasonably incurred by the Contractor in attempting to comply with such errors in the Contract.
- iii. Any Change Order or other amendment that increases the total cost of the Contract to be equal to or greater than five hundred thousand and 00/100 dollars (\$500,000.00) shall require the approval of city council.
- iv. In case a satisfactory adjustment in price cannot be reached for any item requiring a written Change Order, the city reserves the right to terminate the Contract as to said item as it applies to the terms in question and make such arrangements as may be deemed necessary to complete the Work.
- v. The Contractor shall require subcontractors to certify to the best of their knowledge and belief that the cost and pricing data submitted are accurate, complete, and current as of the date of execution, which date shall be as close as possible to the date of agreement on the negotiated price of the Change Order.
- vi. The Contractor shall not start Work on any alteration until the agreement, whether by Change Order or more formal amendment, setting forth the adjusted prices has been executed by the city and the Contractor, subject to all requirements of Title 1, Chapter 15 of the City of Littleton Code and the city's procurement policy. All changes or approvals for increasing the Work as required and authorized herein, shall be in written form and approved and signed by the city prior to the Work being done. All such writings and approvals shall be specific as to the nature of the Work and the quantities involved. Any Work performed without prior written approval of the city shall not be binding on the city.

1.3.3. *Field Order for Minor Changes.* The Project Manager ("Project Manager") may at any time, by issuing a Field Order, order minor changes in the Work not involving an increase

or decrease in the Contract amount and not involving a change in the time for completion. If the Contractor believes that any order for minor changes in the Work involves changes in the Contract amount or time for completion, the Contractor shall not proceed with the minor changes so ordered and shall within seven (7) days of the receipt of such order notify the Project Manager in writing of the estimate of the changes in the amount and time for completion. Such estimate shall thereafter be treated as a Change Order Request.

1.3.4. *Equitable Adjustment.*

- i. If the Contractor intends to assert a claim for an equitable adjustment under this Section, the Contractor shall, within 30 (thirty) days after receipt of a written Change Order or the furnishing of a written notice of requested changes by the Project Manager, submit to the Project Manager a written statement setting forth the general nature and monetary extent of such claim. No claim by the Contractor for an equitable adjustment hereunder will be allowed unless asserted as described above.
- ii. In the event the Contractor and the city are unable to agree upon the Contractor's entitlement to an equitable adjustment or upon the amount thereof, or in the event that it is in the best interest of the city to have the Work proceed pending negotiation of amount of an equitable adjustment, the city may direct the Contractor to perform the Work in accordance with the Change Order, direction, instruction, interpretation, or determination, with any Work price adjustments and progress payments for the Work to be determined on a Force Account basis in accordance with Section 7.6 of the General Conditions. The Contractor shall continue diligently to perform the Work in accordance with the city's order, direction, instruction, interpretation, or determination during negotiations with respect to the Contractor's entitlement to an equitable adjustment hereunder or to the amount of any Work price adjustment hereunder or to the amount or any Work price adjustment or time extension. The Contractor and the city may agree on certain aspects of an equitable adjustment and take those aspects out of operation of Force Account provisions.

1.3.5. *Payments for Change Orders.*

- i. Payment will not be made for Work or materials which are required under the Contract Documents and which are not specifically mentioned, indicated or otherwise provided for in the Bid Schedule, if, in the opinion of the Project Manager, the Work or materials are susceptible of classification under or reasonably inferred to be included. in the Bid Schedule.
- ii. In the event the Contractor is ordered to perform Work under this Section for which payments are not determined hereunder, which in the opinion of the city it is impracticable to have performed by the Contractor's own employees, the Contractor will, subject to the written approval of the Project Manager, be paid the actual cost of such Work and, in addition thereto, an amount of 10% (ten percent) of the actual costs to cover the Contractor's superintendence, administration and other overhead expenses. The terms and conditions of any subcontract which the Contractor may

propose to enter into in connection with Work under the provisions of this Section, shall be subject to the written approval of the city before such subcontract is executed.

- iii. In cases other than those described above, the city and the Contractor (on its own behalf and on behalf of its subcontractors) shall endeavor to negotiate a reasonable price and line adjustment in a Change Order on terms appropriate to the changed Work. The Contractor will be required to submit a sufficiently detailed price bid supported with sufficient documentation so that the city can determine that (1) the bid reflects all impacts on the Work from Work additions, deletions and modifications shown in the Change Order; (2) the proposed prices are set out in such a way that their reasonableness can be evaluated against prices based on adequate price competition, unit prices, established catalog or market prices of commercial items sold in substantial quantities to the general public, prices set by law or regulation, recognized published price lists and indices, independently developed cost estimate and other appropriate price comparisons; and (3) cost-increase provisions relating to Work changes are complied with, including but not limited to City of Littleton City Manager or city council approvals. If any prices or other aspects are conditional, such as on firm orders being made by a certain date or the occurrence or non-occurrence of an event, the Contractor shall identify these aspects in the Change Order Request. A negotiated Change Order shall set forth prices, scheduling requirements, time extensions and all costs of any nature arising out of the issuance of a Change Order except for those cost and time aspects explicitly reserved on the face of the Change Order.

- 1.3.6. *Claims for Concealed or Unknown Conditions.* If conditions are encountered at the site which are (1) subsurface or otherwise concealed physical conditions which differ materially from those indicated in the Contract Documents; or (2) unknown physical conditions of an unusual nature, which differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, then notice by the observing Party shall be given to the other Party promptly before conditions are disturbed and in no event later than seven (7) days after first observance of the conditions. Site conditions which an experienced and prudent contractor could have anticipated by visiting the site, familiarizing themselves with the local conditions under which the work is to be performed and correlating observations with the requirements of the Contract Documents, shall not be considered as claims for concealed or unknown conditions, nor shall the locations of utilities which differ from locations provided by the utility companies. The Project Manager will promptly investigate such conditions and, if they differ materially and cause an increase or decrease in the Contractor's cost of, or the required time for, performance of any part of the Work, will recommend an equitable adjustment in the cost and/or time. If the Project Manager determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Project Manager shall so notify the Contractor in writing, stating the reasons. Claims by either Party in opposition to such determination must be made within twenty-one (21) days after the Project Manager has given notice of the decision. If the city and Contractor cannot

agree on an adjustment in the cost and/or time, the adjustment shall be subject to further proceedings pursuant to Section 1.3.4 and Section 1.3.9 of the General Conditions, which shall apply to claims by either Party, notwithstanding language in said Sections that they apply only to claims brought by the Contractor.

- 1.3.7. *Inspection, Recordkeeping.* For any Change Orders, the Contractor shall maintain, and the city or the city's representatives shall have the right to examine books, records, documents and other evidence and accounting principles and practices sufficient to reflect properly all direct and indirect costs of whatever nature claimed to have been incurred and anticipated to be incurred for the performance of the Contract changes. At the request of the city, the Contractor shall submit any documents reasonably necessary to permit adequate evaluation of the cost or pricing data submitted including, but not limited to, computations, projections, price competition, catalog and market prices, etc. If inadequate or incomplete documentation is submitted, the city may refuse to complete negotiation until such a time that satisfactory documentation is submitted. The requirements of Section are in addition to other audit, inspection and record keeping provisions elsewhere in the Contract Documents.
- 1.3.8. Changes involving aggregate increases and decreases in excess of one hundred thousand dollars and 00/100 (\$100,000.00) shall be subject to the following:
- a. A change, defined for the purposes of this Section, involves aggregate increases and decreases in excess of one hundred thousand dollars and 00/100 (\$100,000.00) if the total value of Work affected, without regard to any increases or decreases, exceeds this amount. For example, a Change Order adding Work in the amount of seventy-five thousand dollars and 00/100 (\$75,000.00) and reducing Work in the amount of fifty-thousand dollars and 00/100 (\$50,000.00) will be considered to involve aggregate increases and decreases of \$125,000.00.
 - b. The Contractor shall submit, in support of all items not based upon unit prices or lump sum prices contained in the Contract or upon the established prices at which commercial items are sold in substantial quantities to the public, statements by vendors that the prices charged the Contractor are not greater than the prices charged by the respective vendors to their most favored customers for the same items in similar quantities.
 - c. Pricing shall be reduced accordingly, and the Contract shall be modified in writing accordingly to reflect such reduction, if any price (including profit and fee) negotiated in connection with any price adjustment was increased by any significant sums because:
 - (1) The Contractor furnished cost or pricing data which were not complete, accurate, or current as certified in the Contractor's pricing data; or

- (2) Adjustments or any subcontract provisions therein required, furnished costs or pricing data which were not complete, accurate, and current as certified in the subcontractor's pricing data.

Any reduction in the Contract price due to defective subcontractor data of a prospective subcontractor, when the subcontract was not subsequently awarded to such subcontractor, will be limited to the amount (plus applicable overhead and profit markup) by which the actual subcontract, was less than the prospective subcontract cost estimate submitted by the Contractor, provided the actual subcontract price was not affected by defective cost or pricing data; or the Contractor shall require subcontractors to certify to the best of their knowledge and belief that the cost and pricing data submitted are accurate, complete, and current as of the date of execution, which date shall be as close as possible to the date of agreement on the negotiated price of the Change Order.

- 1.3.9. In case a satisfactory adjustment in price cannot be reached for any item requiring a Change Order, the city reserves the right to terminate the Contract as to said item as it applies to the terms in question and make such arrangements as may be deemed necessary to complete the Work.

1.4. **OMITTED ITEMS:** The Project Manager may, in writing, order omitted from the Work any item other than Major Items, which are found by the Project Manager or city to be unnecessary to the Project and such omission shall not be a waiver of any condition of the Contract nor invalidate any of the provisions thereof. Major Items may be omitted by amendments to the Contract. The Contractor will be paid for all Work performed toward the completion of the item prior to such omission as provided in Section 7.5 of the General Conditions.

1.5. **EXTRA WORK:**

1.5.1. When additional Work is necessary for the proper completion of the Project for which no quantities or prices were given in the Contract, the same shall be called "Extra Work" and shall be performed by the Contractor when so directed in writing by the Project Manager. Extra Work shall be performed by the Contractor in accordance with these Specifications in a skillful and workmanlike manner and as may be directed by the Project Manager.

1.5.2. Prices for Extra Work shall be itemized and covered by a Change Order. Pricing shall be submitted by the Contractor and approved by the city prior to the actual starting of such Work, in accordance with Section 1.3 of the General Conditions. Should the Parties be unable to agree on unit prices for the Extra Work or if this method of pricing is impractical, the Project Manager may instruct the Contractor to proceed with the Work by day labor or Force Account as hereinafter provided in Section 7.6. of the General Conditions. Claims for Extra Work not authorized in writing by the Project Manager prior to the Work being performed will be rejected and the Contractor shall not be compensated for.

1.5.3. Extra Work shall not include materials, labor or equipment which is incidental or appurtenant to the Work indicated on the drawings and in the Specifications. Such Work

shall be completed and paid for as part of the Work to which it is appurtenant.

1.6.UNAUTHORIZED WORK: Work performed beyond the lines and grades shown on the Contract drawings, approved Work and Shop Drawings and Extra Work done without written authorization will be considered unauthorized work and the Contractor will receive no compensation therefore. If required by the city, unauthorized work shall be remedied, removed or replaced by the Contractor at the Contractor's expense. Upon failure of the Contractor to remedy, remove or replace unauthorized Work, the city may take action as provided in Section 2.11 of the General Conditions.

1.7.MAINTENANCE AND CONTROL OF TRAFFIC:

1.7.1. Unless the Contract specifically provides for the closing to traffic of any local road or highway while construction is in progress, such road or highway shall be kept open to all traffic by the Contractor. The Contractor shall also provide and maintain in a safe condition temporary approaches, crossings or intersections with roads and highways.

1.7.2. The Contractor will provide their own traffic control, including flagging, traffic control supervisor, and traffic control devices for the duration of the Project per the most current edition of the Manual on Uniform Traffic Control Devices ("MUTCD"). Traffic control plans will be required for city review and approval prior to commencement on Work.

1.7.3. The Contractor shall bear all expense of maintaining traffic over the section of road affected by the Work to be done under this Contract, and of constructing and maintaining such approaches, crossings, intersections and any accessory features without direct compensation, except as otherwise provided.

1.8.REMOVAL AND DISPOSAL OF STRUCTURES AND OBSTRUCTIONS: All structures or obstructions found on the site and shown on the Plans which are not to remain in place or which are not to be used in the new construction shall be removed as directed by the Project Manager. Unless specified in the Contract, this Work will not be paid for separately but will be included in the price bid for that portion of the Work requiring the removal of the obstruction. All material found on the site or removed therefrom shall become the property of the Contractor unless otherwise indicated. Materials determined by the Project Manager to be unsuitable for backfill shall be disposed of off the site at the Contractor's expense.

1.9.USE OF MATERIALS FOUND ON THE WORK:

1.9.1. The Contractor, with the approval of the Project Manager, may use in the proposed construction, any stone, sand, or gravel found on the site. The Contractor will not be paid for such excavation unless specifically stated in the Contract, and the Contractor shall replace with other suitable material, without compensation, all of that portion of the material so removed and used as was contemplated for use in the embankments or otherwise. If it was intended that any or all of the material so excavated and used was to have been wasted, then the Contractor will not be required to replace it. The Contractor

shall not excavate any material from the site which is not within the excavation as indicated by the slope and grade lines, without being authorized in writing by the Project Manager.

1.9.2. Specific job mix designs conforming to specifications for any Work shall be submitted for Project Manager approval within 10 (ten) days of the Notice to Proceed, or a minimum of seven (7) days prior to use of the material. This material approval applies to asphaltic concrete paving materials, concrete, aggregate base course, and fine grading material.

1.10. FINAL CLEAN UP:

1.10.1. During the Project's final cleanup, the Contractor shall remove from the site(s) all machinery, equipment, surplus and discarded materials, rubbish, temporary structures, and stumps or portions of trees. The streets and adjacent properties in the Project shall be repaired to as good or better condition than existed prior to construction. This shall include removal of all dirt or mud from streets and lawns. No extra payment shall be made for these items. The Contractor shall leave the site(s) in a neat and presentable condition.

1.10.2. The Contractor shall provide written notification to the Project Manager that the Work is complete and the site is ready for final inspection. If the Project Manager determines that the Work is not complete, they will immediately notify the Contractor in writing stating the reasons. If the Project Manager determines the Work is complete, the city will inspect the Work within seven (7) r days and prepare a final cleanup list. When the final cleanup list is completed by the Contractor and inspected by the Project Manager, the Project Manager will initiate the acceptance and final payment procedures as set forth in Section 7.9 of the General Conditions. The final cleanup shall be completed before the expiration of the Contract's term as set forth in the Contract Documents.

1.11. **DELAYS:** No payment, compensation, damages, or adjustment of any kind, other than extension of time if received in writing from the city shall be made to, or claimed by, the Contractor because of hindrances or delays from any cause in the commencement, prosecution, or completion of the Work, whether caused by the city or any other party and whether avoidable or unavoidable other than as set forth in a Change Order described fully above.

**SECTION 2
CONTROL OF THE WORK**

2.1. **AUTHORITY OF PROJECT MANAGER:** The Project Manager shall decide any and all questions which may arise as to the quality and acceptability of the materials furnished, the Work performed, the manner of performance and the rate of progress of the Work. The Project Manager shall decide all questions which may arise as to the interpretation of the Plans and Specifications, all questions as to acceptable fulfillment of the Contract, all disputes and mutual rights by the contractors if there be more than one contractor on the Work, and all questions as to compensation. The decision of the Project Manager shall be final and shall have executive authority to make effective such decisions and to enforce the Contractor to carry out all orders promptly.

2.2.PLANS AND SHOP DRAWINGS:

This Section 2.2 shall be included in all subcontracts hereunder at all times.

- 2.2.1. The Contractor shall bring discrepancies between different Plans, or between Plans and Specifications, or regulations and codes covering the Work to the attention of the Project Manager in writing. In the event such discrepancies exist and the Project Manager is not so notified, the Project Manager shall reserve the right to exercise sole arbitration authority. It is mutually agreed that all authorized alterations affecting the requirements and information given on the approved Plans shall be in writing and approved by the Project Manager.
- 2.2.2. The Plans will be supplemented by Shop Drawings as necessary to adequately control the Work or as specified. Shop Drawings are not part of the Contract Documents. Shop Drawings may consist of drawings, diagrams, illustrations, schedules, calculations, and other data prepared by the Contractor, subcontractor, manufacturer, supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated and/or installed in accordance with the Plans and Specifications. Any Work performed prior to the city's approval of Shop Drawings will be at the Contractor's risk and expense.
- 2.2.3. The Project Manager may request additional details and require the Contractor to make changes in the design which are necessary to conform to the provisions and intent of these Specifications without additional cost to the city.
- 2.2.4. Approval of the Shop Drawings by the Project Manager shall not be construed as a complete check and verification but will indicate that general conformance with the design concept and general compliance with the information given in the Contract has been achieved. Any information or action to be taken as set forth in the Shop Drawings is subject to the requirements of the Plans and Specifications. The Contractor shall be responsible for all dimensions and quantities shown on the Shop Drawings. The Project Manager shall be notified in writing and shall take appropriate action for any information in the Shop Drawings that deviates from the requirements of the Contract Documents.
- 2.2.5. Approval by the Project Manager of the Contractor's Shop Drawings shall not relieve the Contractor of its obligation to meet all requirements of the Plans and Specifications and shall not relieve the Contractor of its responsibility for the correctness of the Shop Drawings.
- 2.2.6. Five (5) sets of Shop Drawings shall be submitted to the Project Manager either in hard copy format or electronic format. No faxed copies will be accepted. After inspection, two sets will be returned to the Contractor; one for the Contractor's use and the other for the fabricator or supplier's use. Shop Drawings being returned will be stamped to indicate the following:
 - i) Shop Drawings approved for use in construction will have one of the following statements checked: Approved; No Exception Taken; or Approved as Noted; or

- ii) Shop Drawings to be corrected or redrawn and resubmitted for approval will have one of the following statements checked: Revise as Noted; Resubmit; or Rejected.

If Shop Drawings are returned for correction, corrections shall be made and the corrected drawings shall be resubmitted by the Contractor in the same manner as the first submittal. The time required for approval of each submittal will not exceed four (4) weeks after Shop Drawings are received by the Project Manager.

It is the intent that no more than two submittals will be required. If, however, additional submittals are required by actions of the Contractor, the additional time for Shop Drawing approval will be borne by the Contractor. If additional submittals are required, or if Shop Drawing approval is delayed by actions of the Project Manager, and if the Contractor's controlling operations are delayed or interfered with by reason of the delay in Shop Drawing reviews, an extension of time commensurate with the delay in completion of the Work thus caused will be granted as provided herein.

Specifications for the Shop Drawings:

- i) Electronic Shop Drawings and work drawings are preferred.
- ii) All manually-drafted Shop Drawings shall be 34 inches long and 22 inches wide overall. There shall be a two-inch margin on the left side of the sheet and one-half inch margin on the other three sides. A blank space, six inches by three inches, shall be left near the lower right-hand corner for an approval stamp. Computer drafted 11-inch by 17-inch drawings may be submitted.
 - a. Where design notes or catalogue cuts are required, they may be submitted on 8 1/2 inch by 11-inch sheets in lieu of the size mentioned above.
- ii) There shall be a title block in the lower right-hand corner of each sheet. The title block shall show the city's name, structure number, the location of the structure, and the contents of the sheet.
- iii) The Contract price will include the cost of furnishing all Shop Drawings. Shop Drawings and working drawings submitted to the Project Manager by the Contractor, subcontractor or any lower tier subcontractor pursuant to the Work, may be duplicated by the city and the city may use and disclose in any manner and for any purpose such Shop Drawings and working drawings delivered under this Contract.

2.3.OPERATING MANUALS AND PARTS LISTS: The Contractor shall submit four (4) complete operating manuals and parts lists to the Project Manager for all items of mechanical and electrical equipment incorporated into the Work.

2.4.AS-BUILT DRAWINGS: The Contractor shall maintain a set of drawings at the site, with all changes or deviations from the original drawings neatly marked thereon in brightly contrasting color. This shall be a separate set of drawings, not used for construction purposes, which shall be kept up-to-date as the job progresses and shall be made available for inspection by the

Project Manager at all times. Upon completion of the Contract, this set of drawings shall be delivered to the Project Manager.

2.5. CONFORMITY WITH PLANS AND ALLOWABLE DEVIATIONS: Finished surfaces shall conform with lines, grades, cross sections and dimensions shown on the approved Plans. Any deviation from the approved Plans and working drawings, as may be required by the demands of construction, will in all cases be determined by the Project Manager and authorized in writing.

2.6. COORDINATION OF SPECIFICATIONS, PLANS AND SPECIAL PROVISIONS: The Specifications, Plans, Special Provisions, and all supplementary Plans and documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be cooperative to describe and provide for a complete Work. In case of discrepancy, figured dimensions, unless obviously incorrect, shall govern over scaled dimensions. Plans shall govern over Specifications and Special Provisions shall govern over both Plans and Specifications. The Contractor shall not use to its advantage any apparent error or omission in the Plans or Specifications. In the event the Contractor discovers any apparent error or discrepancy, the Contractor shall immediately request the Project Manager's interpretation and decision, and such decision shall be final. In the event contradiction and/or conflicts occur in the Specifications not otherwise covered by Special Provisions, the Specifications deemed by the Project Manager to be most restrictive shall govern.

2.7. CONSTRUCTION SURVEYING: The Contractor will furnish and set all construction stakes. The Project Manager will review the stakes. The Contractor shall be held responsible for the proper preservation of all marks and stakes. If, in the opinion of the Project Manager, any marks or stakes have been willfully or carelessly disturbed or destroyed by the Contractor, its employees, or subcontractors, the cost of replacing them will be charged against the Contractor and be deducted from the final payment.

2.8. RIGHT OF ENTRY: At all times, the city shall have the right to enter and inspect the Project premises.

2.9. AUTHORITY AND DUTIES OF INSPECTORS:

2.9.1. All Work shall be subject to inspection and testing by the city at all reasonable times and at all places prior to acceptance. Inspectors, employed by the city, are authorized to inspect all Work done and all material furnished. Such inspection may extend to all of any part of the Work and to the preparation, fabrication, or manufacture of the materials to be used. The Inspector is not authorized to revoke, alter, or waive any requirements of the Plans and Specifications. The Inspector is authorized to call to the attention of the Contractor any failure of the Work or materials to conform to the Specifications and Contract Documents.

2.9.2. The Inspector shall have the authority to reject materials or suspend the Work until any question at issue can be referred to and decided by the Project Manager. If the Contractor refuses to suspend operations on verbal order, the Inspector shall issue a written order

giving the reason for shutting down the Work. Work performed during the absence of the Inspector will not be accepted nor paid for by the city.

- 2.9.3. Inspections by the city or others shall not relieve the Contractor from its obligations to perform the Work in accordance with the requirements of the Contract Documents and to also inspect its own Work.
- 2.9.4. Any plan of action, method of work or construction procedure suggested to the Contractor by the city or city contractors, whether orally or in writing, if adopted or followed by the Contractor in whole or in part, shall be at the sole risk and responsibility of the Contractor.
- 2.9.5. The Inspector shall neither act as foreman or perform other duties for the Contractor nor interfere with the management of the Work by the Contractor. Any advice which the Inspector may give the Contractor shall, in no way, be construed as binding to the Project Manager in any way or releasing the Contractor from fulfilling any of the terms of the Contract.

2.10. **INSPECTION:**

- 2.10.1. Until final payment, all parts of the work may be subject to inspection and testing by the city. The Contractor shall furnish, at its own expense, all reasonable access, assistance, and facilities required by the city for such inspection and testing. The Contractor shall furnish the Project Manager with every reasonable facility for ascertaining whether the Work performed and materials used are in accordance with the requirements and intent of the Specifications and Contract. In the event of night Work, the Contractor shall furnish proper lighting to adequately perform and inspect the Work being performed.
- 2.10.2. Upon request from the Project Manager, the Contractor shall, at any time before acceptance of the Work, remove or uncover such portion of the finished Work as may be directed. After examination, the Contractor may restore said portions of the Work to the standard required by the Specifications. Should the Work thus exposed or examined prove acceptable, the uncovering, or removing, and the replacing of the coverage or making good of the parts removed, may be paid for as Extra Work; but should the Work so exposed or examined prove unacceptable, the uncovering, or removing, and the replacing of the covering or making good of the parts removed, shall be at the Contractor's expense. Any Work performed or materials used by the Contractor without suitable supervision or inspection by the city shall be ordered removed and replaced at the Contractor's expense.
- 2.10.3. If the Contractor does not promptly replace rejected material or correct rejected workmanship, the city may (a) by separate Contract or otherwise, replace such material or correct such workmanship and charge the cost thereof to the Contractor; or (b) terminate the Contractor's right to proceed in accordance with this Agreement pursuant to Section 4.10 of the General Conditions. Such inspection and test is for the sole benefit of the city and shall not relieve Contractor of the responsibility of providing quality control measures to assure that the Work strictly complies with the Contract. No inspection or test by the city shall be construed as constituting or implying acceptance. Inspection or test shall

neither relieve Contractor of responsibility for damage to or loss of the material prior to acceptance, nor in any way affect the continuing rights of the city after acceptance of the completed Work.

2.10.4. Any Work outside the normal five (5) day, forty (40) hour week will require the Project Manager or Inspector on the job. All inspection so required shall be done at the Contractor's expense and the cost thereof may be deducted from the final payment. Overtime inspection may be conducted by the city at the Contractor's expense at one hundred dollars and 00/100 (\$100.00) per hour. The payment by the Contractor of overtime inspection fees shall not relieve the Contractor from the liquidated damages provisions as specified in Section 4.8 of the General Conditions.

2.11. REMOVAL OF DEFECTIVE AND UNAUTHORIZED WORK:

2.11.1. All Work which has been rejected or condemned by the city shall be repaired, or if it cannot be satisfactorily repaired, be removed and replaced at the Contractor's expense. At the Project Manager's discretion, the following unauthorized work shall neither be measured nor paid for by the city, and may need to be removed at the Contractor's sole expense:

- i. Work performed beyond the lines and grades shown on the Plans, or as given, except as herein provided; or
- ii. Work performed without giving timely notice to the Project Manager so the Project Manager may elect to be present to observe the Work in progress; or
- iii. Any Extra Work or unclassified Work performed without prior city written authority and price agreement.

2.11.2. If directed by the city, should the Contractor fail to satisfactorily repair or remove and replace rejected, unauthorized, or condemned Work immediately after receiving formal notice from the Project Manager, the city may, at its sole discretion, recover for such defective Work on the Contractor's Bond or by action in a court having proper jurisdiction over such matters, or the city may employ labor and equipment and satisfactorily repair or remove and replace such Work and charge the cost of the same to the Contractor, which cost will be deducted from any payments due to the Contractor.

2.12. SUPERVISION AND SUPERINTENDENCE:

2.12.1. The Contractor shall supervise and direct the Work competently and efficiently, devoting such attention thereto and applying such skills and expertise as may be necessary to perform the Work in accordance with the Contract Documents. The Contractor shall be solely responsible for the means, methods, techniques, sequences, and procedures of construction. The Contractor shall be responsible to see that the completed work complies with the Contract Documents.

2.12.2. The Contractor shall designate and keep on any work site at all times during its progress, a competent superintendent who shall not be replaced without prior written notice to the Project Manager. The Contractor shall provide contact information for the superintendent who may be reached twenty-four (24) hours per day. The superintendent will be the

Contractor's representative at the site and shall have authority to act on behalf of the Contractor. All communications given to the superintendent shall be as binding as if given to the Contractor. During periods when the Work is suspended, the Contractor shall make appropriate arrangements for any emergency work which may be required.

- 2.12.3. Whenever the superintendent is not present on any particular part of the Work where the Project Manager may desire to inform the Contractor relative to interpretation of the Plans and Specifications or to disapprove or reject materials or Work performed, the Project Manager may so inform the foreman or other worker in charge of the particular part of the Work in reference to which the information is given. Information so given shall be as binding as if given to the superintendent.
- 2.12.4. The Contractor will be supplied with four (4) copies of the Plans, and three (3) copies of the Specifications and Special Provisions. The Contractor shall have available on the work site at all times one copy each of said Plans, Specifications and Special Provisions, exclusive of the set designated for as-built drawings in Section 2.4 of the General Conditions. Additional copies of Plans, Specifications and Special Provisions can be obtained by the Contractor at the cost of reproduction.

SECTION 3 CONTROL OF MATERIAL

3.1.MATERIAL:

- 3.1.1. Unless otherwise indicated in this Contract, equipment, material and products incorporated in the Work covered by this Contract, shall be new and of the grade specified for the purpose intended. Unless otherwise specifically indicated, reference to equipment, material, product, or patented process by trade names, make or catalog number, shall be regarded as establishing a standard of quality and shall not be construed as limiting competition, and the Contractor may, with permission from the Project Manager, use any equipment, material, article, or process which is equivalent to that named, subject to the requirements of this Section.
- 3.1.2. Within the scope of their authority, the Project Manager shall be the sole judge of the quality and suitability of proposed alternative equipment, material, article or process. The burden of proving the quality and suitability of the alternative shall be upon the Contractor. Information required by the Project Manager in judging an alternative shall be supplied by the Contractor at the Contractor's expense.

3.2.APPROVAL AND ACCEPTANCE OF MATERIALS:

- 3.2.1. Samples of all materials to be tested may be taken by the Project Manager or their authorized representative at the discretion of the Project Manager. Materials may be sampled either prior to shipment or after being received at the work site. All sampling, inspection, and testing shall be done in accordance with the Specifications contained in the Contract Documents.

- 3.2.2. The Contractor shall provide such facilities as the city may require for conducting field tests and for collecting and forwarding samples. The Contractor shall not use or incorporate into the Work any materials represented by the samples until tests have been approved by the city. Any material, which after approval, has for any reason become unfit for use, shall not be incorporated into the Work.
- 3.2.3. Tests or approvals by the Project Manager or others shall not relieve the Contractor from its obligations to perform the Work in accordance with the requirements of the Contract Documents.

3.3.CITED SPECIFICATIONS; SAMPLES AND TESTS:

- 3.3.1. Except as otherwise provided, sampling and testing of all materials, and the laboratory sampling and testing of equipment required under these Specifications, shall be in accordance with the current edition of the American Society for Testing Materials (“ASTM”) publication of standards, adopted and in effect on the date of the city’s solicitation for bids.
- 3.3.2. When designated, sampling and testing of materials shall be in accordance with the current edition of the American Standards Association (“ASA”) Specifications; the current edition of The American Association of State Highway and Transportation Officials (“AASHTO”) publication Standard Specification for Highway Materials and Methods of Sampling and Testing; the current edition of the American Water Works Association Specifications; the current edition of the Federal Specifications or the current edition of MIL Specifications adopted and in effect on the date of city’s solicitation for bids.
- 3.3.3. The testing of all samples and materials shall be made at the expense of the city, when specified herein as by the city, unless the tests reveal nonconformance in which case said costs shall be reimbursed by the Contractor to the city. The Contractor shall furnish the required samples without charge to the city. The Contractor shall give sufficient notification of the placing of orders for materials in order to permit the Project Manager to arrange for appropriate testing.

3.4.STORAGE: Materials shall be stored to insure the preservation of their quality and fitness for the Work. When necessary, they shall be placed on wooden platforms, or other hard, clean surfaces and not on the ground and shall be placed under cover when directed. Stored materials shall be located to facilitate prompt inspection.

3.5.SUBSTITUTION OF MATERIALS AFTER AWARD OF CONTRACT: Substitution of equipment and materials of makes and types other than those specified and/or those approved in advance by the Project Manager will be considered for approval only as hereafter provided:

- i. Proposed substitutes shall be equal or superior to items specified or previously approved.
- ii. The Contractor shall submit any requests on its letterhead in duplicate within two (2) weeks after the date of Contract execution. The request for substitutions shall include a complete written list submitted at one time and must be accompanied by

a statement outlining reasons for each requested substitution. The request shall include catalog number, technical data, cuts diagrams and such other descriptive data or samples as may be required, and a detailed statement listing all significant details in which each item requested for approval differs from the item specified. Such listing or the failure to list such information shall not relieve the Contractor from providing properly functioning and/or fitting materials, regardless of the approval action taken by the Project Manager. If so requested by the Project Manager, the Contractor shall submit samples of both the specified material or equipment and the proposed substitute. In case of a difference in price, the city shall receive all benefits of the difference for any substitutions, and the Contract amount shall be altered by Change Order to credit the city with any savings so obtained.

3.6.DEFECTIVE MATERIALS: All materials not conforming to the requirements of the Specifications shall be considered defective. Whether in place or not, such material shall be removed immediately from the work site, unless otherwise permitted by the Project Manager. No rejected material, the defects of which have been subsequently corrected, shall be used without prior approval from the Project Manager. Upon failure of the Contractor to comply promptly with any order the Project Manager made under the provisions of this Section, the city shall have authority to remove defective materials and to deduct the cost of removal and replacement with specified materials from any moneys due or to become due to the Contractor, or said costs of removal and replacement may be recovered in any action by the city against the Contractor's Bond.

3.7.PROPERTY RIGHTS IN MATERIALS: The Contractor shall have no property right in materials after they have been attached, affixed or incorporated in the Work or the soil, or after payment has been made by the city to the Contractor for materials delivered to the work site or stored subject to or under the control of the city.

3.8.DAMAGE TO THE WORK AND RESPONSIBILITY FOR MATERIALS:

3.8.1. The Contractor shall be responsible for materials delivered and Work performed until completion and Final Acceptance of the entire construction thereof.

3.8.2. The Contractor shall bear the risk of injury, loss or damage to any and all parts of the Work for whatever cause, whether arising from the execution or from the non-execution of Work. The Contractor shall rebuild, repair or restore Work and materials which have been damaged or destroyed from any causes before completion and acceptance of the Work and shall bear the expense thereof. The Contractor shall provide security and drainage and erect temporary structures as necessary to protect the Work and materials from damage.

3.8.3. The Contractor shall be responsible for materials not delivered to the work site for which any progress payment has been made to the same extent as if the materials were so delivered.

SECTION 4 PERFORMANCE AND PROGRESS

4.1.SUBCONTRACTING OR ASSIGNMENT OF WORK:

- 4.1.1. No contractual relationship will be recognized under the Contract other than the contractual relationship between the city and Contractor.
- 4.1.2. No portion of the Contract shall be subcontracted, assigned or otherwise disposed of except with the written consent of the city and Surety, which consent shall not be unreasonably withheld.
- 4.1.3. Requests for permission to subcontract, assign or otherwise dispose of any portion of the Contract shall be in writing to the Project Manager and shall be accompanied by documents demonstrating the organization which will perform the Work is particularly experienced and equipped for such Work. Consent to subcontract, assign or otherwise dispose of any portion of the Contract shall not be construed to relieve the Contractor of any responsibility for the fulfillment of the Contract.

4.2.COMMENCEMENT OF WORK: The Contractor shall begin the Work within the prescribed amount of days set by the city in the written Notice to Proceed. The Contractor shall notify the Project Manager at least forty-eight (48) hours in advance of the time it intends to begin Work. Work shall be completed in the prescribed amount of days set by the city in the Contract Documents, including any Change Orders or amendment. The Contractor shall conduct Work in such a manner and with sufficient materials, equipment, and labor as is considered necessary to ensure its completion within the time limit set forth in the Contract. Should the prosecution of Work for any reason be discontinued by the Contractor, with the consent of the Project Manager, the Contractor shall notify the Project Manager at least forty-eight (48) hours in advance of resuming operations.

4.3.LIMITATION OF OPERATIONS: Each item of Work shall be performed to completion without delay and in no instance will the Contractor be permitted to transfer its force from uncompleted Work to new Work without the permission of the Project Manager. The Contractor shall not open up Work to the prejudice of Work already started.

4.4.PROGRESS SCHEDULE:

- 4.4.1. The Contractor shall prepare and submit to the Project Manager for approval five (5) days prior to the Preconstruction Conference, a practicable schedule, showing the order in which the Contractor proposes to carry on the Work, the date on which it will start the several salient features (including procurement of materials and equipment) and the contemplated dates for completing the same. The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of Work scheduled for completion at any time. The Contractor shall enter on the chart the actual progress at such intervals as directed by the Project Manager and shall immediately deliver three (3) copies thereof. If the Contractor fails to submit a progress schedule within the time herein prescribed, the Project Manager may withhold approval of progress payment estimates until such time as the Contractor submits the required progress schedule.

- 4.4.2. The Contractor shall perform the Work in accordance with the latest approved progress schedule. If the progress of items along the critical path is delayed, the Contractor shall revise its planning to include additional forces, equipment, shifts or hours as necessary to meet the time or times of completion specified in this Contract. Additional costs resulting therefrom will be borne by the Contractor. The Contractor shall make such changes when progress at any check period does not meet at least one of the following two tests:
- i. The percentage of dollar value of completed Work with respect to the total amount of the Contract is within 10% (ten percent) of the percentage of the Contract time elapsed; or
 - ii. The percentage of dollar value of completed Work is within 10% (ten percent) of the dollar value which should have been performed according to the Contractor's network analysis previously approved by the Project Manager.
- 4.4.3. Failure of the Contractor to comply with the requirements under this Section will be grounds for determination that the Contractor is not performing the Work with such diligence as will ensure completion within the time of completion specified in this Contract. Upon such determination, the city may terminate the Contractor's right to proceed with the Work, or any separate part thereof, in accordance with the provisions contained herein. The city may extend the time periods reflected by Section 4.4.2 (i) or (ii) above, if it does not reasonably reflect upon the Contractor's prosecution of the Work.

4.5.CHARACTER OF WORKMEN AND EQUIPMENT:

- 4.5.1. The Contractor shall employ such superintendents, foremen, and workmen as are careful and competent, and the Project Manager may demand the dismissal of any person employed or subcontracted by the Contractor in, about, or upon the Work who misconduct themselves or act incompetently or negligently in the proper performance of their duties, or neglects or refuses to comply with the directions given. Such person or subcontractor shall not be employed again thereon without the written consent of the Project Manager. Should the Contractor continue to employ, or again employ such person or subcontractor, the Project Manager may withhold all payments which are or may become due, or the Project Manager may suspend the Work until such orders are complied with.
- 4.5.2. In the employment of labor, preference shall be given, other conditions being equal, to residents of the area wherein the Work is being performed, but no other preference (except as may be required by special labor provisions) or discrimination among citizens of the United States shall be made. No convict labor shall be employed.
- 4.5.3. The Contractor shall furnish such equipment as is considered necessary for the prosecution of the Work in an acceptable manner and at a satisfactory rate of progress. All equipment, tools, and machinery used for handling materials and executing any part of the Work shall be subject to the approval of the Project Manager and shall be maintained in a satisfactory working condition. Equipment used on any portion of the Work shall be such that no injury to the Work, roadways, adjacent property, or other objects will result from its use. The Contract may be terminated if the Contractor fails to provide adequate equipment for the Work.

4.6.TEMPORARY SUSPENSION OF WORK: The city shall have the right to suspend, delay or interrupt the Work wholly or in part for such period as he may determine to be appropriate because of the failure on the part of the Contractor to properly perform the Work in accordance with the Contract, to carry out orders, or to remove defective material or Work. The Contractor shall not suspend the Work without written order given by the Project Manager, and prior to resuming Work shall give the Project Manager forty-eight (48) hours' prior notice to afford opportunity to reestablish supervision.

4.7.DETERMINATION AND EXTENSION OF CONTRACT TIME FOR COMPLETION:

4.7.1. The Contractor shall perform fully, entirely, and in a satisfactory and acceptable manner the Work, within the number of days stipulated in the Contract. Time will be assessed against the Contractor beginning with the actual date the Work is started in accordance with the Notice to Proceed. If the Contractor does not begin the Work within the limit as designated in the Notice to Proceed, the days shall start on the first day after the expiration of the limit as stated in the Notice to Proceed.

4.7.2. In adjusting the Contract time for the completion of the Project, all strikes, lockouts, unanticipated delays in transportation or any condition over which the Contractor has no control, and any suspensions ordered by the city for causes not the fault of the Contractor, shall be excluded from the computation of the Contract time for completion of the Work and the city may extend the time for completion in such amount as the conditions justify. In order to secure an extension of time for delays beyond its control, the Contractor, shall within 10 (ten) days from the beginning of any such delay, notify the Project Manager in writing of the causes of delay, where upon the Project Manager shall ascertain the facts and the extent of the delay and extend the time for completing the Work when, in their judgment, the findings of fact justify such an extension, and their finding of fact thereon shall be final and conclusive. No allowances will be made for delays or suspensions of the performance of the Work which are in the control of the Contractor.

4.7.3. If the satisfactory execution and completion of the Contract shall require Work or materials in greater amounts or quantities than those set forth in the Contract, then the Contract time shall automatically be increased in the same proportion as the cost of the additional Work bears to the original Work contracted for.

4.8.FAILURE TO COMPLETE WORK ON TIME:

4.8.1. The city and Contractor agree and recognize that time is of the essence for every time period set forth in the Contract Documents and that the city will suffer financial loss if the Work is not substantially complete within the time set forth in the Contract Documents. If the Contractor fails to fully perform and complete the Work in conformity with the provisions and conditions of the Contract within the specified time limit for such performance and completion, or within such further time as, in accordance with the provision of this Contract, shall be fixed or allowed for such performance and completion, the city and Contractor agree that as liquidated damages, and not as a penalty, for the delay in

performance, the Contractor shall pay to the city the amount stipulated below for each and every calendar day that expires after the time set forth in the Contract Documents until the same is finally complete and ready for final payment as provided herein.

Original Contract Amount	Amount of Liquidated Damages Per Day
Less than \$100,000	\$300.00
\$100,000 and less than \$500,000	\$600.00
\$500,000 and less than \$1,000,000	\$1,000.00
\$1,000,000 and over	\$1,500.00

4.8.2. The city shall recover inspection charges and damages by deducting the amount thereof out of any moneys which may be due or may become due to the Contractor, and/or by an action at law against the Contractor or its Surety. It is understood and agreed that aside from any other penalty or damage, all costs of the Project Manager and inspection on behalf of the city may be charged to the Contractor and be deducted from any estimate or payment otherwise due and payable.

4.8.3. If the Contractor fails to pay such liquidated damages promptly upon demand therefor, the Surety shall pay such damages. In addition, and at the city’s option, the city may withhold all or any part of such liquidated damages from any payment due the Contractor.

4.9.ADJUSTMENT FOR SUSPENDED WORK:

4.9.1. In the event the Contractor is ordered by the city, in writing, to suspend Work for some unforeseen cause not provided for in the Contract, and over which the Contractor has no control, the Contractor may be reimbursed for actual money expended on the job during the period of shutdown. No allowance will be made for lost profits. The period of shutdown shall be computed from the date set out in the written order for Work to cease until the date of the written order for Work to resume. Claims for such compensation shall be filed with the city within 10 (ten) days of the date of written order to resume Work, or such claims will not be considered. The Contractor shall submit with its claim substantiating papers covering the entire amount shown on the claim. The city shall take the claim under consideration, and may make such investigations as are deemed necessary, and shall be the sole judge as to the equitability of such claim and such decision shall be final.

4.9.2. Notwithstanding any provisions of this Contract to the contrary, no provision of this Section shall be construed as entitling the Contractor to compensation for delays due to inclement weather, delays due to failure of the Surety, for suspensions made at the request of the Contractor, or for any other delay provided for in the Contract Documents, Specifications, Special Provisions, Bid Schedule, Contract, Change Order or Field Order.

4.10. TERMINATION OF CONTRACT FOR DEFAULT:

4.10.1. The occurrence of any one or more of the following shall constitute an “Event of Default” of the Contract, for which the city may, at the city’s option, terminate the Contract upon written notice to the Contractor:

- i. The Contractor fails to start the Work on the date given in the Notice to Proceed, or the Contractor in any way abandons the Work;
- ii. The Contractor’s progress is insufficient to complete the Work within the specified time;
- iii. The Contractor’s willful or deliberate failure or violation to comply with any requirement of the Contract, including the Plans and Specifications and Special Provisions, or execution of Work by the Contractor in bad faith or otherwise not in accordance with its obligations;
- iv. The Contractor fails to maintain any required Bonds, licenses, permits, and/or insurance as required in the Contract;
- v. The Contractor fails to promptly repair, replace or remove any defects in materials or Work or any defects in materials or Work of any other nature, the correction of which has been directed in writing by the Project Manager;
- vi. Substantial evidence of the Contractor’s collusion for the purpose of illegally procuring a Contract or perpetrating fraud in the construction of Work;
- vii. The Contractor files a voluntary petition in bankruptcy if a receiver is appointed for the Contractor or any of its property, or the insolvency of the Contractor;
- viii. The Contractor allows any final judgment against it unsatisfied for a period of 10 (ten) days or longer, and makes an assignment for the benefit of creditors;
- ix. The Contractor or any of its officers or employees are convicted, plead nolo contendere, enter into a formal agreement in which they admit guilt, enter a plea of guilty, or otherwise admit culpability to criminal offenses of bribery, kickbacks, collusive bidding, bid-rigging, anti-trust, fraud, undue influence, theft, extortion, or any offense of similar nature, in connection with the Contractor’s business;
- x. Other just causes for termination as determined by the city.

4.10.2. The city shall provide the Contractor and Surety with written notice of the city’s intent to terminate. The Contractor and/or Surety shall have 10 (ten) days from receipt of notice to cure any default or to provide to the city a detailed plan, in writing, of how the Contractor will cure the causes for termination listed within the written notice. If a satisfactory effort has not been made by the Contractor or its Surety to correct the default within the prescribed period in the notice, or, if in the judgment of the city, any submitted written plan does not ensure satisfactory performance of the Work, the city may declare the Contract terminated and notify the Contractor and its Surety accordingly. Upon receipt of notice from the city that the Contract has been terminated, the Contractor shall immediately discontinue all operations. The city may then proceed with the Work in any lawful manner that it elects until completion.

4.10.3. The city reserves the right to take possession of any machinery, implements, tools, or materials of any description that shall be found upon the Work, to account for said equipment and materials, and to use the same to complete the Project. When the Work is thus finally completed, the total cost of the same will be computed. If the total cost is more than the Contract price, the difference shall be paid to the city either by the Contractor or

its Surety. In case of termination, all expenses incident to ascertaining and collecting losses under the Bond, including city project management and legal services, shall be assessed against the Bond.

- 4.11. **TERMINATION FOR CONVENIENCE OF THE CITY:** This Contract and the performance of the Work hereunder may be terminated at any time, in whole or in part, for convenience. Any such termination shall be effected by delivery to the Contractor of a written notice (“Notice of Termination”) specifying the extent to which performance of Work is terminated, the date upon which termination becomes effective, and any necessary actions to be taken by the Contractor to effectuate termination and close-out the Contract. If the Contract is terminated, the Contractor shall be paid on a prorated basis of Work satisfactorily completed, under the Work. The portion of Work satisfactorily completed but not yet accepted by the city shall be determined by the city.
- 4.12. **COOPERATION WITH OTHER CONTRACTORS:** In connection with the improvements under this Contract, the right is reserved by the city to award any Work not included in the Contract to another contractor for performance during the progress of this Contract, or to perform such Work with the city’s forces, and the Contractor shall cooperate and so conduct its operation as to minimize the interference therewith, as directed by the Project Manager.
- 4.13. **TERMINATING OF CONTRACTOR'S RESPONSIBILITY:** This Contract will be considered complete when all Work and final cleanup has been finished, the Work has been accepted by the city, and all claims for payment of labor, materials, or services of any kind used in connection with the Work have been settled for by the Contractor or its Surety. The Contractor will then be released from further obligation except as set forth in the Bond and for its responsibility for injury to persons or property arising from its duties and obligations under Section 7 of the General Conditions. The Bond executed for performance of this Contract shall be in full effect for a period of one (1) year following acceptance of the Work; except with regard to the representation regarding copyright infringement found in Section 6.4 the Bond shall remain in effect for three (3) years, and except with regard to the representation regarding patent infringement found in Section 6.4 the Bond shall remain in effect for six (6) years. Neither the final payment nor any provision in the Contract Documents shall relieve the Contractor of the responsibility for negligence or faulty materials or workmanship. The Contractor shall warrant its work to be free from faulty materials or workmanship for the period of two (2) years after Final Acceptance, and upon written notice, the Contractor shall remove any defect due thereto and pay for any damage due to other Work resulting there from which shall appear within the two-year period. Remedied Work shall carry the same warranty as the original Work starting with the date of acceptance of the replacement or repair. Payment to the Contractor will not relieve the Contractor of any obligation under this Contract.

SECTION 5 WARRANTY

5.1. SCOPE OF WARRANTY:

- 5.1.1. The Contractor warrants that the Work and all of its components shall be free from defects and flaws in design, workmanship, and materials; shall strictly conform to the requirements of this Contract; and shall be fit, sufficient and suitable for the purposes expressed in, or reasonably inferred from, this Contract. The warranty herein expressed shall be in addition to any other warranties expressed or implied by law, which are hereby reserved unto the city. In all emergencies the Contractor shall immediately remedy, repair, or replace, without cost to the city and to the entire satisfaction of the city, defects, damages or imperfections due to faulty materials or workmanship appearing in said Work within said period of not less than two (2) years from the date of Final Acceptance. Remedied Work shall carry the same warranty as the original Work starting with the date of acceptance of the replacement or repair. Payment to the Contractor will not relieve the Contractor of any obligation under this Contract.
 - 5.1.2. The Contractor, at no additional expense to the city, shall also remedy damage to equipment, the site, or the buildings or the contents thereof which is the result of any failure or defect in the Work, and restore any Work damaged in fulfilling the requirements of the Contract. Should the Contractor fail to remedy any such failure or defect within a reasonable time after receipt of notice thereof, the city will have the right to replace, repair, or otherwise remedy such failure or defect at the Contractor's expense.
 - 5.1.3. Subcontractors', manufacturers', and suppliers' warranties and guarantees, expressed or implied, respecting any part of the Work and any material used therein shall be deemed obtained and shall be enforced by the Contractor for the benefit of the city without the necessity of separate transfer or assignment thereof.
 - 5.1.4. The rights and remedies of the city provided in this Section are in addition to and do not limit any rights and remedies afforded by the Contract or by law. The Contractor specifically waives all the provisions of Chapter 8 of Article 20 of Title 13, C.R.S. regarding defects in the Work under the Contract.
- 5.2. **CITY'S RIGHT TO CORRECT:** If, within five (5) business days after the city gives the Contractor notice of any defect, damage, flaw, unsuitability, nonconformity, or failure to meet warranty subject to correction by the Contractor, or if the Contractor neglects to make, or undertake with due diligence to make the necessary corrections, then the city shall be entitled to make, either with its own forces or with contract forces, the corrections and to recover from the Contractor all resulting costs, expenses, losses, or damages, including attorneys' fees and administrative expenses.
- 5.3. **WARRANTY PERIOD:** Except where longer periods of warranty are indicated for certain items, the Contractor warrants Work under the Contract to be free from faulty materials and workmanship for a period of not less than two (2) years from date of Final Acceptance, with one (1) of those years being covered by the Bond, as specified in this Contract. In cases of warranty work, which is not an emergency, all necessary repairs shall be made within a reasonable time not to exceed twenty (20) days after notice of the required repair is received by the Contractor. For those items of warranty work which cannot be completed within said twenty (20)-day period, the Parties shall negotiate a reasonable period of time.

SECTION 6
LEGAL RELATIONSHIP AND RESPONSIBILITY TO THE PUBLIC

6.1.LAWS TO BE OBSERVED: The Contractor shall at all times observe and comply with all Federal, State and local laws, codes, ordinances, and regulations, which pertain to and affect the conduct of the Work, and the Contractor and its Surety shall indemnify and save harmless the city and all its officers, agents, employees, or any of their heirs, successors or assigns against any claim, judgment, demand, costs, liability or expenses, including but not limited to attorney's fees and costs of suit arising from or based on the violation of any such law, ordinance, regulations, order, or decree, whether such claim, judgment, demand, costs, liability or expenses arises from actions by the Contractor, its employees, agents or subcontractors. Nothing contained herein shall be deemed to create liability for the Contractor for any design defects not managed by the Contractor.

6.2.PERMITS AND LICENSES: The Contractor shall, at its own expense, procure all permits and licenses, pay all charges and fees, and give all notices necessary and incidental to the due and lawful prosecution of the Work. Any costs incurred for these permits must be included in the unit costs.

6.3.PAYMENT OF TAXES:

6.3.1. With the exception of being exempt from City of Littleton Sales and Use taxes, the Contractor shall pay all sales and use taxes required to be paid, shall maintain such records in respect to its Work, which shall be separate and distinct from all other records maintained by the Contractor and shall be available for inspection by the city at any and all reasonable times, and shall furnish the city with such data, as may be necessary to enable the city to obtain any refunds of such taxes which may be available to the city under the laws, ordinances, rules or regulations applicable to such taxes. The Contractor shall require each of its subcontractors to pay all sales and use taxes required and to maintain such records and furnish the Contractor with such data as may be necessary to enable the city to obtain a refund of the taxes paid by such subcontractors.

6.3.2. In accordance with C.R.S. §§ 39-26-114 and 39-26-203, and the related regulation of the State of Colorado Department of Revenue, the Contractor shall apply to the State of Colorado Department of Revenue and secure prior to commencing Work, an exemption certificate which when issued by the State of Colorado Department of Revenue will enable the Contractor to purchase all materials free of State Sales and Use Taxes and Regional Transportation District (“RTD”) Tax, provided that any building permit fee shall be included in any Bid Schedule with respect to the Work. Further, no Littleton sales and/or use tax shall be included in any billing with respect to the Work. This provision shall apply to all contractors, subcontractors and material suppliers. When Littleton sales tax is paid to licensed Littleton vendors for materials, which become part of the Work by a Contractor, the City of Littleton will refund that tax to the Contractor upon receipt of an application from the Contractor at the conclusion of the Contract. Accompanying the application must be the material receipt(s) displaying a description of the item(s) purchased, date of

purchase, amount of purchase, tax paid and any other documentation and information which may be required by the city to substantiate the payment and validate a refund.

6.3.3. Contractors who purchase materials that become part of the Work that do not honor the exemption, and thereby who pay sales tax, will not be reimbursed for that tax payment by the city. The Contractor shall bear the risk of any added or increased taxes occurring during the performance of the Work. A change in taxes shall under no circumstances entitle the Contractor to an adjustment under the Contract.

6.4.PATENTED DEVICES, MATERIALS AND PROCESSES: If the Contractor is required or desires to use any design, device, material or processes covered by patent or copyright, the Contractor shall provide for such use by suitable legal agreement with the patentee or patent owner. The Contractor shall warrant that the materials, equipment or devices used on or incorporated in the Work shall be delivered free of any rightful claim of any third-party for infringement of any United States patent or copyright. If notified promptly in writing and given authority, information and assistance, the Contractor shall defend, or may settle, at its expense, any suit or proceeding against the city so far as based on a claimed patent or copyright infringement which would result in a breach of this warranty, and the Contractor shall pay all damages and costs awarded therein against the city due to such breach. In case any use of any materials, equipment or devices is in such suit held to constitute an infringement and such use is enjoined, the Contractor shall, at its expense and option, either procure for the city the right to continue using said materials, equipment or devices, or replace same with non-infringing materials, equipment or devices, or modify the same so it becomes non-infringing. The Contractor shall report to the city promptly and in reasonable written detail each notice or claim of patent or copyright infringement based on the performance of this Contract of which the Contractor has knowledge. In the event of any claim or suit against the city as a result of any alleged patent or copyright infringement arising out of the performance of this Contract or out of the use of any supplies furnished or Work or services performed hereunder, the Contractor shall furnish to the city when requested by the city, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the city except where the Contractor has agreed to indemnify the city. This clause shall be included in all subcontracts.

6.5.SANITARY PROVISIONS: The Contractor shall provide and maintain in a neat, sanitary condition such accommodations for the use of its employees as may be necessary to comply with the requirements and regulations of the State Department of Health and the Occupational Safety and Health Administration (“OSHA”). As stated in OSHA Construction Standard 1926.51 C, the Contractor shall supply temporary sanitary facilities as per the following table:

<u>Number of Employees</u>	<u>Minimum Toilet Facilities</u>
20 or less	1 Toilet
21 to 50	1 Toilet and 1 Urinal per 40 workers
51 or more	1 Toilet and 1 Urinal per 50 workers

This requirement to provide sanitary facilities will neither be measured nor paid for separately by the city, but shall be considered incidental to and included in the cost of the Work.

6.6.PUBLIC CONVENIENCE AND SAFETY:

- 6.6.1. The Contractor shall be solely and completely responsible for conditions of the Work site, including safety of all persons and property during performance of the Work. The Contractor shall fully comply with all applicable Federal, State and local laws, and rules and regulations governing safety of the public and workers. The Contractor shall provide all safeguards, safety devices and protective equipment and take any other needed actions on its own responsibility 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. Materials stored on the site shall be so placed and the Work shall, at all times, be so conducted as to cause no greater obstruction to traffic than is considered necessary by the Project Manager.
- 6.6.2. The Contractor shall not close any road to the public except by the express permission of the city. When the improvement under construction is being used by the traveling public, special attention shall be paid to keeping both the sub-grade and surfacing in such condition that the public can travel in comfort and safety. The Contractor shall cooperate with the Project Manager in the regulation of traffic. If the Contractor constructs temporary bridges or temporary stream crossings, the Contractor's responsibility for accidents shall include the roadway approaches as well as the structures of such crossing.
- 6.6.3. The right of the Project Manager to conduct construction review or observation of the Contractor's performance will not include review or observation of the adequacy of the Contractor's safety measures in, on, or near the Work site.

6.7.BARRICADES, SIGNS AND HAZARD MARKINGS:

- 6.7.1. The Contractor shall provide, erect and maintain all necessary barricades, signs, danger signals and lights for the protection of the Work and the safety of the public. All barricades, signs and obstructions erected by the Contractor shall be illuminated at night and all devices for this purpose shall be kept illuminated from sunset to sunrise.
- 6.7.2. The Contractor shall be held responsible for all damage to the Work due to failure of barricades, signs, lights and watchman to protect it, and whenever evidence of such damage is found prior to acceptance, the Project Manager may order the damaged portion immediately removed and replaced by the Contractor without cost to the city if, in the opinion of the Project Manager, such action is justified. The Contractor's responsibility for the maintenance of barricades, signs and lights shall not cease until Work has been accepted.

- 6.8.**USE OF EXPLOSIVES:** When the use of explosives is necessary for the Work, the Contractor shall use the utmost care so as not to endanger life or property, and whenever directed by the Project Manager the number and size of the charges shall be reduced. The

Contractor shall notify the proper representatives of any public services corporation, the city, any company, or any individual at least eight (8) hours in advance of any blasting which may damage property on, along, or adjacent to the site. The Contractor shall comply with the requirements of Title 9, Article 7 of the C.R.S., as amended, titled "Explosive Permits". The Contractor shall also be required, at a minimum, to notify the Littleton Fire Department and the Littleton Police Department. All explosives shall be stored in a secure manner and all storage places shall be marked clearly "DANGEROUS EXPLOSIVES," and shall be in care of competent watchmen at all times.

6.9.PROTECTION AND RESTORATION OF PROPERTY:

- 6.9.1. The Contractor shall not enter upon private property for any purpose without first obtaining permission, and shall be responsible for the preservation of all public and private property, sod, trees, fences, monuments, underground structures, etc., on and adjacent to the site(s) and shall use every precaution necessary to prevent damage or injury thereto. The Contractor shall protect carefully, from disturbance or damage, all land monuments and property markers until an authorized agent has witnessed or otherwise referenced their location and shall not remove them until directed.
- 6.9.2. The Contractor shall be responsible for all damage or injury to property of any character resulting from any act, omission, neglect or misconduct in his manner, or method of executing said Work, or due to its non-execution of said Work, or at any time due to defective Work or materials, and said responsibility shall not be released until the Work has been completed and accepted by the city.
- 6.9.3. The Contractor's attention is directed to the importance of protecting all public utilities encountered on all projects. Such utilities may include, but are not limited to, telephone, telegraph and power lines, water lines, sewer lines, gas lines, railroad tracks, and other overhead and underground utilities, cable television lines and facilities. Before any excavation is to begin in the vicinity of water lines, railroad tracks or structures, sewer lines, cable television lines, gas lines or telephone conduits, each utility company concerned must be notified in advance of such excavation, and such excavation shall not be made until an authorized representative of the utility company concerned is on the ground and has designated the location of their facilities.
- 6.9.4. When or where any direct or indirect damage or injury is done to public or private property by or on account of any act, omission, neglect or misconduct in the execution of the Work, or in consequence of the non-execution thereof on the part of the Contractor, the Contractor shall restore, at its own expense, such property to a condition similar or equal to that existing before such damage or injury was done by repairing, rebuilding, or otherwise restoring, as may be directed; or the Contractor shall make good such damage or injury in an acceptable manner. In case of the failure on the part of the Contractor to restore such property, or to have started action to make good such damage or injury, the city may upon forty-eight (48) hours' notice, proceed to repair, rebuild or otherwise restore such property as may be deemed necessary and the cost thereof will be deducted from any moneys due or which may become due the Contractor under the Contract or prosecuted as a claim

against the Contractor's Bond.

- 6.9.5. The cost of insurance for damages due to Contractor's operation or cost of protecting utilities where required to permit construction under this Contract shall be included in the original Contract prices for the Work.
- 6.10. **INDEMNIFICATION AND HOLD HARMLESS:** The Contractor and its Surety shall indemnify and save harmless the city, its officers, agents, employees, successors and assigns from all suits, demands, actions, or claims of any nature whatsoever brought or made against the city, its officers, agents, employees, successors or assigns from any injuries or damages sustained by any person, firm or corporation or property or resulting from or arising out of any neglect in safeguarding the Work; or through the use of unacceptable materials in the construction of the improvement; or as a result of any act or omission by the Contractor; or from the use, misuse, storage or handling of explosives; or on account of any claims or amounts recovered for any infringement of patent, trademark or copyright; or from any claims or amounts arising or recovered under Worker's Compensation laws, or any other law, by-law, ordinance, order or decree. Moneys due to the Contractor under and by virtue of the Work, as shall be considered necessary by the city, may be retained, or in case no money is due, the Contractor's Bond shall be held until such suit(s), action(s), or claim(s) for injuries or damages have been settled and satisfactory evidence has been furnished to the city.
- 6.11. **NO PERSONAL LIABILITY OF THE PROJECT MANAGER:** The Project Manager is an agent of city, and the Project Manager, its agents, heirs, successors and assignees shall have no liability to any third-party as a result of performance of this Contract.
- 6.12. **NO WAIVER OF LEGAL RIGHTS:** Inspection by the Project Manager or authorized city representatives, payment of money, payment for or acceptance of any Work or any extension of time, or possession taken by the city shall not operate as a waiver of any provision of the Contract, or any power therein provided. A waiver of any breach or term of the Contract shall not be deemed to be a waiver of any other or subsequent breach. The city reserves the right to correct any error that may be discovered in any estimate that may have been paid, and to adjust the same to meet the requirements of the Contract and Specifications. The city reserves the right to claim and recover, by process of law, sums as may be sufficient to correct any error or make good any deficit in the Work resulting from such error, dishonesty, or collusion discovered in the Work after the final payment has been made.
- 6.13. **RIGHTS-OF-WAY:** The city shall furnish all lands and rights-of-way required for completion of the Work. In acquiring rights-of-way, the city will proceed as expeditiously as possible, but in the event all rights-of-way or easements are not acquired prior to the beginning of construction, the Contractor shall begin Work on such lands and rights-of-way as have been acquired. No claim for damage will be allowed or shall be made by reason of the city's delay in obtaining lands, easements or rights-of-way. In the event of litigation or other delays in acquiring rights-of-way, the time allowed herein for completion will be extended to compensate for the time actually lost by such delay.

**SECTION 7
MEASUREMENT AND PAYMENT**

7.1.BONDS.

- 7.1.1. Contemporaneous with the Contractor's execution of this contract, the Contractor shall provide a Performance Bond and a Labor and Material Payment Bond as security for the faithful performance and payment of all the Contractor's obligations under the Contract Documents. All bonds shall be in the form prescribed by the city, executed by a surety company i) licensed to do business in the State of Colorado; ii) with a general rating of A and a financial size category of Class X or better in Best's Insurance Guide, each in the penal sum of the contract price; and iii) in conformance with C.R.S. §§ 38-26-105 and 106 ("Bonds"). All Bonds signed by an agent or attorney-in-fact shall be accompanied by a certified copy of the signatory's authority to act. The Contractor shall, at all times while providing, performing, or completing the Work including without limitation at all times while correcting any failure to meet warranty pursuant to Section 5 of the General Conditions, maintain and keep in force the Bonds at the Contractor's expense.
- 7.1.2. If the Surety for any Bond furnished by the Contractor is placed in a receivership or declared bankrupt, or its rights to do business in Colorado are terminated, or it ceases to meet the requirements specified herein, the Contractor shall within five (5) days thereafter substitute another Bond and Surety, both of which shall be acceptable to the city.

7.2.MEASUREMENT OF WORK PERFORMED: The determination of the amount of Work acceptably completed under the terms of the Contract, or as directed by the Project Manager in writing, will be made by the Project Manager based on measurements taken by them or their authorized representatives. These measurements will be taken according to the United States standard measure. All surface and linear measurements will be taken horizontally unless otherwise shown on Plans or otherwise specified. Structures shall be measured to the neat lines as shown on the Plans, or as directed in writing by the Project Manager.

7.3.SCOPE OF PAYMENT:

- 7.3.1. The Contractor shall accept the compensation, as herein provided, in full payment for furnishing all materials, equipment, labor, tools, and incidentals necessary to complete the Work and for performing all Work contemplated and embraced under the Contract; for loss or damage arising from the nature of the Work, or from the action of the elements, or from any unforeseen difficulties which may be encountered during the completion of the Work until the final acceptance by the city; for all risks of every description connected with the completion of the Work; for all expenses incurred in consequence of the suspension or discontinuance of the Work as herein specified; for any infringement of patent, trademark, or copyright; and for completing the Work according to the Plans and Specifications. Neither the payment of any partial payment nor of any retained percentage shall relieve the Contractor of any obligation to make good any defective Work or material. No moneys payable under the Contract or any part thereof, except the partial payment for the first month period, shall become due and payable until the Contractor satisfies to the city that it

has fully settled or paid for all materials and equipment used in or upon the Work and labor done in connection therewith. The city, if it so elects, may pay any or all such bills, wholly or in part, and deduct the amount or amounts so paid from any monthly or final partial payment excepting the first estimate.

7.4.PAYMENT FOR INCREASED OR DECREASED QUANTITIES: When alterations in the Plans or quantities of Work are ordered and performed without a written Change Order or amendment, the Contractor shall accept payment in full at the Contract unit price for the actual quantities of Work done, and only upon the city's review and approval of said Work. No allowance will be made for lost profits. Increased or decreased Work without a written Change Order will be paid for as stipulated herein.

7.5.PAYMENT FOR OMITTED ITEMS:

7.5.1. For any item omitted from the Work, the city will pay the Contractor a fair and equitable amount for costs incurred directly related to such item prior to the date of the city's order to omit the item, subject to Section 1.4 of the General Conditions. No allowance will be made for lost profits in reimbursements to the Contractor for omitted items of Work. Acceptable materials ordered by the Contractor or delivered to the Work site prior to the date of cancellation, alteration, or suspension of the Work by order of the Project Manager will be paid for at the actual cost to the Contractor and shall thereupon become the property of the city.

7.5.2. The Contractor shall immediately submit certified statements covering all money expended in preparation for any omitted item, and shall be reimbursed for any money expended in preparation for Work on any omitted item when such preparation has no value to the remaining items of the Contract, or for a proportionate amount based on the total Contract price over which such preparation would ordinarily be distributed when other items are included in such preparation.

7.6.EXTRA AND FORCE ACCOUNT WORK:

7.6.1. Extra Work, for which no price is provided in the Bid Schedule, shall be covered by Change Order to be signed by both Parties before such Work is commenced. Extra Work will be paid for either at a lump sum, or unit prices agreed upon, or on a Force Account basis, subject to Section 1.5 of the General Conditions. For all labor, teams, and foremen in direct charge of the specific operations accomplished on a Force Account basis, the Contractor shall receive the current local rate of wage, to be agreed upon before starting the Work, to which shall be added 15% (fifteen percent) of the sum thereof to cover cost of supervision, the rental of small tools and ordinary equipment, additional Bond, Unemployment Insurance, all overhead and any other costs not specifically stated. In addition, the Contractor shall be paid a sum equal to the Worker's Compensation insurance premium, the actual costs of Social Security taxes computed on the base rate for the class of Work involved for the actual amount of the payroll, and the public liability and property damage insurance premium; provided, however, that nothing in this Section will change the legal status of the relationship between the Parties to this Agreement. For all materials furnished

and used by the Contractor on a Force Account basis, the Contractor shall receive the actual cost of such materials, including transportation charges as shown by original receipted bills, to which shall be added 15% (fifteen percent) of said actual cost.

- 7.6.2. For machine power tools or equipment, including fuel and lubricant, used on Force Account Work, payment for the same will be made on a rental basis at the rate agreed upon between the Contractor and the Project Manager, to which rate no percentage shall be added.
- 7.6.3. The compensation as herein provided shall be received by the Contractor as payment for Extra Work done on a Force Account basis and subject to any conditions or limitations as specified in Section 1.5 of the General Conditions. The Contractor shall make no claim for Force Account Work, unless performed on written order and in accordance therewith. The Contractor's representative and the Inspector shall compare records of Extra Work done on a Force Account basis at the end of each day. Copies of these records shall be made upon suitable forms provided for this purpose and signed by both the Inspector and the Contractor's representative, one copy being forwarded to the Project Manager and one copy to the Contractor.
- 7.6.4. All claims for Extra Work done on a Force Account basis shall be submitted each month to the Project Manager by the Contractor upon certified statements, or upon forms furnished by the city. Work performed prior to a written order by the Project Manager will not be paid for.

7.7.PARTIAL PAYMENTS:

- 7.7.1. Partial progress payments shall be made by the city to the Contractor for the percentage of the Work completed, subject to inspection and approval by the Project Manager. The city shall determine when work has been completed, and progress payments shall not constitute a waiver of the city's right to require fulfillment of all terms of the Contract Documents and the delivery of all Work contemplated herein, complete and satisfactory to the city.
- 7.7.2. Once per month as the Work progresses, the Project Manager will make an estimate of the value of the Work performed and materials completed and in-place or delivered to the Work site in accordance with the Contract. Upon the Project Manager's request, the Contractor shall furnish a detailed estimate of the total Contract price showing the amount included therein for each category of Work, to provide a basis for determining the amount of progress payments. The market value of materials and equipment delivered to the Work site but not yet incorporated in the Work may, at the discretion of the city, be included with a progress payment. However, payment by the city for such materials and equipment shall not relieve the Contractor of the responsibility for the care of such materials and equipment; the city shall not be deemed to have assumed ownership of the materials or equipment until incorporated into the completed and accepted Work. Such increases to progress payments, if authorized, are intended only to reduce the cost of doing business with the city.
- 7.7.3. In accordance with C.R.S. § 24-91-103, where the Contract price exceeds one hundred fifty

thousand dollars (\$150,000.00), partial payments shall be authorized at the end of each calendar month, or as soon thereafter as practicable, to the Contractor upon satisfactory performance of the Contract. The city shall, from the total of the Contract estimate so ascertained, deduct an amount equivalent to five (5) percent of the whole, to be retained by the city until acceptance of the entire Contract and the balance of the sum equivalent to 95% (ninety-five percent) of the whole, shall be certified to by the Project Manager for payment.

7.7.4. The city shall retain from all progress payments an amount equal to all statutory claims filed against the Contractor pursuant to C.R.S. § 38-26-107. No partial payments except final payment will be made for a sum less than one thousand dollars (\$1,000.00). The estimates will be approximate only, and all partial or monthly estimates and payments shall be subject to correction in the estimate and payment rendered following discovery of an error in any previous estimates or payments. Should any defective Work or material be discovered, or should a reasonable doubt arise as to the integrity of any part of the Work completed previous to the final acceptance and payment, the costs shall be deducted from the first payment rendered after the discovery of such Work an amount equal in value to the defective or questioned Work, and this Work will not be included in a subsequent estimate or payment until the defects have been remedied or the causes for doubt removed.

7.8.PUNCH LIST AND FINAL ACCEPTANCE. The Work shall be finally accepted when, and only when, the whole and all parts thereof shall have been completed to the satisfaction of city in full compliance with, and as required by or pursuant to, this Contract. Upon receipt of the Contractor's Written Notice of Completion, the city shall make a review of the Work and notify the Contractor in writing of all Punch List Work, if any, to be completed or corrected. Following the Contractor's completion or correction of all Punch List Work, the city shall review the Work and prepare and deliver to the Contractor either a written notice of additional Punch List Work to be completed or corrected or a written notice of Final Acceptance of the Work.

7.9.ACCEPTANCE AND FINAL PAYMENT:

7.9.1. Two (2) weeks after acceptance of the Work including final cleanup, the city shall initiate the acceptance and final payment procedures. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. Upon completion of the acceptance and final payment procedures, the Work will be considered accepted, the Contract considered complete, and, upon compliance with the provisions of State law, the final payment shall be executed and submitted to the Contractor.

7.9.2. The acceptance by the Contractor of the last payment as aforesaid shall operate as and shall be a release of the city from all claims for liability arising from the performance of the Work under the Contract, excepting any claims that may arise during the warranty period.

7.10. LIENS.

7.10.1. *Title.* Nothing in this Contract shall be construed as vesting in the Contractor any right of property in any equipment, materials, supplies, and other items provided under this

Contract after they have been installed in, incorporated into, attached to, or affixed to, the Work or Work site. All such equipment, materials, supplies, and other items shall, upon being so installed, incorporated, attached or affixed, become the property of the city, but such title shall not release the Contractor from its duty to insure and protect the Work in accordance with the requirements of this Contract.

7.10.2. *Waivers of Lien.* The Contractor shall, from time to time at the city's request and in any event prior to final payment, furnish to the city such receipts, releases, affidavits, certificates, and other evidence as may be necessary to establish, to the reasonable satisfaction of the city, that no lien against the work or the public funds held by the city exists in favor of any person whatsoever for or by reason of any equipment, material, supplies, or other item furnished, labor performed, or other thing done in connection with the Work or this Contract ("Lien"), and that no right to file any Lien exists in favor of any person whatsoever.

7.10.3. *Removal of Liens.* If at any time any notice of any Lien is filed, the Contractor shall, promptly and without charge, discharge, remove, or otherwise dispose of such Lien. Until such discharge, removal, or disposition, the city shall have the right to retain from any money payable hereunder an amount that the city, in its sole judgment, deems necessary to satisfy such Lien and to pay the costs and expenses, including attorneys' fees and administrative expenses, of any actions brought in connection therewith or by reason thereof.

7.10.4. *Protection of City Only.* This Section shall not operate to relieve the Contractor's Surety or Sureties from any of their obligations under the Bonds, nor shall it be deemed to vest any right, interest, or entitlement in any subcontractor or supplier. The city's retention of funds pursuant to this Section shall be deemed solely for the protection of its own interests pending removal of such Liens by the Contractor, and the city shall have no obligation to apply such funds to such removal but may, nevertheless, do so where the city's interests would thereby be served.

7.11. **DEDUCTIONS.**

7.11.1. *City's Right To Withhold.* Notwithstanding any other provision of this Contract and without prejudice to any of the city's other rights or remedies, the city shall have the right at any time, to deduct and withhold from any progress or final payment that may be or become due under this Contract, such amount as may reasonably appear necessary to compensate the city for any actual or prospective loss due to:

- i. Work that is defective, damaged, flawed, unsuitable, nonconforming, or incomplete;
- ii. Claims or liens filed or reasonable evidence indicating probable filing of claims or liens from third-parties, regardless of merit;
- iii. Failure of the Contractor to make payments properly and promptly to subcontractors for material or labor;

- iv. Failure of the Contractor to complete any portion of the Work in compliance with an approved schedule;
- v. Reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract value;
- vi. Failure of the Contractor to submit on a timely basis, any documentation required by the Contract Documents, including without limitation, monthly reports, schedules, or request for approval of subcontractors;
- vii. Unauthorized Work or deviations by the Contractor from the Contract Documents;
- viii. Damage to the city or to another contractor;
- ix. State or local sales, use, or excise taxes from which the city is exempt;
- x. Any other failure of the Contractor to perform any of its obligations under this contract; or
- xi. The cost to the city, including attorneys' fees and administrative costs, of correcting any of the aforesaid matters or exercising any one or more of the city's remedies set forth within the Contract Documents.

7.11.2. *Release and Use of Withheld Funds.* The city shall be entitled to retain any and all amounts withheld pursuant to Section 7.11.1 above until the Contractor has either performed the obligations in question or furnished security for such performance satisfactory to the city. The city shall be entitled to apply any money withheld or any other money due to the Contractor under this Contract to reimburse itself for any and all costs, expenses, losses, damages, liabilities, suits, judgments, awards, attorneys' fees and administrative expenses incurred, suffered, or sustained by the city and chargeable to Contractor under this Contract.

7.11.3. *Waiver under C.R.S. § 38-26-107.* Execution of the Contract Documents by the Contractor shall constitute waiver by the Contractor to claim any right of payment of interest upon any such retained funds, or to claim any right of payment of interest upon funds withheld under the provisions of C.R.S. § 38-26-107.

SECTION 8 DISPUTES AND REMEDIES

8.1. DISPUTE RESOLUTION PROCEDURE.

8.1.1. *Notice of Disputes and Objections.* If the Contractor disputes or objects to any requirement, direction, instruction, interpretation, determination, or decision of the city, the Contractor may notify the city in writing of the issue and of the amount of any equitable adjustment to the Contract price or Contract time to which the Contractor claims it will be entitled as a result thereof; provided, however, that the Contractor shall, nevertheless, proceed without delay to perform the Work as required, directed, instructed, interpreted, determined, or decided by the city, without regard to such dispute or objection. Unless the Contractor so notifies the city within two (2) business days after receipt of such requirement, direction, instruction, interpretation, determination, or decision, the Contractor shall be conclusively

deemed to have waived all such disputes or objections and all claims based thereon.

8.1.2. *Negotiation of Disputes and Objections.* To avoid and settle without litigation any such dispute or objection, the city and the Contractor agree to engage in good faith negotiations. Within 10 (ten) business days after the city's receipt of the Contractor's written notice of dispute or objection, a conference between the city and the Contractor shall be held to resolve the dispute. Within 10 (ten) business days after the end of the conference, the city shall render its final decision in writing to the Contractor. If the Contractor objects to the city's final decision, then it shall, within 10 (ten) business days give the city notice thereof and, in such notice, shall state its final demand for settlement of the dispute. Unless the Contractor so notifies the city, the Contractor shall be conclusively deemed to have agreed to and accepted the city's final decision and to have waived all claims based on such final decision.

8.2.DISPUTED CLAIMS FOR EXTRA WORK: In case the Contractor deems extra compensation is due for Work or material not covered in the Contract Documents, or not ordered by the Project Manager as Extra Work, the Contractor shall notify the Project Manager in writing of its intention to make claim for such extra compensation before beginning Work on which the Contractor bases the claim, and shall afford the Project Manager every facility for keeping actual cost of the Work. Failure on the part of the Contractor to give such notification or to afford the Project Manager proper facilities for keeping strict account of actual cost shall constitute a waiver of the claim for such extra compensation. The filing of such notice by the Contractor and the keeping of costs by the Project Manager shall not in any way be construed to prove the validity of the claim. When the Work has been completed, the Contractor shall, within 10 (ten) days, file its claim for extra compensation with the Project Manager, who will review for consideration.

8.3.CONTRACTOR'S REMEDIES. If the city fails or refuses to satisfy a final demand made by the Contractor pursuant to Section 8.2 above, or to otherwise resolve the dispute which is the subject of such demand to the satisfaction of the Contractor, within 10 (ten) days following receipt of such demand, the Contractor shall be entitled to pursue such remedies, not inconsistent with the provisions of this Contract, as it may have in law or equity.

8.4.CITY'S REMEDIES. If it should appear at any time prior to final payment that an Event of Default, and has failed to cure any such Event of Default, as defined within Section 4.10 of the General Conditions, the city shall have the right, at its election and without prejudice to any other remedies provided by law or equity, to pursue any one or more of the following remedies:

- i. The city may require the Contractor, within such reasonable time as may be fixed by the city, to complete or correct all or any part of the Work that is defective, damaged, flawed, unsuitable, nonconforming, or incomplete; to remove from the Work site any such work; to accelerate all or any part of the Work; and to take any or all other action necessary to bring the Contractor and the Work into strict compliance with this Contract.
- ii. The city may perform or have performed all work necessary for the accomplishment of the results stated in (i) above and withhold or recover

- from the Contractor all the cost and expense, including attorneys' fees and administrative costs, incurred by the city in connection therewith.
- iii. The city may accept the defective, damaged, flawed, unsuitable, nonconforming, incomplete, or dilatory Work or part thereof and make an equitable reduction in the Contract price.
 - iv. The city may terminate this Contract without liability for further payment of amounts due or to become due under this Contract, pursuant to Section 4.10 of the General Conditions.
 - i. Upon any termination of this Contract or of the Contractor's rights under this Contract in accordance with Sections 4.10 or 4.11 of the General Conditions, and at the city's option exercised in writing, any or all subcontracts and supplier contracts of the Contractor shall be deemed to be assigned to the city without any further action being required, but the city shall not thereby assume any obligation for payments due under such subcontracts and supplier contracts for any Work provided or performed prior to such assignment.
 - v. The city may withhold from any progress or final payment, whether or not previously approved, or may recover from the Contractor any and all costs including attorneys' fees and administrative expenses, incurred by the city as the result of any Event of Default or as a result of actions taken by the city in response to any Event of Default.
 - vi. The city may recover any damages suffered by the city.

8.5. CITY'S SPECIAL REMEDY FOR DELAY. If the Work is not completed by the Contractor in full compliance with and as required by or pursuant to this Contract, within the time as such time may be extended by Change Order, then the city may invoke its remedies under Section 8.4 of the General Conditions or may, in the exercise of its sole and absolute discretion, permit the Contractor to complete the Work but charge to the Contractor and deduct from any progress or final payments, whether or not previously approved, administrative expenses and costs for each day completion of the Work is delayed beyond the completion date, computed as set forth in Section 4.8 of the General Conditions, as well as any additional damages caused by such delay.

8.6. ATTORNEY FEES: In the event there is any dispute between the the Contractor or the Surety and the city, its officers, agents or employees, and the city, its officers, agents or employees prevail, the city, its officers, agents or employees shall be granted all of its costs, including but not limited to attorney's fees, court costs and expert witness fees.

SECTION 9 OTHER PROVISIONS

9.1. Wherever a number of days is specified in this Contract it shall mean calendar days unless otherwise specified.

9.2. When a delay on any aspect of the Work occurs, the Contractor, to the maximum extent possible, shall utilize its resources elsewhere in the Work. If the Contractor, after complying

the maximum extent possible by the reassignment of its labor force, equipment and materials, alleges to have suffered damages due to delay, and the delay is caused in whole or in part by acts or omissions within the control of the city or persons acting on its behalf, then such a claim shall be treated as a Change Order request and shall be processed in accordance with the Change Order, audit and inspection requirements specified in the General Provisions or it shall be deemed forever waived. Nothing herein contained shall be interpreted so as to allow the Contractor to recover delay damages from the city for delays caused by acts of God, the acts or omissions of the Contractor, its subcontractors, employees or agents, or persons over which the city has no control.

9.3. Work performed by the Contractor under this Contract shall conform to reasonable and normal professional standards and the Contractor shall conduct itself at all times in a manner consistent with industry standards.

9.4. No reports, graphics or other material produced specifically for the city under this Contract shall be the subject of an application for copyright or trademark by or on behalf of the Contractor.

9.5. No assignment of any claim or proceeds under this Contract shall be binding upon the city unless it shall be first notified thereof in writing.

DEFINITIONS

Whenever the following terms or pronouns are used in the Specifications and Contract Documents, the intent and meaning shall be as follows:

AWWA: American Water Works Association.

CHANGE ORDER: A written modification of the Contract, issued after award to the Contractor, authorizing an addition, deletion, or revision to the Work within the general scope of the Contract or authorizing an adjustment in the Contract price or time mutually agreed upon between the city and the Contractor.

CDOT: Colorado Department of Transportation.

CONTRACT OR CONTRACT DOCUMENTS: The written agreement executed between the city and the Contractor covering the performance of the Work and the furnishing of labor and materials, by which the Contractor is bound to perform the Work and furnish the labor and materials and by which the city is obligated to compensate at a mutually established and accepted rate or price.

CONTRACTOR: The individual, partnership, firm, or corporation executing the Contract, acting directly or through lawful agents or employees, primarily liable for the acceptable performance of the Work for which contracted, and for the payment of all legal debts pertaining to the Work.

DRAWINGS: The Plans, profiles, typical cross-sections, general cross-sections, elevations, schedules, and details which show locations, character, dimensions, and details of the Work.

DISTRICT: A legally constituted group of individuals who have joined together in order to facilitate construction of utility systems within the limits of their property. The district shall be represented by its authorized Board of Directors.

PROJECT MANAGER: The duly authorized representative of the city, acting directly or through an assistant or representative.

EQUIPMENT: All machinery, together with the necessary supplies for upkeep and maintenance, and all tools and apparatus necessary for the proper construction and acceptable completion of the Work.

EXTRA WORK: Work not provided for in the Contract as awarded but found to be essential to the satisfactory completion of the Contract, within its intended scope.

FIELD ORDER: A written order effecting minor change in the Work not involving an adjustment in the Contract price or an extension of the Contract time, issued by the Project Manager to the Contractor during construction.

FINAL ACCEPTANCE: An acknowledgment made by the city that all Work has been completed.

FORCE ACCOUNT: A method of payment, other than lump sum or unit price, for Work ordered by a Change Order.

INSPECTOR: An authorized representative of the city assigned to make all necessary inspection of the Work performed or being performed, or of the materials furnished or being furnished by the Contractor.

LABORATORY: The official testing laboratories of the city or such other laboratories as may be designated by the Project Manager.

NOTICE TO PROCEED: A written notice to the Contractor of the date on which it is to begin Work.

PAYMENT BOND: The approved form of security furnished by the Contractor and its Surety as a guarantee that the Contractor will pay in full all bills and accounts for materials and labor used in the construction of the Work, as provided by law.

PERFORMANCE BOND: The approved form of security furnished by the Contractor and its Surety as a guarantee of good faith and ability of the Contractor to execute the Work in accordance with the terms of the Plans, Specifications, and Contract. In lieu of a separate Performance Bond, a combination Performance, Labor and Material Payment Bond may be supplied by the Contractor.

PERFORMANCE, LABOR AND MATERIAL PAYMENT BOND: Security furnished by the Contractor and its Surety as a guarantee that the Contractor will pay in full all bills and accounts for materials and labor used in the Work and that it will execute the Work in accordance with the Contract.

PLANS: The official Plans, working drawings, or supplemental drawings or exact reproductions thereof, approved by the Project Manager which show the locations, character, dimensions, and details of the Work to be done and which are to be considered as part of the Contract, supplementary to the Specifications.

PROGRESS SCHEDULE: A construction schedule prepared by the Contractor in a bar-chart, critical path or other format acceptable to the Project Manager which includes the start and completion dates of all salient features of the Work.

SHOP DRAWINGS: All drawings, diagrams, illustrations, brochures, schedules and other data which are prepared by the Contractor, a subcontractor, manufacturer, supplier, or distributor, which illustrate how specific portions of the Work shall be fabricated or installed.

SPECIAL PROVISIONS: The specific clauses setting forth conditions or requirements particular to the Work, covering work or materials involved in the bid and estimate, which are not thoroughly or satisfactorily stipulated in the General Provisions or Specifications.

SPECIFICATIONS: The directions, provisions, and requirements contained herein, supplemented by Special Provisions, pertaining to the method and manner of performing the Work, or to the quantities or the qualities of materials to be furnished under the Contract. Also includes Technical Specifications, part of the Contract Documents consisting of technical written descriptions for materials, equipment, construction systems, standards and workmanship.

STRUCTURES: Bridges, culverts, sewers, catch basins, retaining walls, manholes, headwalls, buildings, valve vaults and other features which may be encountered in the Work and not otherwise classified herein.

SUBCONTRACTOR: An individual, firm or corporation having a direct contract with the Contractor or the Contractor's subcontractor(s) for the performance of a part of the Work.

SUBSTANTIAL COMPLETION: The Work (or a specified part thereof) has progressed to the point where, in the opinion of the Project Manager, it is sufficiently complete in accordance with the Contract, so that the Work (or a specified part thereof) can be utilized for the purposes for which it is intended. For the purposes of final acceptance of the Work, Substantial Completion shall include cleanup of the Work site and all work areas.

SUPPLIER: Any person or organization who supplies materials or equipment for the Work, including that fabricated to a special design.

SURETY: The corporate body or individuals who are bound by the Performance Bond; Payment Bond; or Performance, Labor and Material Payment Bond, with and for the Contractor who is responsible for the entire and satisfactory fulfillment of the Contract and for the payment of all debts incurred in fulfilling the Contract.

UNIT PRICE WORK: Work to be paid for on the basis of unit prices.

Exhibit D Construction Contract Forms

PERFORMANCE, LABOR AND MATERIAL PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS that E&M Concrete LLC (Contractor), as Principal (the "Principal") and Philadelphia Indemnity Insurance Company, a corporation organized under the laws of the State of Pennsylvania, and authorized to transact business in the State of Colorado, as "Surety," jointly and severally, including their heirs, personal representatives, successors and assigns, are held and firmly bound unto the City of Littleton as Obligee, hereinafter called Owner, for the use and benefit of claimants as herein below defined, in the amount of **one million twenty-four thousand thirty-three and 00/100 dollars (\$1,024,033.00)**, as adjusted by approved Change Orders, for the payment and interest as provided by law for the performance of the Construction Contract between the Principal and the Owner, dated _____, 2024, for the following project: **Miscellaneous Concrete #24-05** in accordance with drawings and specifications; which Construction Contract is made a part hereof, and is hereinafter referred to as the Contract, and incorporated by this reference.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that if the Principal, at all times, shall promptly and faithfully perform said Contract, and shall promptly make payment to all claimants as hereinafter defined, for all labor and material used or reasonably required for use in the performance of the Contract, any authorized modifications thereof during the original term of the Contract, any extensions thereof that may be granted by the Owner, and during the term of any guarantee or warranty required under the Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense when the Owner may incur in making good any default, then the Principal and Surety shall have no obligation under this Bond, otherwise it shall remain in full force and effect.

The Surety, for value received, agrees that no extension of time, change in, addition to, or other alteration or modification of the terms of the Contract or work to be performed there under or any other forbearance on the part of either the Owner or the Principal to the other shall in any way release or impact the Surety's liability or obligation on this Bond, and the Surety hereby waives notice of any extension of time, change in, addition to, or other alteration or forbearance.

Whenever the Owner terminates the Contract in accordance with the terms thereof, the Surety shall, within fifteen (15) calendar days after written notice of such termination, notify the Owner in writing of its election to complete the Contract in accordance with its terms and conditions, or notify the Owner that the Surety elects not to complete the Contract. If the Surety fails to provide the written notice within the fifteen (15) calendar day period, then it will have deemed to have not elected to complete the Contract. Should the Surety elect to complete the Contract, then it shall, within fifteen (15) additional calendar days, following written notice of such election, obtain a bid or bids for submission to Owner for completing the Contract in accordance with its terms and conditions. The Surety shall arrange for a contract between bidder and Owner, and make available as work progresses (even though there should be a default or a succession of defaults under the contract or contracts of completion arranged under this paragraph) sufficient funds to pay the cost of completion less the balance of the Contract price; but not exceeding, including other costs, attorneys fees of the Owner and damages for which the Surety

shall be liable hereunder, the amount set forth in the first paragraph hereof. In the event of termination, the Surety may not engage the Principal to complete the Contract, without prior written consent of the Owner, which consent may be withheld in the Owner's sole discretion. If the Surety elects to complete the Contract, then it shall be entitled to receive the balance of the Contract price, less i) any amounts paid by the Owner to the Principal; ii) costs incurred by the Owner in correcting the defective work; iii) any additional legal, design professional or other costs incurred by the Owner resulting from Principal's default; and iv) any liquidated damages caused by the delayed performance or nonperformance of the Principal. Any progress payments, less retainage, due but not paid at the date of termination shall be paid to the Surety so long as the Surety has agreed to indemnify the Owner for the amount thereof and no other claims have been made to such funds by subcontractors or suppliers in accordance with the Contract or any applicable law. In the event that the Surety elects not to complete the Contract, the Owner may then have work completed by such means and in such manner, as it may deem advisable. The Surety, in such event, shall at all times make available, as work progresses under the Contract between the Owner and new contractor, sufficient funds to pay the cost of completion of the Contract pursuant to the its terms together with the other amounts set forth above, but in no event shall the Surety be responsible for the payment of any sums to the Owner until the Owner has paid in full its total obligation under the terms of the original Contract, plus Change Orders or amendments less deductions and claims chargeable by law or by the Contract, if any, and less the retainage which will be disbursed as provided by the Contract and any applicable law.

Any proceeding, whether legal or equitable, under this Bond, except for claims for payment of labor and material, or copyright or patent infringement, must be instituted before the expiration of two (2) years from the date on which final payment under the Contract falls due.

Further, the above named Principal and Surety hereby jointly and severally agree with the Owner that the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such Contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, repairs or machinery, equipment and tools, consumed or used in connection with the construction of such work, whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

The above named Principal and Surety hereby jointly and severally agree with the Owner that every claimant, who has not been paid in full before the expiration of a period of ninety (90) days after the date on which the last of such claimant's work or labor was done or performed or materials were furnished by such, claimant, may sue on this Bond for the use of such claimant, prosecute the suit to final judgment for such sum or sums as may be justly due claimant, and have execution thereon. Provided, further, that no final settlement between the Owner and the Principal shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied. The Owner shall not be liable for the payment of any costs, attorney fees, or other expenses of any such suit.

SIGNED this 10th day of July 2024.

In the presence of:
E&M Concrete, LLC

Erick Espinoza
(Contractor / Principal) Erick Espinoza, Managing Member

Philadelphia Indemnity Insurance Company

Tim Mitchell
(Surety) Tim Mitchell, Attorney-in-Fact

(Accompany this Bond with Attorney in-fact's authority from the Surety to execute the Bond, certified to include the date of the Bond.)

APPROVED FOR THE OWNER:

DocuSigned by:
By: Brent Soderlin TITLE: Deputy Director Public Works
City Department Director

Power of Attorney

KNOW ALL MEN BY THESE PRESENTS THAT:

Nationwide Mutual Insurance Company, an Ohio corporation

hereinafter referred to severally as the "Company" and collectively as "the Companies" does hereby make, constitute and appoint:
TIM MITCHELL; WILLIAM R GREER;

each in their individual capacity, its true and lawful attorney-in-fact, with full power and authority to sign, seal, and execute on its behalf any and all bonds and undertakings, and other obligatory instruments of similar nature, in penalties not exceeding the sum of

UNLIMITED

and to bind the Company thereby, as fully and to the same extent as if such instruments were signed by the duly authorized officers of the Company; and all acts of said Attorney pursuant to the authority given are hereby ratified and confirmed.

This power of attorney is made and executed pursuant to and by authority of the following resolution duly adopted by the board of directors of the Company:

"RESOLVED, that the president, or any vice president be, and each hereby is, authorized and empowered to appoint attorneys-in-fact of the Company, and to authorize them to execute and deliver on behalf of the Company any and all bonds, forms, applications, memorandums, undertakings, recognizances, transfers, contracts of indemnity, policies, contracts guaranteeing the fidelity of persons holding positions of public or private trust, and other writings obligatory in nature that the business of the Company may require; and to modify or revoke, with or without cause, any such appointment or authority; provided, however, that the authority granted hereby shall in no way limit the authority of other duly authorized agents to sign and countersign any of said documents on behalf of the Company."

"RESOLVED FURTHER, that such attorneys-in-fact shall have full power and authority to execute and deliver any and all such documents and to bind the Company subject to the terms and limitations of the power of attorney issued to them, and to affix the seal of the Company thereto; provided, however, that said seal shall not be necessary for the validity of any such documents."

This power of attorney is signed and sealed under and by the following bylaws duly adopted by the board of directors of the Company.

Execution of Instruments. Any vice president, any assistant secretary or any assistant treasurer shall have the power and authority to sign or attest all approved documents, instruments, contracts, or other papers in connection with the operation of the business of the company in addition to the chairman of the board, the chief executive officer, president, treasurer or secretary; provided, however, the signature of any of them may be printed, engraved, or stamped on any approved document, contract, instrument, or other papers of the Company.

IN WITNESS WHEREOF, the Company has caused this instrument to be sealed and duly attested by the signature of its officer the 20th day of August, 2021.

Antonio C. Albanese, Vice President of Nationwide Mutual Insurance Company

ACKNOWLEDGMENT

STATE OF NEW YORK COUNTY OF NEW YORK: ss

On this 20th day of August, 2021, before me came the above-named officer for the Company aforesaid, to me personally known to be the officer described in and who executed the preceding instrument, and he acknowledged the execution of the same, and being by me duly sworn, deposes and says, that he is the officer of the Company aforesaid, that the seal affixed hereto is the corporate seal of said Company, and the said corporate seal and his signature were duly affixed and subscribed to said instrument by the authority and direction of said Company.



Stephanie Rubino McArthur
Notary Public, State of New York
No. 02MCE270117
Qualified in New York County
Commission Expires October 15, 2024

Notary Public
My Commission Expires
October 15, 2024

CERTIFICATE

I, Laura B. Guy, Assistant Secretary of the Company, do hereby certify that the foregoing is a full, true and correct copy of the original power of attorney issued by the Company; that the resolution included therein is a true and correct transcript from the minutes of the meetings of the boards of directors and the same has not been revoked or amended in any manner; that said Antonio C. Albanese was on the date of the execution of the foregoing power of attorney the duly elected officer of the Company, and the corporate seal and his signature as officer were duly affixed and subscribed to the said instrument by the authority of said board of directors; and the foregoing power of attorney is still in full force and effect.

IN WITNESS WHEREOF, I have hereunto subscribed my name as Assistant Secretary, and affixed the corporate seal of said Company this ____ day of _____, _____.

Assistant Secretary

BDJ 1(08-21)00



SURETY BOND SEAL ADDENDUM

Nationwide Mutual Insurance Company

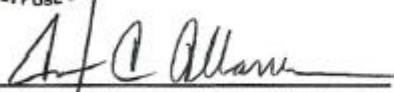
Due to logistical issues associated with the use of traditional seals during the COVID-19 pandemic, Nationwide Mutual Insurance Company has authorized its Attorneys-in-Fact to affix Nationwide Mutual Insurance Company's corporate seal to any bond executed on behalf of Nationwide Mutual Insurance Company by any such Attorney-in-Fact by attaching this Addendum to said bond.

To the extent this Addendum is attached to a bond that is executed on behalf of Nationwide Mutual Insurance Company by its Attorney-in-Fact, Nationwide Mutual Insurance Company hereby agrees that the seal below shall be deemed affixed to said bond to the same extent as if its raised corporate seal was physically affixed to the face of the bond.

Dated this 2nd day of April, 2020.

Nationwide Mutual Insurance Company



By 
Antonio C. Albanese, Vice President – Surety
Nationwide Mutual Insurance Company

July 9th, 2024

DATE

OBLIGEE City of Littleton
ADDRESS 2255 W. Berry Avenue
Littleton, CO 80120

Re: CONTRACTOR E&M Concrete, LLC

Contract No: 24-05
Project Name: 2024 Miscellaneous Concrete, Various Locations
Contract Amount: \$1,024,033.00
Bond Number: PB10617400041

To Whom It May Concern:

Enclosed are the Performance and Payment Bonds for the referenced project. Because the agreement date is not known, the bonds and powers have not been dated.

We hereby authorize City of Littleton to date all bonds and powers of attorney to coincide with the date of the contract.

Please forward a copy of the contract date for this project to complete our file to tmitchell@trustedadvisors.agency.


Thank you.

Sincerely,



Tim Mitchell
Attorney-in-Fact
Philadelphia Indemnity Ins. CO.
Ph. #303-378-3316



 303-378-3316

 tmitchell@trustedadvisors.agency

 P.O. Box 602 Parker, CO 80134

NOTICE TO PROCEED
[Project Name and Number]

Date: _____

TO: **[Type Contractor Name]**
[Type Contractor Address]

You are hereby authorized to proceed on this date, **[Date]** with the work covered in the contract documents titled **[Project Name and Number]**. Work must commence within **[Number of Days in which construction must commence]** days of acceptance of this Notice to Proceed.

OWNER, CITY OF LITTLETON

By: _____ TITLE: _____

CONTRACTOR ACCEPTANCE OF NOTICE TO PROCEED

By: _____
this _____ day of _____, 20____.
Title: _____

CONTRACTOR'S RECEIPT FOR FINAL PAYMENT

[Project Name and Number]

Date: _____

TO: [Type Contractor Name]
[Type Contractor Address]

The undersigned has accepted the City of Littleton's Check No. _____ dated _____, 20 ____ in the amount of _____ Dollars (\$ _____), as final payment of all sums due for work done under the Contract Documents titled [Project Name and Number], as amended, and as complete performance by the Contractor of all obligations to be performed by it pursuant thereto. The Contractor acknowledges and agree that no future claims for additional payments shall be made.

CONTRACTOR

By: _____ TITLE: _____

FINAL ACCEPTANCE AND WARRANTY INITIATION

[**Project Name and Number**]

Date: _____

TO: [Type Contractor Name]
[Type Contractor Address]

You are hereby notified that on the ___ day _____, 20___, the City of Littleton has accepted the construction work completed by _____, for the construction work covered under the contracts documents titled [**Project Name and Number**].

You are also notified that the warranty terms and conditions as set forth in the contract documents are initiated as of the date of this acceptance.

Final payment receipt form is attached within the contract documents for your convenience. Should this form not be returned within ten (10) calendar days, properly signed and approved, it will be assumed that lack of such performance constitutes informal giving of a receipt and satisfaction by the contractor for final settlement of all amounts due.

CITY OF LITTLETON

By: _____ TITLE: _____

NOTICE OF END OF BASIC WARRANTY PERIOD

[Project Name and Number]

Date: _____

TO: _____

You are hereby notified that on the ____ day of _____, 20____, the City of Littleton has ended the basic warranty period for the construction work completed by _____ for the construction work covered under the contract documents titled **[Project Name and Number]**. The basic warranty two (2) years from the date of Final Acceptance and warranty initiation.

You are also notified that the contract provisions concerning additional warranties on remedied work; patented devices, materials, and processes which may have been used in this construction; or other expressed warranties are not relinquished by the owner as a result of the issuance of this notice.

CITY OF LITTLETON

By: _____
Title: _____

Exhibit E

2024 MISCELLANEOUS CONCRETE PROJECT

CITY PROJECT No. 24-05

CITY OF LITTLETON, COLORADO

PROJECT SPECIAL PROVISIONS

MODIFICATIONS TO COLORADO DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS

The technical specifications for this project shall be the Colorado Department of Transportation 2023 Standard Specifications for Road and Bridge Construction and the most recent version of the Metropolitan Government Pavement Engineers Council Pavement Design Standards and Construction Specifications. The following special provisions supplement or modify the Standard Specifications and Supplemental Specifications and take precedence over the Standard Specifications, Supplemental Specifications, and plans.

PROJECT SPECIAL PROVISIONS

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City Project Manager: Matthew Matuszewski, PE –
MMatuszewski@littletongov.org

Engineer Technician II: Paul Hitzges – PHitzges@littletongov.org

The above referenced individual or his designee are the only representatives of the City with authority to provide any information, clarification, or interpretation regarding the plans, specifications, and any other contract documents or requirements.

COMMENCEMENT AND COMPLETION OF WORK

The Contractor shall commence work under the Contract within seven (7) calendar days after date of the "Notice to Proceed" work shall be completed within **90 calendar days** for Bid Schedules 1. Minimum salient features to be shown on the Contractor's Progress Schedule for all schedules (in the tabulation of quantities) are:

1. Submittals
2. Traffic Control & Erosion Control
3. Removals
4. Concrete Forming
5. Concrete Pouring
6. Hot Mix Asphalt Laydown
7. Roadway Sweeping and Clean Up
8. Landscaping
9. Final Acceptance

All work on the streets within a highly trafficked area of a school shall be completed prior to August 13th, 2024. Work shall include all construction activities. If work is not completed prior to the milestone date, then working hours will be reduced to between the hours of 9:00 a.m. and 3:00 p.m. with traffic being able to use the roadway at 3:00 p.m.

Streets with school traffic anticipated on this project include:

- Cedar Street
- Datura Street
- Peakview Avenue
- Sherman Street
- Grant Street
- Pennsylvania Street

REVISION OF SECTION 101 – GENERAL PROVISIONS

SECTION 101 of the Standard Specifications is hereby revised for this project as follows:

101 DEFINITIONS & TERMS

Technical Specifications related to construction materials and methods for the work embraced under this Contract shall consist of the Colorado Department of Transportation Standard Specifications for Road and Bridge Construction dated 2019.

Certain terms utilized in the Specifications referred to in the paragraph above shall be interpreted to have different meaning within the scope of this Contract. A summary of redefinitions follows:

Subsection 101.28 “Department” shall mean the City of Littleton, Colorado.

Subsection 101.29 “Chief Engineer” shall mean the City Engineer, Littleton, Colorado, or designated representative.

Subsection 101.39 “Laboratory” shall mean Littleton, Colorado or their designated representative.

Subsection 101.51 “Project Engineer” or “Project Manager” shall mean the City Engineer, Littleton, Colorado, or their designated representative.

Subsection 101.76 “State” shall mean Littleton, Colorado (where applicable).

REVISION OF SECTION 105 – CONTROL OF WORK

SECTION 105 of the Standard Specifications is hereby revised for this project as follows:

105.17 REMOVAL OF UNACCEPTABLE WORK AND UNAUTHORIZED WORK

Shall include the following:

Existing condition or damage to any adjacent infrastructure and/or structures shall be the responsibility of the Contractor to fully document prior to any work. The Contractor shall notify the Engineer of any existing damage and provide photographs or videos of pre-construction conditions and to confirm the various locations, and their limits, of existing damage prior to any work.

REVISION OF SECTION 107 – LEGAL RELATIONS AND RESPONSIBILITY TO PUBLIC

Section 107 of the Standard Specifications is hereby revised for this project as follows:

107.02 PERMITS, LICENSES, AND TAXES

Shall include the following:

Unless otherwise specified, the Contractor shall procure all required permits and licenses; pay all charges, fees, and taxes, including permits procured for this project by others; and give all notices necessary and incidental to the due and lawful prosecution of the work. The costs of these permits will not be paid for separately but shall be included in the work.

Prior to beginning work, the Contractor shall furnish the Engineer with a written list of all permits required for the proper completion of the contract. The list shall clearly identify the types of permits that must be obtained before work on any particular phase or phases of work can be started. Copies of the fully executed permits shall be furnished to the Engineer prior to construction.

107.07 PUBLIC CONVENIENCE AND SAFETY

Shall include the following:

The Contractor shall provide the following services on an ongoing basis throughout the duration of the project:

- a. A contact person for the project shall be designated by the Contractor at the preconstruction conference. This individual shall be primarily responsible for maintaining communications with the Engineer and impacted residents/businesses; provide information on a regular basis to private individuals, local organizations interested in the project and the affected agencies.
- b. The following agencies, at a minimum, shall be coordinated with on an ongoing basis:

**City of Littleton
South Metro Fire and Rescue
City of Littleton Police Department
Adjacent Businesses / Residents
RTD**

- c. A letter of introduction and notice of work shall be delivered to all affected landowners and tenants at least five (5) business days and no more than ten (10) business days prior to mobilization and the commencement of work for each project site.

- d. Updates shall be on a weekly basis after mobilization and one (1) week prior to any major traffic switches.
- e. A letter of introduction shall be delivered to all affected property owners, tenants and/or residents prior to mobilization. The letter shall contain the following information as a minimum:

- Contractor – Name, Address, Phone Number
- Field Superintendent – Name, Mobile Phone Number
- Schedule and description of work
- Information regarding private property and repair procedures

- f. In the event a driveway entrance will be impacted the contractor shall notify the property owner in writing a minimum of forty-eight (48) hours prior to the commencement of construction activities at the corresponding address.
- g. Payment for the above requirements will not be made separately but shall be included in the work.

107.10 BARRICADES AND SIGNS

Shall include the following:

Construction traffic control signs or devices not in use shall be removed from the roadway and pedestrian walkway (sidewalk & trails). Laying the sign down in a horizontal position or turning the sign parallel is not permitted on the sidewalk and/or within private property such as residential yards.

Variable Message Boards (VMB) shall contain the following information at a minimum: type of work, the scheduled week of work, and the phrase "ALTERNATE ROUTES ADVISED". Any missing or defaced signs shall be replaced within twenty-four (24) hours.

"NO PARKING" signs shall be placed a minimum of forty-eight (48) hours in advance of any conflicting construction activities on specific segments of streets with proposed improvements where on-street parking is permitted. No Parking signs shall specify the date range and time where no parking will be allowed due to construction activities.

Any other signs as required by the Traffic Engineer shall be placed.

For locations that do not have sufficient right-of-way available to store the sign(s) or device(s), they must be picked up or moved to an approved storage area. Signs that are placed in the medians must be dismantled, laid down, or relocated to the approved storage area.

REVISION OF SECTION 108 – PROSECUTION AND PROGRESS

SECTION 108 of the Standard Specifications is here by revised for this project as follows:

108.03 SCHEDULE

Shall include the following:

The contractor shall provide a construction schedule at the pre-construction meeting for review by the Engineer. The Engineer may adjust the construction schedule, with notification to the Contractor, to ensure completion of certain road segments by certain dates.

108.05 LIMITATION OF OPERATIONS

Shall include the following:

In residential areas, the Contractor shall limit hours of operation to **7:00 a.m. to 7:00 p.m. Monday thru Friday**, or as otherwise approved in writing by the Engineer. In non-residential areas, the Contractor is encouraged to perform work activities during evening and weekend hours as approved in writing by the Engineer.

The Contractor shall work on, at most, three (3) streets and only one (1) side of the street at any given time. Additional work zones may be approved by the Owner if the contractor demonstrates the ability to perform the work in a timely manner.

108.09 FAILURE TO COMPLETE WORK ON TIME

Shall include the following:

A daily charge will be made against the Contractor for each calendar day that work is performed outside the working times listed in 108.05, Limitation of Operations. A penalty of \$500 per occurrence will be applied as Liquidated Damages.

PORTLAND CEMENT CONCRETE PAVEMENT

30.1 DESCRIPTION

The concrete shall be composed of fine and coarse aggregates, portland/hydraulic cement, supplementary cementitious materials, admixtures, and water. The ingredients are specified in Sections 30.2A through 30.2F. Reference documents ACI 301 and ACI 318.

30.2 MATERIALS

All materials used in concrete shall be the same materials used in the concrete represented by the field test records or trial batch mixtures. Materials substitution shall be approved by the AGENCY.

A. Aggregate

Aggregate is defined as granular material, such as sand, gravel, crushed stone, and iron blast furnace slag, used with a cementing medium to form hydraulic-cement concrete or mortar as per ASTM C125. Other materials that are significantly detrimental to the concrete mix should be excluded from the aggregate or aggregate blend utilized.

1. Alkali-Silica Reactivity

Aggregates containing certain ingredients can react with the cement in concrete causing expansion of the concrete. The following tests shall be performed to help produce concrete resistant to alkali-silica reaction. Individual aggregates shall be tested and considered innocuous if it complies with the following:

- ASTM C1260 14-day expansion less than or equal to 0.10%, or
- ASTM C1293 1-year expansion less than or equal to 0.040%

For aggregates that do not meet these criteria, mitigation measures shall be demonstrated in accordance with the below to meet the minimum requirements:

- ASTM C1567 14-day expansion less than or equal to 0.10%*, or
- ASTM C1293 2-year expansion less than or equal to 0.040%*

*Tested with submitted concrete mix design cement, supplementary cementitious materials, and aggregate(s) Individual aggregate proportions or the aggregate blends which shall be used in the mix design shall be tested. Alternative mitigation measures will be considered case by case (see Table 30.2A-3).

2. Fine Aggregate

Fine aggregate shall meet the requirements in ASTM C33, except as follows. The gradation shall meet the requirements in Table 30.2A-1.

**Table 30.2A-1
Fine Aggregate Gradation**

Sieve	Percent Passing, %
3/8 inch	100
No. 4	95 - 100
No. 8	80 – 100
No. 16	50 – 85
No. 30	25 – 60
No.50	5 – 30
No. 100	0 – 10
No. 200	0 – 3 *

*Manufactured sand that consists of over 50% crushed particles limits No. 200 to a maximum of 5%.

Sulfate soundness loss by weight (ASTM C88) shall not exceed 10% (Sodium Sulfate,) or 15% (Magnesium Sulfate.)

The maximum deleterious substances and organic impurities shall not exceed the limits listed in ASTM C33 (Table 30.2A-2).

**Table 30.2A-2
Fine Aggregate Deleterious Substances and Organic Impurities**

Material	ASTM	Limit
Material finer than 200 mesh sieve	C117	3% by weight
Shale	Petrographic analyses	1% by weight
Coal and Lignite	C123	0.5% by weight
Clay lumps and friable particles	C142	3% by weight
Organic Impurities	C40	Plate 3
3/8 inch	20 to 55	--

The sum of the percentages of the above deleterious substances shall not exceed 5% by weight.

3. Coarse Aggregate

Coarse aggregate gradation shall meet the requirements in ASTM C33 (Table 30.2A-3).

**Table 30.2A-3
Coarse Aggregate Gradation**

Sieve Size	No. 67 (3/4" Nominal) % Passing	No. 57 (1" Nominal) % Passing	No. 467 Combined Grading % Passing
2 inch	- -	- -	100
1 1/2 inch	- -	100	95 to 100
1 inch	100	95 to 100	- -
3/4 inch	90 to 100	- -	35 to 70
1/2 inch	- -	25 to 60	- -
3/8 inch	20 to 55	- -	10 to 30
No. 4	0 to 10	0 to 10	0 to 5
No. 8	0 to 5	0 to 5	- -
No. 200	- -	- -	- -

Note: Grading No. 57 or 67 shall be used when the concrete section thickness is six (6)-inches or less, unless otherwise specified.

Wear shall not exceed 50% as tested in accordance with ASTM C131/C535 (based on nominal maximum aggregate size). Sulfate soundness loss by weight (ASTM C88) shall not exceed 12% (Sodium Sulfate), or 18% (Magnesium Sulfate).

The maximum percentage of deleterious substances shall not exceed the limits in ASTM C33 (Table 30.2A-4).

**Table 30.2A-4
Coarse Aggregate Deleterious Substances**

Material	ASTM	Limit
Material finer than 200 mesh sieve	C117	1% by weight
Lightweight fragments (specific gravity < 2.4)	C123	3% by weight
Coal and Lignite (specific gravity < 2.4)	C123	0.5% by weight
Clay lumps and friable particles	C142	3% by weight

Non-aggregate material such as wood, sealant, and backer-rod are considered deleterious substances. The sum of the percentages of the above deleterious substances shall not exceed 5% by weight.

4. Combined Aggregate Blends

Combined aggregate blends will be allowed. Individual aggregates that do not meet the gradations in Table 30.2A-3 may be blended to achieve the gradations in Table

30.2 A-3. Intermediate aggregates may also be added to improve fresh and hardened properties of concrete.

Optimized gradations may be used by following a Shilstone, KU Mix, or similar method. The combined aggregate gradation usually falls within Zone II of Figure 30.2 but is not required to be within this Zone. Coarseness factor and workability factor shall be computed as follows:

Q (Quality) = % combined aggregate retained on $3/8$ inch sieve

I (Intermediate) =

% combined aggregates passing $3/8$ inch sieve and retained on #8 sieve

W (Workability) = % combined aggregate passing #8 sieve

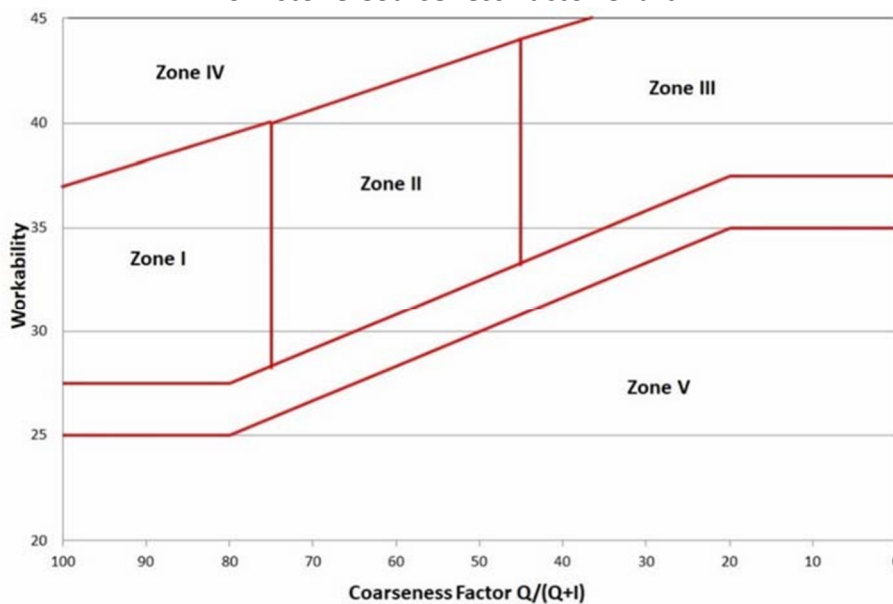
CF (Coarseness Factor - X axis) = $\frac{Q}{(Q+I)}$

WF (Workability Factor - Y axis) = W

The workability factor should be adjusted based on the total cementitious content (cement plus any supplementary cementitious materials) prior to plotting using the following equation:

WF_{adj} (Adjusted Workability Factor) = $W + \left(\frac{\text{wt. cementitious}}{94 \text{ lbs.}} - 6 \right) * 2.5$

Figure 30.2A-1
Shilstone Coarseness Factor Chart



B. Cement

Portland/hydraulic cement shall conform to the following specifications:

**Table 30.2B-1
Cement Types**

Description	Specification	Type
Portland Cement ¹	ASTM C150	I, II, or V ²
Blended Hydraulic Cement	ASTM C595	IL(MS), IL(HS), IP, IP(MS), IP(HS) or IT
Hydraulic Cement ³	ASTM C1157	GU, MS, HS, shall be limited to a maximum of 15% limestone

1 ASTM C150 Type III may be allowed for fast track applications.

2 ASTM C150 Type II cement meeting the optional limits in accordance with ASTM C452 may be substituted for ASTM C150 Type V cement. ASTM C452 documentation shall be valid for two (2) years.

3 ASTM C1157 Type HE may be allowed for fast track applications.

C. Supplementary Cementitious Materials

1. Fly Ash

Fly ash or natural pozzolans shall conform to ASTM C618, for Class C, F, N, or AASHTO M321 for High Reactivity Pozzolans.

2. Slag Cement

Slag cement shall conform to ASTM C989, Grade 100 or Grade 120.

D. Admixtures

Air-entraining admixtures shall conform to ASTM C260.

Chemical admixtures shall conform to ASTM C494, according to the following types:

Type A – Water-reducing

Type B – Retarding

Type C – Accelerating

Type D – Water-reducing and retarding

Type E – Water-reducing and accelerating

Type F – Water-reducing, high range admixtures

Type G – Water-reducing, high range, and retarding

Type S – Specific performance

Calcium chloride shall not be used for exterior concrete. Written approval by the Agency shall be obtained prior to the use of any Type S admixtures. Application of admixtures shall be per manufacturer's recommendations.

Corrosion inhibiting admixtures shall meet ASTM C1582.

Pigments for integrally coloring concrete shall meet ASTM C979.

E. Water

Water shall be potable or qualified by conforming to ASTM C1602.

F. Fibers

Fibers shall be allowed and must conform to ASTM C1116:

Type I	Steel fiber-reinforced concrete or shotcrete. Contains stainless steel, alloy steel, or carbon steel fibers.
Type II	Glass fiber-reinforced concrete. Contains alkali-resistant glass fibers.
Type III	Synthetic fiber-reinforced concrete. Contains virgin homopolymer polypropylene fibers or other synthetic fibers.
Type IV	Natural fiber-reinforced concrete that contains cellulose fibers.

G. Reinforcing Steel

All steel shall meet the requirements as noted or as shown in the project plans. Mesh reinforcement shall meet ASTM A1064 for plain and deformed welded wire.

1. Tie Bars for Pavement

Tie bars shall be ASTM A615 Grade 60 deformed steel bars and conform to the requirements of ASTM A775, except that ends need not be patched and frames are not required to be epoxy coated. Tie bars fabricated with ASTM A615 Grade 40 steel may be used for construction requiring bent bars.

2. Dowel Bars for Pavement

Dowel bars shall be ASTM A615 Grade 60 plain steel bars conforming to ASTM A775, except that ends and frames need not be epoxy coated. Dowel bars shall be free from burring or other deformation restricting slippage in the concrete. The dowels shall be coated with a bond-breaker recommended by the manufacturer.

3. Tie Bars For Curb, Gutter and Cross Pans

Epoxy coated #4 rebar shall be placed and secured, using epoxy grout, in all transitions between old concrete and newly placed concrete. The rebar will be placed in the curb and gutter portion of both monolithically placed curb, gutter and walk and standalone curb and gutter. The rebar will have at minimum 2" of coverage of concrete in all directions and will be placed every 1 subsequent foot after the first 2". Rebar placement shall be considered incidental to the overall cost of the concrete placement and will not be paid separately.

4. Expansion Joint Material

Expansion material will be placed explicitly at the direction of the Engineer and shall be considered incidental overall cost of placement of the material and will not be paid separately.

H. Curing Materials

Curing materials shall conform to one of the following:

**Table 30.2H-1
Curing Materials**

Material	Specification
Liquid membrane-forming curing compounds	ASTM C309, Type 2, Class A, or Class B
Liquid membrane-forming compounds having special properties for curing and sealing concrete	ASTM C1315, Type I or II, Class A
White polyethylene film	ASTM C171
White burlap-polyethylene sheeting	ASTM C171
Waterproof paper	ASTM C171

I. Joint Sealant, Backer Rod & Expansion Joint Materials

The joint sealant for all sawed longitudinal and transverse joints shall be a silicone joint sealant meeting ASTM D5893. ASTM C1193 provides guidance for use of joint sealants.

Blocking medium shall be an expanded closed cell polyethylene foam backer rod or non-plastic rope that is compatible with the joint sealant material and meets ASTM C1330, Type C or ASTM D5249.

Polyethylene expansion joint materials shall be flexible, low density, expanded extruded polyethylene plank formed by the expansion of polyethylene base resin, extruded as a multicellular, closed cell, homogeneous foamed polyethylene. Laminations shall not be permitted. The joint material shall conform to ASTM D1751, ASTM D1752, or ASTM D8139.

J. Miscellaneous Additional Products

Use of additional products and or special ingredients may be approved by the Agency on a project specific basis.

30.3 CONCRETE MIXTURE PROPORTIONING

The following criteria is for general use exterior flatwork and concrete pavement, both of which may be exposed to deicing chemicals, as detailed in the application types in Table 30.3A-1.

A. Mixture Requirements

Jobsite, placement size, and exposure conditions may require modifications to these general criteria.

**Table 30.3A-1
Mix Design Criteria**

		EXTERIOR - General, Deicer Resistant	PAVING – Deicer Resistant
MIX SELECTION BY USE	Designation	EXT-DR	P-DR
	Acceptable CDOT Mix Substitution Class	D, B, S35	P
	Typical Application Type	Flatwork, sidewalk, curb and gutter, curb ramps, bridge structure and decks, other structures	Concrete pavement, bus pullouts, curb and alley cuts or pans
	Typical Cure Environment	Year-Round	Year-Round
STRENGTH REQUIREMENTS	Minimum Design Compressive Strength (f'c)* at 28 Days	4,500 psi	4,500 psi
	Minimum Lab Mix Design Compressive Strength at 28 Days	5,200 psi	5,200 psi
	Minimum Design Flexural Strength at 28 Days	Not Required	650 psi
	Minimum Opening Compressive Strength	2,000 psi (before construction traffic) 2,500 psi (before normal traffic) All opening strengths must be verified with maturity methods. Alternative mitigation measures will be reviewed individually	
MIX COMPONENTS	Allowable Cement Types	Refer to Table 30.6	
	Allowable Supplementary Cementitious Materials	ASTM C618 Class F Fly Ash, Class C Fly Ash, or other approved pozzolans (20-30% replacement of cement) ASTM C989 Slag Cement, Grade 100 or 120 (20-50% replacement of cement) Supplementary cementitious materials are required to mitigate deicer impacts	
	Minimum Cementitious Material Content (cement + supplementary cementitious materials)	520 lbs./cy (flatwork) 565 lbs./cy (structures; inlets, buried sewer box culverts, vaults)	520 lbs./cy
	Maximum Water-to-Cementitious Material (W/CM) Ratio [water/(cement + supplementary cementitious materials)]	0.45	0.44
	Sulfate Resistance	Subject to the limits in CDOT 601.04 Sulfate Resistance	
SLUMP	Lab Mix Design Slump Range	Slump requirements will vary based on application (hand vs. machine placement or other) Slump acceptance is based on approved supplier mix design and set limits	
TEMPERATURE	Fresh Concrete Temperature (for placement)	Between 50 F and 95 F	
	In-Place Concrete Temperature (during curing)	A minimum of 50 F for at least 48 hours, or until it reaches 2,000 psi compressive strength. Use curing blankets as needed and verify using temperature monitoring devices, such as a min-max thermometer or maturity logger	

*f'c = Minimum Specified Compressive Strength

The concrete mixture shall include a supplementary cementitious material to mitigate winter deicer impacts, and the type(s) of supplementary cementitious materials allowed are dependent on sulfate contents in the subgrade soils.

The supplier should have available a range of mixtures that will work with various placing temperatures, slumps, climates, and need to adhere to required setting and opening time to pedestrian and vehicular traffic.

Allowable air content ranges for concrete mixture shall be according to the following table:

Table 30.3A-2
Air Content Requirements for Mix Design
(ACI 318, 19.3.3.1)

Nominal maximum aggregate size, inches	Air content, %
3/8	6.0 – 9.0
½	5.5 – 8.5
¾	4.5 – 7.5
1	4.5 – 7.5
1 – ½	4.0 – 7.0
2	3.5 – 6.5
3	3.0 – 6.0

Nominal maximum size (of aggregate) is defined in ASTM C125 as the smallest sieve opening through which the entire amount of the aggregate is permitted to pass.

Application and performance requirements will dictate the maximum nominal aggregate size.

B. Mix Design Submittal

Mix Design submittals will follow ACI 318 and include the following items at a minimum:

- Certified material test reports for aggregate, including all tests required; reporting each test, test method, test result, and other requirement specified (criteria).
- Aggregate gradations and analysis.
- Reactivity test results.
- Coarse aggregate quality test results, including deleterious materials. • Fine aggregate quality test results, including deleterious materials.
- Mill certificates for cement and supplementary cementitious materials.
- Certified test results or certifications for all admixtures.
- Specified strength, slump, air content and maximum water-cementitious materials (w/cm) ratio.

- Recommended proportions, weights/volumes for proposed mixture and trial water cementitious materials (w/cm) ratio, including actual slump and air content. Include material supplier and location of materials (pit name, cement plant, etc.)
- Compressive (and flexural when required) strength summaries and plots, including all individual beam and cylinder break results. Maturity Method data and curves showing the basis of criteria for allowing the opening of traffic on pavement.
- Submit a new design mix based on the above requirements when a significant change occurs in the mix proportions, source or type of cement, fly ash, or aggregate, or failure of field tests to meet specifications.
- The limits to possible field added weights for air, water, slump, other materials shall be clearly shown on individual dispatch tickets during production. The mix design shall be reviewed and stamped by a Professional Engineer registered in the State of Colorado. Alternatively, a mix design on the current CDOT Approved Products List (APL,) may be submitted for use.

Review of the design mix by the AGENCY does not constitute acceptance of the concrete delivered.

C. Field Acceptance

1. Fresh Properties

Concrete may be placed when slump, air content and water to cementitious materials ratio are determined to be in accordance with the AGENCY approved mix design parameters. Use Tables 30.3A-1 and 30.3A-2, and maximum water added dictated by the supplier in the mix design or delivery batch ticket when the AGENCY has no parameters. Concrete may be placed when batch tolerances are in accordance with ASTM C94, including the onsite addition of water and admixtures, and discharge time limits.

2. Strength

The strength level of standard or field cured concrete mixture specimen shall be acceptable if:

- The arithmetic average of any three consecutive strength tests equals or exceeds the Minimum Specified Compressive Strength, $f'c$, and,
No strength test falls below $f'c$ by more than 500 psi if $f'c$ is 5,000 psi or less; or by more than $0.10f'c$ if $f'c$ exceeds 5,000 psi.

If either of these requirements are not satisfied, steps shall be taken to increase the average of subsequent strength results. Evaluation of strength test results, and investigation of low strength-test results shall be in accordance with ACI 301 and ACI 318. When 28-day strength test results are below the minimum specified strength, 56-

day cylinders can be evaluated to verify minimum specified strength. Otherwise, if concrete is determined to not meet required compressive strength, in-place coring can be performed for material evaluation up to 65 days after placement. If the average of three core specimens achieve at least 85% of f'_c , the concrete placement is considered acceptable. Concrete determined to have low strength shall be removed and replaced at the Contractor's expense or may remain in place at a reduce cost at the AGENCY's discretion. Core specimens must be obtained following ASTM C42. Additional testing or coring of concrete shall be performed at the Contractor's expense.

D. Testing

Testing of Concrete shall be performed in accordance with Table 30.3D-1 .

**TABLE 30.3D-1
Contractor's QC SCHEDULE FOR MINIMUM MATERIALS SAMPLING AND TESTING**

Test Type	Test Standard	Minimum Frequency (General Use)	Minimum Frequency (Pavement)
Strength	ASTM C31 ASTM C39	One set* per 100 cubic yards (minimum of one set per day)	One set* per 500 CY (minimum of one set per day)
Air Content	ASTM C231	One test per each first three trucks, then one for every five trucks** and with each set of strength samples	One test per each first three trucks, then one for every 500 CY** and with each set of strength samples
Slump	ASTM C143	One test per each first three trucks, then one for every five trucks** and with each set of strength samples	One test per each first three trucks, then one for every 500 CY** and with each set of strength samples
Temperature	ASTM C1064	One test with every air and slump test	One test with every air and slump test
Unit Weight	ASTM C138	One per air content test	One per air content test
Thickness	ASTM C174	--	One core per 1,500 LF per lane or utilize MIT Scan T3 or equivalent

+QA testing may be less frequent than that required for QC testing.

*One set consists of at least 5 cylinders, with a minimum of 3 cylinders tested at 28 days. One cylinder may be tested at 7 days and one held for compressive strength testing at 56 days, in case compressive strength tests do not meet requirements at 28 days.

**If out of specification, test each truck until within specification

Testing shall be performed by ACI Concrete Field Testing Technician Grade I certified technicians. The AGENCY shall determine who is responsible for performing QA testing, and the CONTRACTOR shall be responsible for QC testing. QC testing will not be paid for separately but shall be considered part of the work.

The CONTRACTOR shall provide and maintain onsite facilities that will allow for the initial curing of test specimens to meet the requirements of ASTM C31. The AGENCY, CONTRACTOR, TESTING LABORATORY, AND CONCRETE SUPPLIER shall meet to discuss the adequacy and location of the on-site initial curing facilities location. Test results will be distributed by the TESTING LABORATORY to the AGENCY, CONTRACTOR, CONCRETE SUPPLIER, and any other appropriate representatives after specified project break dates of compressive strength specimen.

Laboratories performing tests shall be accredited by a nationally recognized accrediting organization. The laboratory will meet the requirements of ASTM C1077 and E329 for Aggregates and Concrete. Temporary field laboratories shall meet the same requirements, but the principal laboratory shall be accredited. Testing shall be performed by individuals certified in the testing conducted or under the direct observation of certified individuals while in training and in pursuit of certification (within 3 months). Results of tests determined to have not been performed in accordance with applicable ASTM standards or criteria stated here shall not be used in the determination of acceptance. (Note: Records of technician certifications, and equipment calibrations and verifications shall be maintained and made available for review.)

30.4 MATURITY (TIME-TEMPERATURE) METHOD AND ESTIMATING CONCRETE STRENGTH

The Maturity Method may be used to make reliable estimates of the in-place strength of concrete, particularly when early opening is desired or required by the AGENCY. This is a two-step procedure:

- First, a relationship must be established between the maturity values and the concrete strength as measured by destructive methods in a laboratory in order to determine the Maturity Index. The development of the maturity curve shall be done prior to beginning construction and shall use the approved materials and mix design for the project.
- The second step is the instrumentation of the concrete to be measured. Maturity loggers are installed in the concrete and measured at predetermined intervals. By comparing those maturity readings to the laboratory curve, the in-place strength can be estimated. The contractor and the agency shall jointly develop a plan for performing the maturity testing.

A. Terminology

Datum Temperature	“The datum temperature is a selected temperature value at which it is assumed that no reactions occur to contribute to strength.” (TIP 15)
Maturity Logger	A device required to monitor and record the concrete temperature as a function of time and compute the Maturity Index.
Maturity Method	“A technique for estimating concrete strength that is based on the assumption that samples of a given concrete mixture attain equal strengths if they attain equal values of the maturity index.” (ASTM C1074)
Strength-Maturity Relationship	“An empirical relationship between concrete strength and maturity index that is obtained by testing specimens whose temperature history up to the time of test has been recorded.” (ASTM C1074) In this document the Strength-Maturity Relationship is referred to as the Maturity Curve.
Temperature-Time Factor	“The maturity index computed as the area between the concrete temperature and the datum temperature from the plot of measured concrete temperature versus time, expressed in units of degree-days or degree hours.” (ASTM C125) In this document the Temperature-Time Factor is referred to as the Maturity Index.

B. Laboratory Curve Development

Maturity curves should be developed in a laboratory with the same concrete mix design that will be used on the project. It is acceptable to use concrete produced at the ready mix plant, and delivered to the laboratory, for development of the maturity curve.

Determine test cylinder size according to ASTM C192. Prepare a minimum of 15 cylinders for testing in addition to cylinders that will contain the maturity loggers.

The maturity logger should be placed in the center of the cylinder with the lead exposed. Use two maturity loggers, in separate cylinders, for curve development. Activate the maturity loggers, input datum temperature, and record the logger activation time immediately after molding is complete.

Moist cure cylinders in a water bath, or a moist room, following the requirements of ASTM C511.

For conditions when maximum accuracy of strength estimation is desired the appropriate datum temperature can be determined experimentally. For convenience, 0 degrees Celsius is an industry standard datum temperature selection in the absence of verification testing.

For high early applications, the recommended cylinder curing environment is described in ASTM C1758. Several field and laboratory observations have indicated that concrete mixtures with rapid strength development generate increased early age heat that cannot be replicated through standard curing. Standard curing of this type of concrete slows the hydration reaction and restricts the early age heat which would otherwise occur. This restriction in early age heat and strength development may yield an inaccurate maturity curve. In all cases, cure cylinders for maturity curve development in a manner that closely mimics the expected jobsite curing conditions.

Determine measurement ages based on the type of cylinder curing environment that will be utilized. Take a minimum of three measurements prior to reaching the target strength for the project, and two afterwards. Record the averages of the maturity values, temperatures and at least two compressive strengths at each measurement age. If the range of compressive strength of the two specimens exceeds 10% of their average compressive strength, test another cylinder and compute the average of the three tests. If a low test result is due to an obviously defective specimen, discard the low test result.

Input the recorded data into the maturity software system that is being utilized. Provide a report that summarizes the following data from the trial:

- Batch Date
- Batch time
- Logger activation time
- Datum temperature
- Mix Code
- Concrete slump, air content, unit weight, temperature and water to cementitious ratio at the time of testing
- Minimum and maximum temperatures recorded
- At each test age list averages of the maturity values, temperature and compressive strengths
- What size cylinder or beam that was used as a specimen type
- The time-temperature factor for the target compressive strength
- The appropriate equation from ASTM C1074 Section 6 used
- Plotted maturity curve with the maturity value on the X axis and the strength listed on the Y axis

If specified, a flexural strength maturity relationship is permitted. Use the same procedures found in Section 30.4B above to develop the flexural maturity curve.

Development of a new maturity curve due to material source, or proportion changes, in a concrete mix may be waived by use of the verification procedure found in Section 30.4D.

C. Field Measurement

The AGENCY is responsible for the maturity determination of in-place concrete such as designating the location and quantity of maturity sensors and verifying the required maturity index for the project.

Prior to concrete placement, install maturity loggers at locations in the structure that are critical in terms of exposure conditions and structural requirements. Sensors should be surrounded by concrete and not be in direct contact with metallic embedment's or other features that are partially exposed to the environment. For pavements, insert the maturity loggers into the concrete until the probe is at approximately the slab mid-depth, and at least two feet from the edge. Consult the AGENCY for smaller sections of pavement where this is not possible.

D. Determination of In-Place Strength

The field placement will likely reach the target maturity index faster than the cylinder specimens did during the development of the maturity curve. This is more accentuated when using high early concrete. A plan should be developed for each pour as to when maturity readings in the field will begin based on the anticipated rate of strength gain of the concrete placement. Consult with the Ready-Mix supplier to understand this in more detail.

When the strength at a location is to be estimated, read the maturity index from the logger.

Verification of the strength maturity relationship is performed when safety critical elements are identified by the AGENCY. Cast at least three field-molded cylinders. A maturity logger will be placed in the center mass of one cylinder. Activate the maturity logger immediately after molding is complete. Subject these cylinders to the same curing method used during maturity curve development. When the logger reads 90-100% of the target maturity index, transport all cylinders, including the one with the logger, to the testing location. Prior to testing any cylinders, record the temperature, maturity index and elapsed time of the embedded logger. Test at least two cylinders to determine the average compressive strength. If the average compressive strength of the cylinders is more than 10% below the strength indicated by the maturity curve at that time, a new strength maturity relationship should be developed. If the average compressive strength of the cylinders is more than 10% over the strength indicated by the maturity curve at that time, it is not necessary to develop a new curve unless more accuracy is deemed necessary by the AGENCY.

E. Factors Requiring a New Curve

Changes in material sources, proportions, and mixing equipment all affect the maturity value of a given concrete mixture. If the w/c ratio of the production concrete exceeds the w/c ratio of the concrete used to develop the strength-maturity curve by more than 0.02, a new curve shall be Item 30 - Page 16 developed. Therefore, development of a new maturity curve is generally required for any change to a concrete mix.

Development of a new maturity curve due to material source or proportion changes in a concrete mix may be waived by use of the validation procedure. If the average strength is greater than the original maturity curve at the TTF the validation beams were tested, a new curve shall not be required. A new curve shall be required if the average strength is less than the original curve at the TTF the validation beams were tested.

30.5 REFERENCES

See MGPEC VOLUME I - PAVEMENT DESIGN STANDARDS & CONSTRUCTION SPECIFICATIONS 2019 Version for references.

CONCRETE CURBS, GUTTERS, AND SIDEWALKS

31.1 DESCRIPTION

This work shall consist of constructing curbs, gutters, sidewalks, ramps, local depressions and driveways of the form and dimensions shown on the plans.

31.2 MATERIALS

Materials shall conform to the applicable requirements of Item 30, Portland Cement Concrete Pavement (PCCP).

31.3 EQUIPMENT

A. General

Equipment and tools necessary for handling materials and performing all parts of the work must have adequate capacity and be in good mechanical condition. This equipment shall be on the site, available for inspection and testing, before paving operations are started. All equipment, tools, and machinery shall be maintained in a satisfactory working condition.

Equipment shall be approved by the AGENCY. All equipment and machinery shall be kept in good working order, free of leaks and properly muffled. All taxes, licenses and fees shall have been paid and proper licenses and permits shall be posted as required by law.

B. Forms

The depth of forms for curbs shall be equal to the full depth of the curb. The depth of outside forms for concrete gutter shall be equal to the full thickness of the gutter. Timber forms, if used, shall be surfaced on the side placed next to the concrete, shall have a true smooth upper edge, and shall not be less than 1/4 inches thick after being surfaced. Warped forms and forms not having a smooth, straight upper edge shall not be used. Benders or thin plank forms, rigidly placed, shall be used on curves, grade changes or for curb returns. Steel forms shall not be used on curved sections with radii less than 200 feet. Back forms for curb returns shall be made of a minimum of 1/2-inch benders, for the full height of the curb, cleated together. Forms shall be carefully set to alignment and grade and to conform to the dimensions required. Forms shall be held rigidly in place by the use of pairs of steel stakes placed at intervals not to exceed 4 feet. If metal forms are used, steel stakes shall not be spaced more than 6 feet apart. Clamps, spreaders and braces shall be used where required to ensure rigidity in the forms.

C. Slip Forms

Slip-form paving equipment shall be equipped with traveling side forms of sufficient dimensions, shape, and strength to support the PCCP laterally for a sufficient length of time during placement to produce pavement of the required cross section.

No abrupt changes in longitudinal alignment of the pavement will be permitted. The horizontal deviation shall not exceed 0.04 foot from the alignment established by the AGENCY. All forms shall be cleaned thoroughly each time they are used and coated with a light soil often as necessary to prevent the PCCP from adhering to them.

31.4 CONSTRUCTION

Curbs, gutters and sidewalks shall be placed in sections of 90 feet maximum length, unless allowed by the Owner. Moisture treatment and stabilization of the subgrade will be required at all locations.

A. Earthwork

The subgrade shall be constructed true to the grade and cross section as shown on the plans or established by the AGENCY. It shall be thoroughly moisture conditioned and rolled or hand tamped until the subgrade from front of curb to back of sidewalk reaches the compaction required for the adjacent roadway. All soft and yielding material shall be removed to a depth of not less than 12 inches and the resulting space filled with compacted earth, sand or gravel. The City mandates that all removed soil be replaced with compacted fill. The contractor may elect to use up to three inches (3") of compacted ABC or Class 6 to establish grade, however, additional base must be approved by the City or will be considered to be "Contractor Means and Methods" and will not be compensated for the material.

The completed subgrade shall be tested for grade and cross section by means of a template extending the full depth and supported on the side forms. The subgrade and forms shall be watered in advance of placing portland cement concrete.

B. Existing Curbs, Gutters and Sidewalks

The CONTRACTOR shall remove existing curbs, gutters and sidewalks to the limits shown on the plans or directed by the Owner. Removal and replacement beyond the plan limits shall be at the CONTRACTOR's expense and no additional compensation will be allowed. Saw-cutting is included in the price of removals and will not be measured and paid for separately.

C. Curb and Gutter Expansion Joints

Expansion joints 1/2 inch wide shall be constructed in curbs and gutters at 90-foot intervals, at each side of structures and at the ends of all curb returns or driveways; except that expansion joints shall not be installed within 20 feet of an island nose. Expansion joints shall be filled with joint filler strips 1/2 inch thick conforming to

ASTM D 1751, Fiber Type. The filler for the joint shall be furnished in a single piece for the full depth and width required for the joint. Expansion joint filler shall be shaped to the cross section of the curb and gutter.

D. Sidewalk Expansion Joints

Transverse expansion joints 1/2 inch wide shall be constructed at all sidewalk returns and in line with expansion joints in adjacent curb. Where curb is not adjacent, expansion joints shall be constructed at intervals of 100 feet. Expansion joints shall coincide where curb and gutter are adjacent, even if not integral. Expansion joints shall be placed where sidewalk abuts adjacent structures, appurtenances or driveways. Expansion joints shall be filled with joint filler strips 1/2 inch thick conforming to ASTM D 1751, Fiber Type. The filler for the joint shall be furnished in a single piece for the full depth and width required for the joint unless otherwise authorized by the AGENCY.

The joint filler shall be placed with the top edge 1/4 inch below the concrete surface and shall be held in place by means of steel pins driven into the subgrade and spaced sufficiently close to prevent warping of the filler during floating. Upon completion of floating, the pins shall be removed and when finishing operations have been completed, the joint shall be edged with an edging tool having a radius of, 1/8 inch.

E. Curb and Gutter Construction

In constructing curbs, entrances for driveways shall be constructed according to the dimensions shown on the plans. With approval of the AGENCY, the curb may be constructed by the use of a curb forming machine.

Where hot mix asphalt pavement (HMAP) or portland cement concrete pavement (PCCP) is to be placed around or adjacent to manholes, drop inlets or catch basins in gutter, local depressions or driveways, such structures shall not be constructed to final grade until after the curbs and gutters have been constructed on each side of the structure in order to maintain a true grade.

The forms shall be filled to the top and the concrete shall be consolidated so that there will be no rock pockets or voids. Concrete shall be consolidated by means of mechanical vibrators approved, by the AGENCY. No concrete over 90° F shall be used. Immediately after removing the front curb forms, the face of the curb shall be troweled smooth to a depth of not less than 2 inches below the flow line or to the flow line of integral curb and gutter, and then finished with a steel trowel. The top shall be finished and the front and back edges rounded as shown on the plans.

After the face of the curb has been troweled smooth, it shall be given a final fine brush finish with brush strokes parallel to the line of curb. In no case shall the minimum time between placing concrete and removal of forms be less than 12 hours.

No dusting or topping of the surface, or sprinkling with water, to facilitate finishing shall be permitted.

The top and face of the finished curb shall be true and straight, and the top surface of curbs and gutters shall be of uniform width, free from humps, sags or other irregularities. When a straightedge 10 feet long is laid on the top or face of the curb or on the surface of the gutters, the surface shall not vary more than 1/4 inch from the edge of the straightedge, except at grade changes or curves. The exposed surface shall be cured for a period of not less than 72 hours in accordance with the requirements in MGPEC Item 30, Portland Concrete Pavement.

F. Sidewalk Construction

The structures shall be finished to smooth, NOT troweled, and uniform texture by floating with wooden or magnesium floats, and, if so directed by the AGENCY, by cross brooming or burlap-finishing. No concrete over 90° F shall be used. The surface shall be lightly grooved or marked into squares or other shapes to match other such markings on similar existing structures in the vicinity, or as designated by the AGENCY.

No dusting or topping of the surface, or sprinkling with water, to facilitate finishing shall be permitted. The minimum time between placing concrete and removal of forms is at least 12 hours. When a 10-foot straightedge is placed on the sidewalk, the surface shall not vary more than 3/4 inch from the edge of the straightedge, except at grade changes, and the finished surface shall be free from blemishes.

Immediately after the surface of the sidewalk is finished, the concrete shall be cured for a period of not less than 72 hours in accordance with the requirements of MGPEC Item 30, Portland Concrete Cement.

Contraction joints in sidewalks must be placed at a spacing equivalent to width up to 12 feet. All joints in curb and gutter must be continuous through adjacent sidewalk.

G. Cold Weather Protection

When concrete is placed with ambient temperatures below 40° F during or within the initial 72 hours of placement, the CONTRACTOR shall provide satisfactory methods and means to protect the mix from injury by freezing. The aggregates, or water, or both, shall be heated in order to place the concrete at temperatures between 50° and 90° F. Placing of concrete may be started in the morning if the CONTRACTOR desires, but shall be discontinued at 3:00 p.m. of the same day if freezing weather threatens.

The concrete or aggregates shall be protected before and after placing, as directed by the AGENCY, to retain all heat possible in the concrete mix. After the concrete has been placed, the CONTRACTOR shall provide sufficient protection such as blankets,

canvas, framework, heating apparatus, etc., to enclose and protect the structure and maintain the temperature of the concrete at not less than 50° F until at least 60 percent of the 28-day field strength has been attained. Temperatures shall be measured and recorded using a recording thermometer by the Contractor's QC Testing. Except as provided above, cold weather concreting shall be in accordance with ACI 306. If in the opinion of the AGENCY, the protection provided is inadequate, concrete placement shall cease until conditions or procedures are satisfactory to the AGENCY. No additional payment for cold weather concrete protection shall be made.

H. Hot Weather Concreting

Except by written authorization, concrete shall not be placed if its temperature exceeds 90° F. The placement of concrete in hot weather shall comply with ACI 305.

I. Opening

Walks shall not be opened to pedestrian traffic for at least 24 hours after placement. Curb cuts, curb and gutter and crosspans shall not be opened to vehicular traffic for at least 7 days after placement or until concrete has attained two-thirds of the required 28-day strength. The CONTRACTOR shall maintain suitable barricades to comply with these requirements. Early opening may be approved by the City if "High-Early" concrete has been placed and has demonstrated the approved compressive strength. Concrete shall be backfilled within 24 hours of opening to eliminate potential tripping hazards or uneven surfaces.

31.5 TOLERANCES

Surface irregularities (measured with a 10-foot long straightedge) exceeding 1/4 inch, but less than 1/2 inch, shall be ground by the CONTRACTOR at his expense. When surface irregularities exceed the foregoing limits, the CONTRACTOR shall remove and replace that portion of work at his expense.

If, after stripping of forms, any concrete is found to be not formed as shown on the Plans, or is out of alignment or level, or shows a defective surface, it shall be considered as not conforming to these specifications. The defective area shall be removed and replaced at the CONTRACTOR's expense.

31.6 MEASUREMENT

The quantity of curb and gutter measured for payment will be the number of linear feet along the base of the curb face or along the flow line of the gutter, and such measurement shall be continuous along such line extended across driveway and alley entrance returns. The quantity of sidewalk, ramps and driveway shall be measured for payment by area in square yards. All quantities herein will be complete and in place.

31.7 TESTING AND INSPECTION

Testing of portland cement concrete pavement shall be performed in accordance with Table 31.7-1.

**TABLE 31.7-1
SCHEDULE FOR MINIMUM MATERIALS SAMPLING AND TESTING**

Compressive Strength	ASTM C 39	Minimum of one (1) set per day or one (1) set per 100 cubic yards
Air Content	ASTM C 231	One test per each first three trucks, then one for every five trucks thereafter
Slump	ASTM C 143	One test per each first three trucks, then one for every five trucks thereafter
Temperature	ASTM C 1064	One test with every air and slump test

31.8 PAYMENT

All quantities of concrete measured will be paid for at the contract unit price. All excavation or backfill work required other than roadway quantities will be considered subsidiary and no further payment will be made. Saw cutting of existing installations prior to removal will not be paid for directly but the cost shall be considered as included in the contract unit price. The price shall be full compensation for furnishing all materials required and for all manipulations, labor, tools, equipment and incidentals necessary to complete the work.

Item	Description	Payment
31.8-1	Concrete Curb and Gutter Type 2 IB	\$/linear foot
31.8-2	Concrete Curb and Gutter Type 2 IIB	\$/linear foot
31.8-3	Concrete Sidewalk	\$/yd ²
31.8-4	Concrete Curb, Gutter, and Sidewalk	\$/yd ²
31.8-5	Concrete Curb Ramps	\$/yd ²
31.8-6	Removal Concrete Curb Gutter and Sidewalk	\$/yd ²
31.8-7	Removal of Curb and Gutter	\$/linear foot

REVISION OF SECTION 630 CONSTRUCTION ZONE TRAFFIC CONTROL

Section 630 of the Standard Specifications is hereby revised as follows:

Subsection 630.01 is revised to include the following:

1. Working hours shall be 7:00 a.m. to 7:00 p.m. Monday through Friday in all residential areas, or as otherwise approved in writing by the Engineer.
2. The use of alternate one-way traffic may be approved on a case-by-case basis.
3. All work done outside the times above must be approved by the Engineer in writing.

As required by, in descending order of precedence, these plans and special specifications, the current Standard Specifications, as augmented by the Colorado Department of Transportation M and/or S standards, and the current version of the Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways.

Subsection 630.10 through 630.11 shall be modified to read:

Traffic control throughout the construction area is the responsibility of the Contractor. Before starting construction, the Contractor shall submit, in writing, the proposed Method of Handling Traffic (MHT) for the initial phase of construction. When a different MHT is required for a subsequent construction phase, it must be submitted two weeks prior to starting that phase. All proposed methods of handling traffic shall be approved, in writing, by the Engineer. No phase of construction shall start until an acceptable MHT has been received and approved by the Engineer. The proposed methods shall include, as a minimum, the following:

A detailed diagram which shows the location of all sign placements, including advance construction signs (if not previously approved) and speed limit signs; method length and time duration for lane closures; and location of flag persons.

A tabulation of all traffic control devices shown in the detailed diagram including, but not limited to: construction signs, vertical panels; vertical panels with lights; Type 1 and Type 2 barricades; cones and drum channelizing devices; concrete barrier (temporary); advance warning flashing or sequencing arrow panels.

Approval of the proposed MHT is intended to indicate all devices to complete the project safely. Such approval does not relieve the contractor of liability specifically assigned to him under the contract. The Contractor shall erect and maintain warning lights, signs, barricades, and sufficient safeguards around all excavations, embankments, stockpiles, equipment, and obstructions.

Non-metallic drums may be substituted for vertical panel channelizing devices if site dimensions allow.

The Contractor shall, at the preconstruction conference, designate one of their employees, other than the Superintendent, to be responsible for traffic control management. This responsibility shall include management for the contractor's signing and all other details covered by the specifications which contribute to the convenience, safety, and orderly movement of traffic and to the comfort of the traveling public. The designated employee will have the Certification of the Traffic Control Supervisor as a Worksite Traffic Supervisor by the American Traffic Safety Services Association (ATSSA) in lieu of completion of the CDOT minimum training requirements.

Traffic control managements shall be maintained on a 24-hour per day basis. The contractor shall make arrangements so that the Traffic Control supervisor or their approved representative will be available on every working day, "on call" at all times and available upon the Engineer's request at other than normal working hours. The Traffic Control Supervisor shall have an up-to-date copy of Part VI of the MUTCD, pertaining to traffic controls for street and highway constructions, and the approved MHT available at all times.

The contractor shall apply for and receive a City of Littleton right-of-way use permit (at no cost to the contractor) prior to commencing operations.

Due to the mobility of the operation, the contractor will need to provide traffic control consistent with the MUTCD. For sweeping operations, the contractor will need to provide an MHT. The flagger's STOP/SLOW sign paddle shall be 18 inches with letters six inches high.

Subsection 630.13 is revised to include the following:

Towing

Vehicles shall be identified by the Engineer and shall be limited to any class of vehicle that is upright and on wheels. 'No Parking' signs shall have been in-place and maintained for a minimum of forty-eight (48) hours along the proposed street segment prior to towing a vehicle.

The Contractor shall make every reasonable attempt as determined by the Engineer, including but not limited to door-to-door investigation, to locate the owner/operator of the vehicle prior to initiating the towing process.

Towing shall be limited to towing a vehicle conflicting with the current or proposed work activities. Vehicles shall be towed using techniques that do not damage the towed vehicle or the roadway, adjacent structures, or other public property or assets. Vehicles shall be towed to a location designated by the Engineer at the time of towing, typically to an adjacent street beyond the proposed work area. **Towed vehicles shall be positioned in a legal parking space within a public roadway in a manner that permits through traffic.**

Immediately after towing a vehicle, the Contractor shall affix a notice to the windshield or other appropriate place on the motor vehicle, stating "This vehicle was parked within a Temporary Construction Work Zone. It was moved to this location by order of the City of Littleton Public Works.", or similar language approved by the Engineer.

The City shall not grant additional time or compensation for any resulting delays or loss of production because of failure to comply with the requirements of the Contract Documents including posting of notices and identifying and towing vehicles.

Towing Tickets

The Contractor shall deliver a towing ticket identifying the following information:

- · Date and time towing request received,
- · Make, model, and license number of vehicle towed,
- · Locations vehicle towed from and to, and
- · Signature of an authorized City Representative with time and date work performed.

Towing Equipment Requirements

Towing equipment shall, at a minimum, be equipped with a power winch, two-way radio, ten-pound dry fire extinguisher, motorcycle sling, dollies or flatbed equipment, and other modern towing and safety devices. All equipment shall be in good working condition when reporting for use.

630.17 METHOD OF MEASUREMENT and 630.18 BASIS OF PAYMENT are hereby deleted in their entirety and replaced with the following:

Traffic control shall be paid on a lump sum basis to be paid for as follows: 50 percent of the Schedule amount upon first utilization and the remaining 50 percent of the Schedule amount when 75 percent of the original schedule amount has been earned.

In the event towing services are required, the Contractor shall furnish certified invoices for reimbursement through the Force Account Item for Minor Contract Revisions. The City will reimburse the contractor up to \$150.00 per towing event, contingent upon the contractor providing certified invoices as well as proof of appropriate construction signage and timely placement. Any towing performed without required signage or pre-authorization will not be paid for.

PAY ITEM
Traffic Control

UNIT
Lump Sum

FORCE ACCOUNT ITEMS

DESCRIPTION

This special provision contains the City's estimate for force account items included in the Contract. Such estimated amounts will be added to the total bid to determine the Project Commitment Amount and the amount of the performance and payment bonds. Force Account work shall be performed as directed by the Engineer.

BASIS OF PAYMENT

Payment will be made in accordance with subsection 109.04. Payment will constitute full compensation for all work necessary to complete the item.

Force account work valued at \$5,000 or less, that must be performed by a licensed journeyman in order to comply with federal, state, or local codes, may be paid for after receipt of an itemized statement endorsed by the Contractor.

<u>Force Account Item</u>	<u>Quantity</u>	<u>Estimated Amount</u>
F/A Minor Contract Revisions	F.A.	\$100,000.00

ADDITIONS, ALTERATIONS AND MODIFICATIONS TO EXISTING FACILITIES

1. GENERAL: The existing facilities shall be altered in accordance with the drawings and notes. Materials removed may be re-used if in good condition and insofar as they are adaptable to the requirements of the drawings and specifications, and if approved by the Engineer, except as hereinafter specified or noted on the drawings to be replaced with new materials. Re-used material, if and when so directed, shall be altered to suit new requirements and items in need of repair shall be repaired as directed. Materials and construction of additions and altered portions shall conform with present material and type of construction unless otherwise indicated or noted on drawings or otherwise herein specified. Joining of new and old construction shall be made tight and uniform in appearance. Salvaged materials not used in new construction shall become the property of the Contractor and removed from the site. Present work or existing facilities damaged during alteration or otherwise marred or disfigured as a result of the completion of this contract shall be repaired or replaced as directed by the Engineer. Rough, raw or unfinished areas, exposed as a result of removal of existing items shall be patched, repaired and finished as shown on drawings or as directed by the Engineer.

2. INCIDENTAL WORK: This portion of additions, alterations and modifications covers the performance of incidental work including cleaning of existing inlets and storm drains, and removal and/or relocation of existing fences.
 - a. Removal and/or Relocation of Existing Fences: Existing fences where noted on the drawings, shall be carefully removed and relocated in a manner similar to the original installation. The new location of the fence shall be as determined by the Engineer. Should the Engineer determine that the fence need not be reinstalled, the Contractor shall pile all materials neatly in the location directed by the Engineer for handling by the appropriate property owner.

3. EXISTING CURBS, WALKS AND PAVEMENTS: All existing sidewalks, curbs, and paved or surfaced areas removed or damaged during the construction shall be repaired and/or replaced with materials and construction similar to the existing facilities, unless otherwise directed by the Engineer.

4. EXISTING LAWN AREAS: Existing lawn areas destroyed or damaged during construction shall be back-filled, graded and re-sodded as directed by the Engineer. The area shall be thoroughly moistened prior to cutting and replacing the sod. The sod shall be pressed firmly into contact with the sod bed by tamping or rolling so as to eliminate air pockets and to provide a true and even surface and insure knitting. Soil of good quality shall be used to fill all cracks between sod. Where required, sod shall be fastened to stay in the slope. Work performed within existing lawn areas shall be included with the Landscape Restoration pay item.

5. WATER FOR CONSTRUCTION: The Contractor will be responsible for obtaining any water which may be needed for backfill compacting, line flushing, or any other purpose during construction. All costs, fees, permits and arrangements for obtaining water shall be the responsibility of the Contractor.

PROJECT DESCRIPTION

The work will involve the removal of approximately 6,000 square yards of concrete, 3,000 square yards of asphalt and installation of approximately 6,000 square yards of monolithic curb gutter sidewalk, curb ramps, pans and aprons. Work will also involve associated traffic control, landscape restoration, and erosion control. The scope of work will be on various local and collector streets located throughout the City of Littleton, Colorado.

CONSTRUCTION NOTES

1. All construction shall be in accordance with the most recent versions of the “Colorado Department of Transportation – Standards Specifications for Road and Bridge Construction” and “Colorado Department of Transportation – Standard Plans, Metropolitan Government Pavement Engineers Council Pavement Design Standards and Construction Specifications and the project drawings and specifications included herein.
2. After an award has been made, a Preconstruction Conference will be held at the offices of the City of Littleton, Engineering Division. The Contractor shall submit a construction schedule to the Engineer for approval before the Preconstruction Conference.
3. The City will issue the Contractor a "No Fee" City of Littleton Right of Way Permit for the Work.
4. The Contractor shall make continuous progress on each street or location and must complete all work prior to starting work on another street or location, unless obtaining specific written City of Littleton approval.
5. The City will allow the Contractor to temporarily store equipment and/or materials within the Right-Of-Way. All storage locations must be approved by the Engineer. If the Contractor chooses to store any equipment and/or material on private property, the Contractor shall provide a copy of any written agreement or approval from the owner of the property which

is to be utilized. The City may allow the Contractor to store equipment or materials at secured City storage facilities, if space is available.

6. The Contractor shall familiarize themselves with the extent of landscaping, walls, fences, sod and irrigation lines which may be affected by the construction prior to preparing their bid. The cost of replacement of landscaping, walls, fences, sod or irrigation lines shall be incidental to the work and will not be paid for separately. Removal of landscaping shall be kept to a minimum.
7. The Contractor shall verify and be responsible for all features, including all underground and above ground utilities, prior to beginning any work. See "CDOT Standard Specifications for Road and Bridge Construction", Subsection 105.11. For utility construction coordination, the Contractor shall contact the utility notification center for Colorado at 800.922.1987. The Contractor shall be responsible for field locating, verifying, and protecting all existing utilities within the project areas. The Contractor shall:
 - a) Work with the appropriate utility company in verifying locations.
 - b) Pay for any damage to and arrange for the repair of any existing utilities damaged or disrupted during construction. "Utilities" shall include lawn irrigation pipes and appurtenances.
8. In the event widened sidewalks encroach onto existing landscape irrigation systems the contractor shall realign the existing landscape irrigation systems. A claim against the Force Account may be given for the realignment of the existing landscape irrigation systems. Damaged sprinklers due to the Contractor's removal and forming process and not because of altered configuration shall be repaired at the Contractor's expense.
9. The concrete and asphalt removal shall be limited to what is marked in the field by the Engineer. Maximum asphalt removal for payment purposes shall be 2.0 feet from the edge of proposed gutters but may be less provided a neat line or front form can be used and properly compacted, as marked in the field by the Engineer and verified by the Inspector. Adjustment to these limits may be made as specified by the Engineer and all payment for removal work shall be considered payment in full regardless of thickness of each removal area. The asphalt shall be saw-cut to a smooth line and the cost of saw-cutting shall be included in the work. Asphalt removed beyond these limits, and not approved previously by the Engineer, shall be replaced by the Contractor at their expense. Asphalt patching shall be Grade S 64-22 at a compacted thickness to match the existing pavement thickness with a maximum total thickness of 6 inches with no single lift exceeding 3 inches, and shall be paid for by the ton, complete in place, including tack oil.
10. All concrete shall be replaced to six (6) inches thickness except for pans and aprons, which shall be eight (8) inches. Concrete shall be paid for by the square yard or linear foot as noted on the plans and in these contract documents, complete in place, including any specified reinforcement.

11. Prior to mobilization, the Contractor shall submit the job mix design for Hot Mix Asphalt Pavement and Portland Cement Concrete for approval by the Owner.
12. All excess excavation, destroyed sod and other material determined unsuitable for backfill in the opinion of the Engineer shall be removed (including loading, hauling, and dumping fees, etc.) from the site at no additional cost to the Owner. The Contractor shall not carelessly remove material suitable for backfill from the site. New concrete shall be backfilled with clean soil in the area behind the concrete, to match the adjacent existing landscape elevation. Existing soil generated from concrete work may be used for backfill, provided it does not contain trash, organic material or broken concrete or asphalt.
13. Any portions of existing facilities not reused on this project shall become the property of the Contractor and are to be removed from the site at no additional cost to the Owner.
14. The Contractor shall be responsible for securing the safety of the construction area with adequate fence, tape or other approved measures. The cost of erecting and removing fence or other approved devices to secure the construction area shall not be paid for separately but shall be included in the cost of the Work.
15. The Contractor shall be responsible for repairing all pavement surfaces not marked for removal, but which might be damaged by staging, stockpiling materials or equipment operation. The Engineer and the Contractor shall together document existing conditions and other information prior to any construction activities.
16. For this project no soils investigation was done. It shall be incumbent upon the Contractor to do their own testing at their sole expense, if they so desire.
17. Access to adjacent properties and driveways shall be maintained for the duration of the Work and shall be the responsibility of the Contractor. This will require constructing pans, alleys, sidewalks and driveways in phases.
18. The Contractor is responsible for setting any needed line or grade construction staking, the cost of which shall be considered included in the cost of the work, excluding Shepperd Avenue.
19. Measurement and payment for "Curb Ramp" shall be for the ramp and transition, but shall not include any pan, apron or truncated domes. Leveling, fine grading and compaction and any other necessary work shall be included in the unit cost for the work.
20. Only cast-iron truncated dome detectable warning plates, as manufactured by EJ, Neenah Foundry, Duralast, or approved equal will be allowed.
21. Excavation, filling and compaction of soft spots shall be paid with the pay item "ABC (Class 6)", which shall consist of Class 6 aggregate base course material. This pay item shall cover any "unclassified excavation" and "embankment material". This material shall be placed at

the direction of the owner. Any material placed without direct approval by the Engineer or Inspector will not be paid separately but will be considered included in the work.

22. The Contractor shall be responsible for preparing a construction Erosion and Sediment Control Plan (ESCP) for erosion control. This plan shall be submitted at the pre- construction meeting for City of Littleton approval. The Contractor shall be required to inspect and maintain erosion and sediment control devices to ensure they are functioning as intended and submit inspection reports for Owner's review at 2-week intervals and also following precipitation events. Payment shall be under "Erosion Control".
23. The Contractor shall be responsible for the project and shall take such precautions as may be necessary to construct the work in a dry condition and provide for drainage, dewatering, and control of all surface and subsurface water. The Contractor shall erect any necessary temporary structures or other facilities at their expense, which will not be paid for separately, but shall be considered part of the work.
24. The Contractor shall minimize excavations for formwork at landscaping adjacent to the work. All lawn surfaces adjacent to the work shall be backfilled and compacted with clean topsoil.

25. UTILITIES Known utilities in the project area and the contact personnel for such utilities are:

Denver Water Department

Vince Gaiter
303-628-6589 1600
West 12th. Ave.
Denver, CO 80204

Xcel Energy

Builders Call Line
1-800-628-2121
10001 W. Hampden Ave.
Lakewood, CO 80227

Quantum Fiber

Robert McLeod
303-949-2187

7759 S. Wheeling
Ct

Englewood, CO
80112

Comcast

Jason Mollo
303-201-1964
10312
W. Hampden Ave.
Lakewood, CO 80227

City of Littleton

Grounds and Open Space
Kelsey Stansfield
303-795-3766

Streets

Mike Somsen
303-795-3969

Sanitary and Storm Sewer

Art Duran
303-795-3967

Traffic Signals

Tim Weaver
303-795-3834

CITY OF LITTLETON, COLORADO PUBLIC WORKS

2024 MISCELLANEOUS CONCRETE
CITY PROJECT NO. 24-05



PUBLIC WORKS DEPARTMENT/ENGINEERING DIVISION

**2255 West Berry Avenue
Littleton, CO 80120
303-795-3865
www.littletongov.org**

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
1	TITLE SHEET
2	OVERALL MAP
3	QUANTITIES
4	STANDARD DETAILS - PAGE 1
5	STANDARD DETAILS - PAGE 2
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24-05 MISC CONCRETE

TITLE SHEET

Designer PH
Detailer PH
Checked MM



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DATE	DESCRIPTION

SHEET
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SHEETS 34-39

SHEETS 18-27

SHEETS 29-33

SHEETS 39-43

SHEETS 54-56

SHEETS 56-65

SHEETS 44-45

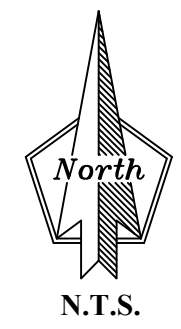
SHEETS 48-50

SHEETS 51-53

LEGEND

— SCHEDULE - 1

NOTE
*INDIVIDUAL CUT SHEETS WILL BE DISTRIBUTED TO THE SUCCESSFUL BIDDER UPON AWARD OF PROJECT CONTRACT



Designer	PH
Detailer	PH
Checked	MM



INDEX OF REVISIONS	
DATE	DESCRIPTION

SHEET 2 of

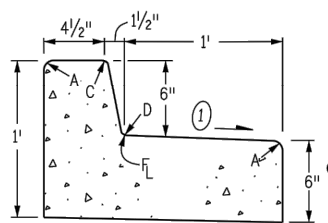
24-05 MISC CONCRETE
QUANTITIES

Miscellaneous Concrete			TOTAL	
CITY PROJECT NO. 24-05				
CITY OF LITTLETON				
ITEM NO.	ITEM	UNIT	QUANTITY	TOTAL
202	REMOVAL OF CONCRETE	SY	5989	
202-00220	REMOVAL OF ASPHALT MAT	SY	3069	
202	REMOVAL OF DRIVEWAY RAMP	EA	4	
208	EROSION CONTROL	LS	1	
210	ADJUST MANHOLE	EA	20	
210-04050	ADJUST VALVE BOX	EA	20	
304-06007	AGGREGATE BASE COURSE (CLASS 6)	TON	2711	
403	HOT MIX ASPHALT (PATCHING)(ASPHALT)	TON	1013	
608-00010	CONCRETE CURB RAMP	SY	1218	
609	CURB, GUTTER, AND SIDEWALK TYPE 2 (SECTION MS)	SY	4255	
609	Crosspan	SY	516	
626-00000	MOBILIZATION	LS	1	
630-00016	TRAFFIC CONTROL	LS	1	
SUBTOTAL				\$ -
FORCE ACCOUNT ITEMS				
700-70010	MINOR CONTRACT REVISIONS	F/A	100,000.00	\$ 100,000.00
				\$ -
F/A TOTAL				\$ 100,000.00
TOTAL				

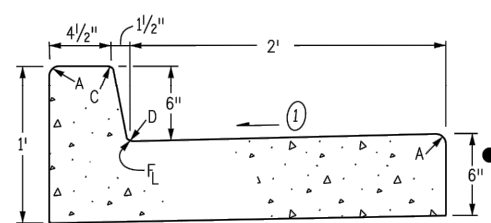
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Detailer PH
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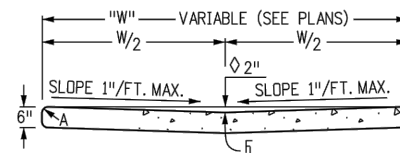
INDEX OF REVISIONS	DATE	DESCRIPTION



**CURB AND GUTTER TYPE 2
(SECTION IB)**
(6 IN. BARRIER - 1 FT. GUTTER)

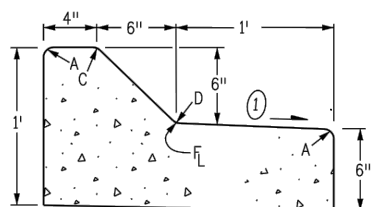


**CURB AND GUTTER TYPE 2
(SECTION IIB)**
(6 IN. BARRIER - 2 FT. GUTTER)

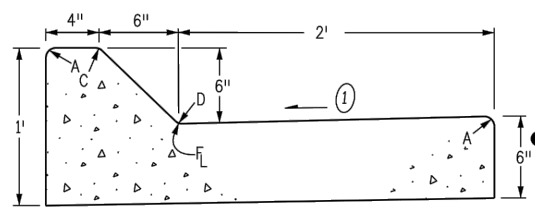


2 IN. DEPTH WHEN USED AS A CROSSSPAN IN AN INTERSECTION

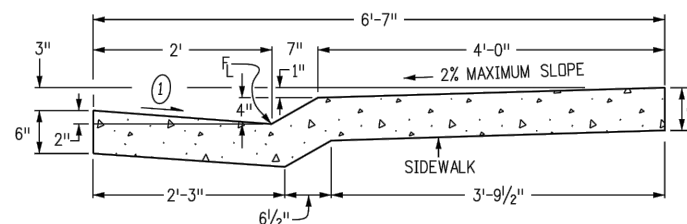
GUTTER TYPE 2



**CURB AND GUTTER TYPE 2
(SECTION IM)**
(6 IN. MOUNTABLE - 1 FT. GUTTER)

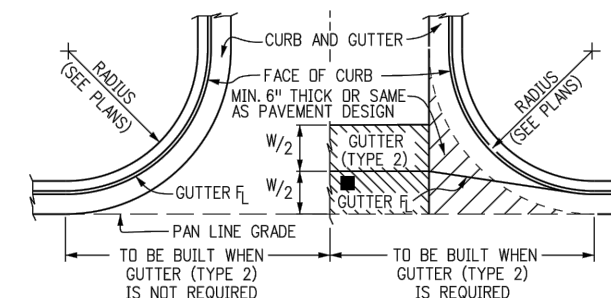


**CURB AND GUTTER TYPE 2
(SECTION IIM)**
(6 IN. MOUNTABLE - 2 FT. GUTTER)



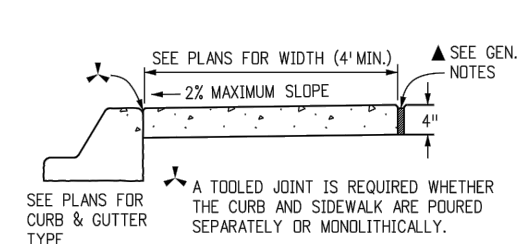
**CURB AND GUTTER TYPE 2
(SECTION MS)**
(4 IN. MOUNTABLE WITH SIDEWALK)

LEGEND FOR RADII	
A	= 3/8" TO 1/4"
B	= 1"
C	= 1 1/2"
D	= 1 1/2" TO 2"

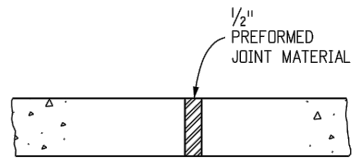


THIS AREA SHALL BE POURED MONOLITHICALLY WITH CURB AND GUTTER AND PAID FOR AS "CONCRETE PAVEMENT".
 ■ FLOW LINE LOCATION WILL BE ESTABLISHED BY W/2 SHOWN ON PLANS.

CONSTRUCTION OF CONCRETE GUTTERS AT INTERSECTION



CONCRETE SIDEWALK



NOTES: 1. EXPANSION JOINTS SHALL BE PLACED IN THE SIDEWALK AT INTERVALS OF NOT MORE THAN 500 FT.
 2. EXPANSION JOINTS MAY BE SEALED WHEN SPECIFIED ON THE PLANS.

SIDEWALK EXPANSION JOINT

- GENERAL NOTES**
- ON ROADWAY CURVES WITH A RADIUS OF 1,900 FT. OR LESS, CURBS AND GUTTERS ARE TO BE PLACED ON THE ARC OF THE CURVE, UNLESS OTHERWISE NOTED ON THE PLANS. A MAXIMUM CHORD LENGTH OF 10 FT. MAY BE USED WHEN THE CURVE RADIUS IS GREATER THAN 1,900 FT.
 - CONCRETE SHALL BE CLASS B.
 - PROFILE GRADE OF CURBS AND GUTTERS SHALL BE LOCATED AT THE FLOW LINE.
 - CURB TYPE 4 (KEY-WAY) MAY BE USED IN LIEU OF CURB AND GUTTER TYPE 2 (SECTIONS IB AND IM) UNLESS OTHERWISE SPECIFIED ON THE PLANS.
 - GUTTER CROSS SLOPES MAY BE ADJUSTED TO FACILITATE DRAINAGE FOR PROFILE GRADES AS SHOWN ON THE PLANS.
 - THICKNESS OF CURB AND GUTTER SECTION SHALL MATCH CONCRETE PAVEMENT THICKNESS IF SHOWN ON THE PLANS. CURB AND GUTTER SHALL BE CLASS P CONCRETE IF PLACED MONOLITHICALLY WITH CONCRETE PAVEMENT.
 - INCREASE SIDEWALK THICKNESS TO 6 IN. AT LOCATIONS SHOWN ON THE PLANS.
 - MINIMUM SIDEWALK WIDTH IS 4 FT.
- ▲ EXPANSION JOINTS SHALL BE INSTALLED WHEN ABUTTING EXISTING CONCRETE OR FIXED STRUCTURE. EXPANSION JOINT MATERIAL SHALL BE 1/2 IN. THICK AND SHALL EXTEND THE FULL DEPTH OF CONTACT SURFACE.
- ① GUTTER CROSS SLOPES SHALL BE 1/2 IN./FT. WHEN DRAINING AWAY FROM CURB AND 1 IN./FT. WHEN DRAINING TOWARD CURB (WITH EXCEPTION TO IMMEDIATELY ADJACENT TO CURB RAMPS - SEE STANDARD PLAN M-608-1 FOR SLOPE REQUIREMENTS).
- WHEN TIE BARS ARE REQUIRED, THE GUTTER THICKNESS SHALL BE INCREASED TO THE PAVEMENT THICKNESS (T). BARS SHALL BE EPOXY-COATED #4 CONFORMING TO AASHTO M 284 AND SPACED AT 3 FT. INTERVALS. THEY SHALL BE INSERTED 1/2 AND 1#2 LENGTH INTO THE GUTTER.

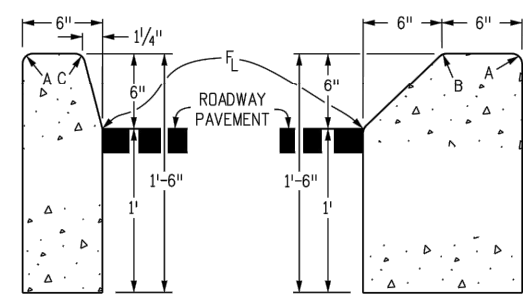
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Last Modification Date: 07/24/12	Initials: LTA
Full Path: www.coloradodot.info/business/designsupport	
Drawing File Name: 609010104.dgn	
CAD Ver.: MicroStation V8	Scale: Not to Scale Units: English

Sheet Revisions	
Date:	Comments
07/24/12	Changed Tie Bar spacing from 30" to 36".

Colorado Department of Transportation
 4201 East Arkansas Avenue
 CDDT HQ, 4th Floor
 Denver, CO 80222
 Phone: 303-757-9021 FAX: 303-757-9868
 Division of Project Support DLM/LTA

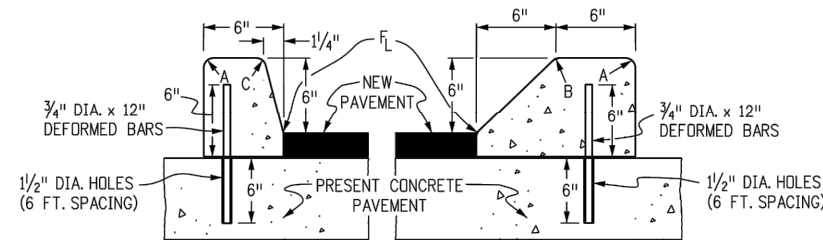
CURB, GUTTERS, AND SIDEWALKS
 Issued By: Project Development Branch on July 4, 2012

STANDARD PLAN NO.
 M-609-1
 Sheet No. 1 of 4



CURB TYPE 2
(SECTION B)
6 IN. BARRIER

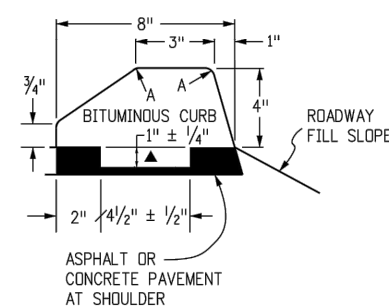
CURB TYPE 2
(SECTION M)
6 IN. MOUNTABLE



CURB TYPE 4
(SECTION B)
6 IN. BARRIER

CURB TYPE 4
(SECTION M)
6 IN. MOUNTABLE

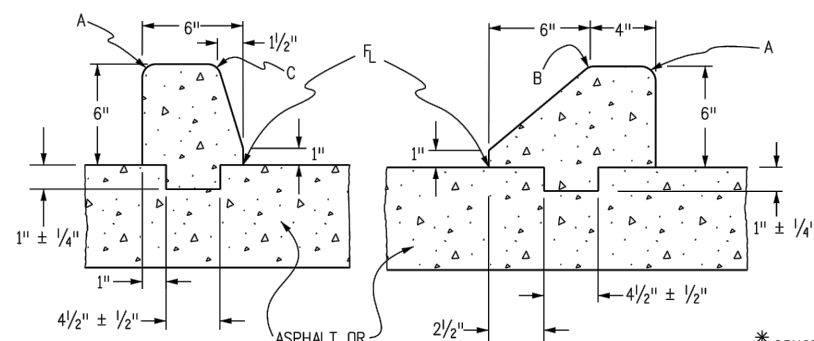
3/4" DIA. x 12" DEFORMED REINFORCING BARS AT 6 FT. SPACING SHALL BE GROUTED IN 1/4" DIA. HOLES IN EXISTING CONCRETE. GROUT SHALL CONSIST OF 2 PARTS CLEAN SAND AND 1 PART CEMENT. COST OF INSTALLATION SHALL BE INCLUDED IN THE PRICE BID FOR CURB.



CURB TYPE 6
(SECTION M)
4 IN. MOUNTABLE

NOTE: BITUMINOUS OR CONCRETE* UNLESS OTHERWISE SPECIFIED ON THE PLANS.

▲ KEY-WAY MAY BE OMITTED WHEN PLACED UNDER GUARDRAIL.



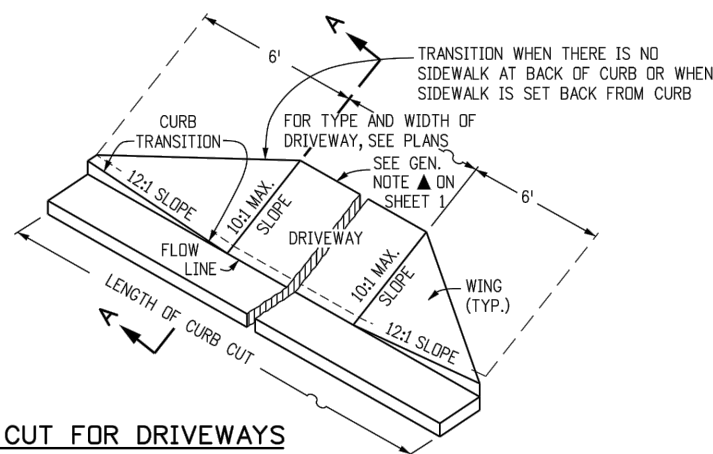
(SECTION B)

(SECTION M)

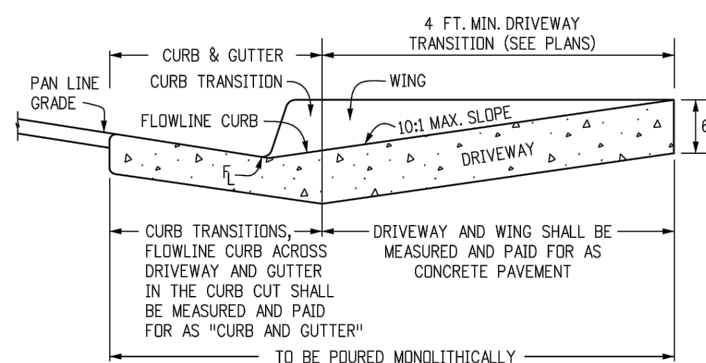
CURB TYPE 4 (KEY-WAY)*

* CONCRETE CLASS B SHALL CONTAIN 1.5 POUNDS PER CUBIC YARD OF APPROVED POLYPROPYLENE FIBERS AND MAY HAVE A NOMINAL AGGREGATE SIZE OF 3/8 IN.

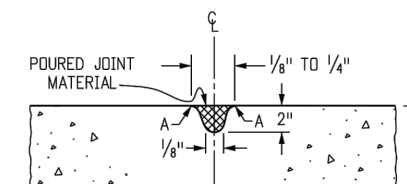
LEGEND FOR RADII	
A	= 1/8 TO 1/4"
B	= 1"
C	= 1 1/2"
D	= 1 1/2 TO 2"



CURB CUT FOR DRIVEWAYS
(WITHOUT ATTACHED SIDEWALK)



SECTION A-A
CONCRETE PAVEMENT (DRIVEWAYS)



NOTE: RECOMMENDED JOINT SPACING IS EVERY 8 FOOT ALONG THE WIDTH AND LENGTH OF DRIVEWAY. FOR DRIVEWAYS WIDER THAN 12 FEET, JOINTS ARE REQUIRED.

TRANSVERSE CONTRACTION JOINT
FOR CONCRETE PAVEMENT (DRIVEWAYS)

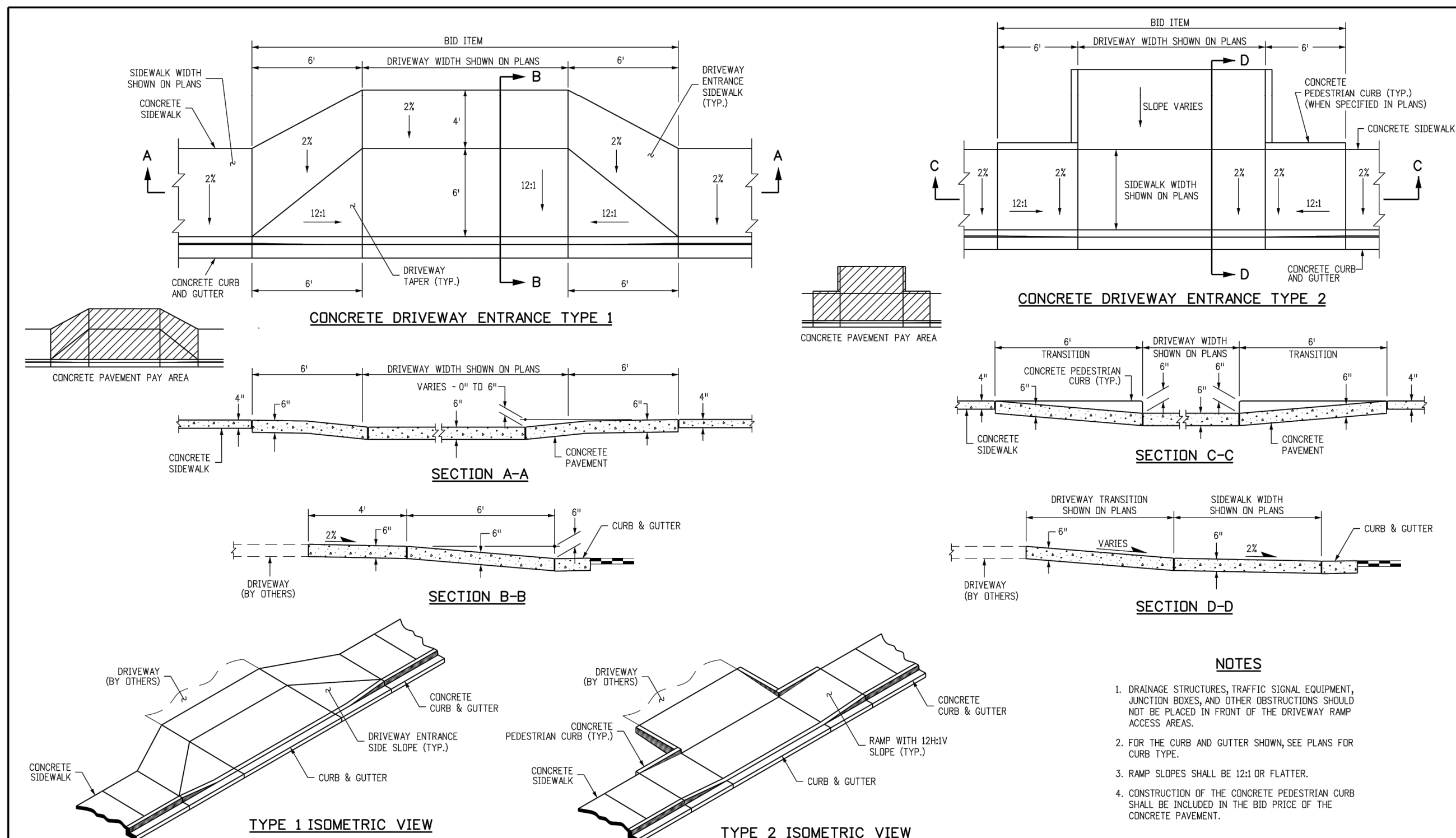
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**CURB, GUTTERS,
AND SIDEWALKS**
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STANDARD PLAN NO.
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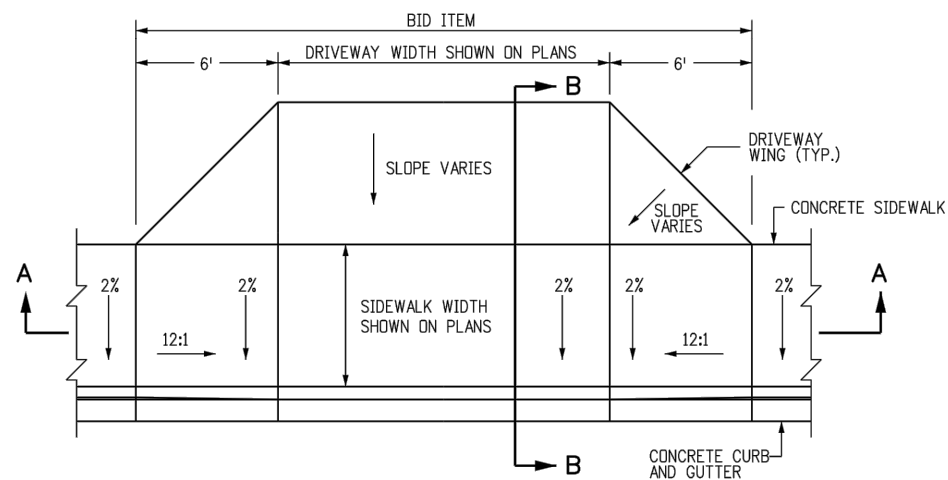
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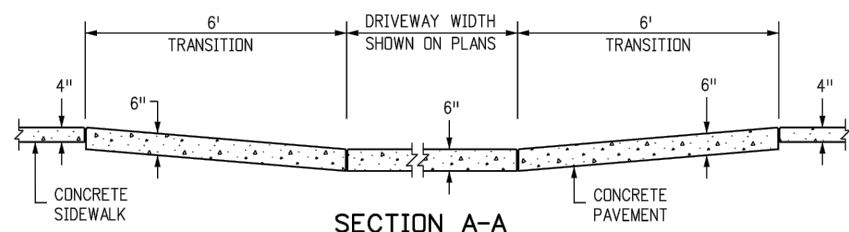
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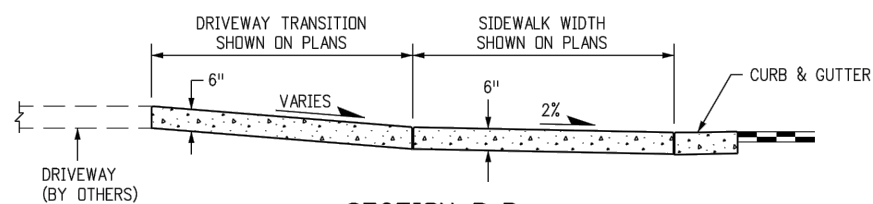
D408 05/21/2024



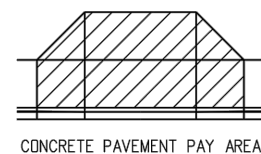
CONCRETE DRIVEWAY ENTRANCE TYPE 3



SECTION A-A



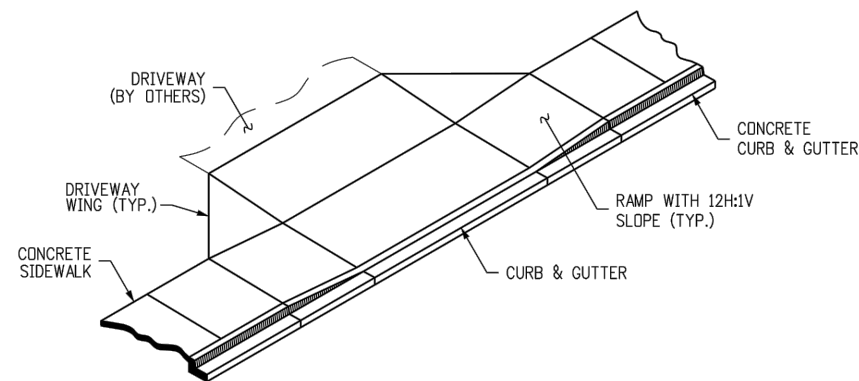
SECTION B-B



CONCRETE PAVEMENT PAY AREA

NOTES

1. DRAINAGE STRUCTURES, TRAFFIC SIGNAL EQUIPMENT, JUNCTION BOXES, AND OTHER OBSTRUCTIONS SHOULD NOT BE PLACED IN FRONT OF THE DRIVEWAY RAMP ACCESS AREAS.
2. FOR THE CURB AND GUTTER SHOWN, SEE PLANS FOR CURB TYPE.
3. RAMP SLOPES SHALL BE 12:1 OR FLATTER.



TYPE 3 ISOMETRIC VIEW

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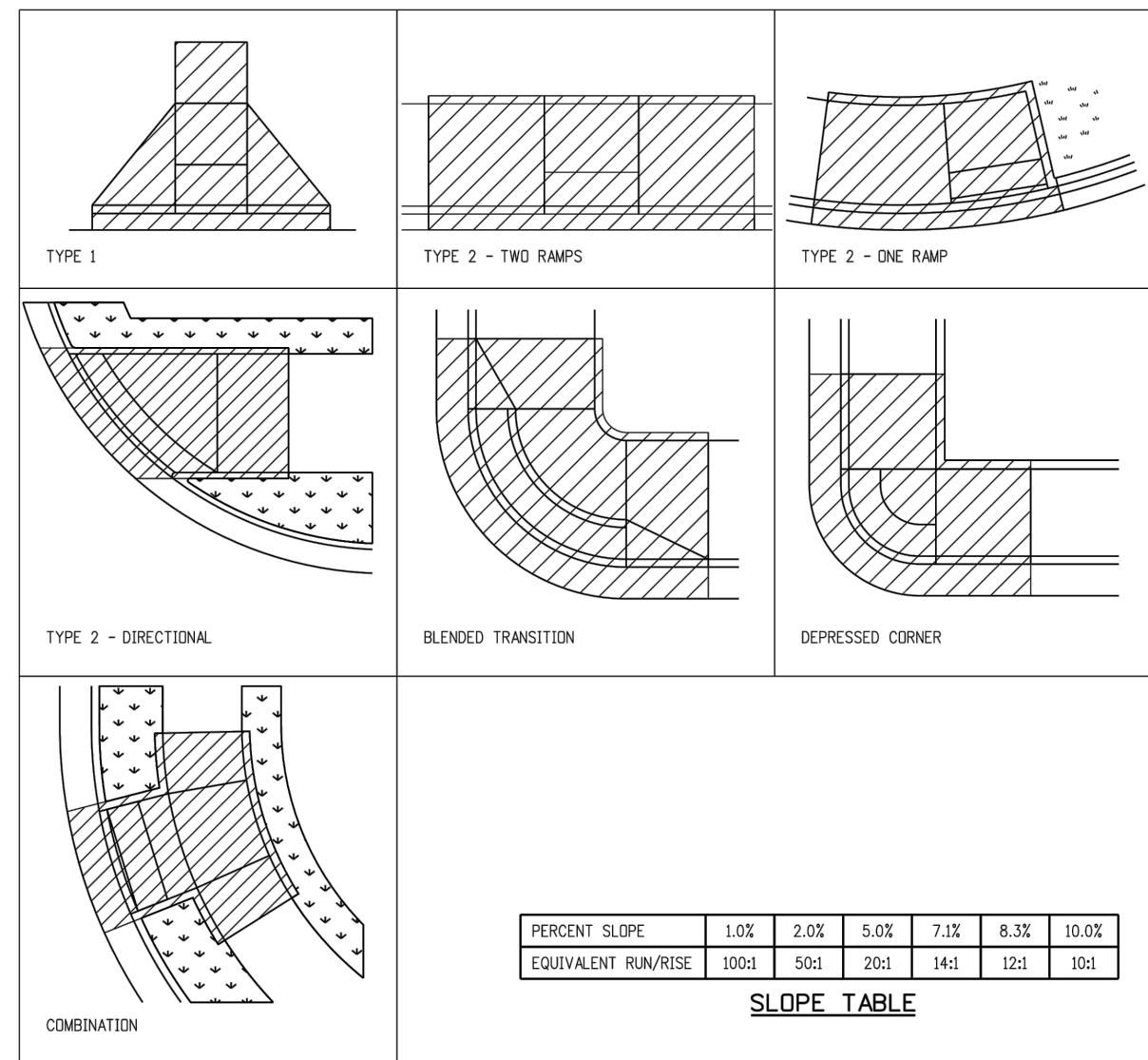
CURB RAMP GENERAL NOTES:

- ① IN NEW CONSTRUCTION OR FULL-DEPTH RECONSTRUCTION, PROVIDE A SEPARATE CURB RAMP FOR EACH MARKED OR UNMARKED PEDESTRIAN STREET CROSSING. CURB RAMPS SHALL BE CONTAINED WHOLLY WITHIN THE WIDTH OF THE PEDESTRIAN STREET CROSSING OR CROSSWALK THEY SERVE, OR AS SHOWN ON THE CONTRACT PLANS.
- ② ALTERATIONS ARE DEFINED AS CHANGES TO AN EXISTING HIGHWAY THAT AFFECT PEDESTRIAN ACCESS, CIRCULATION, OR USE. ALTERATIONS INCLUDE, BUT ARE NOT LIMITED TO, RESURFACING, REHABILITATION, RECONSTRUCTION, CURB RAMP RETROFITS, HISTORIC RESTORATION, OR CHANGES OR REARRANGEMENT TO STRUCTURAL PARTS OR ELEMENTS OF A PEDESTRIAN FACILITY.
- ③ A WALKABLE SURFACE IS DEFINED AS A PAVED SURFACE ADJACENT TO A CURB RAMP OR TURNING SPACE, WITHOUT RAISED OBSTACLES, THAT COULD BE MISTAKENLY TRAVERSED BY A USER WHO IS VISUALLY IMPAIRED.
- ④ IN ALTERATIONS, WHERE AN EXISTING PHYSICAL CONSTRAINT PREVENTS PROVIDING A SEPARATE CURB RAMP FOR EACH PEDESTRIAN STREET CROSSING, A SINGLE DIAGONAL RAMP (ON THE APEX) SHALL BE PERMITTED TO SERVE BOTH PEDESTRIAN STREET CROSSINGS. THE USE OF A SINGLE DIAGONAL RAMP SHALL BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION. DIAGONAL RAMPS ARE NOT ACCEPTABLE IN NEW CONSTRUCTION OR FULL-DEPTH RECONSTRUCTION.
- ⑤ DETECTABLE WARNING SURFACES (DWS) ARE INTENDED TO INDICATE THE BOUNDARY BETWEEN A PEDESTRIAN ROUTE AND VEHICULAR ROUTE WHERE THERE IS A FLUSH RATHER THAN CURBED CONNECTION. DWS ARE NOT INTENDED TO PROVIDE WAYFINDING. DWS SHALL BE PROVIDED AT THE FOLLOWING LOCATIONS;
 1. CURB RAMPS, BLENDED TRANSITIONS, AND DEPRESSED CORNERS AT PEDESTRIAN STREET CROSSINGS;
 2. PEDESTRIAN REFUGE ISLANDS (6 FEET IN WIDTH OR GREATER);
 3. BOARDING PLATFORMS AT TRANSIT STOPS WHERE THE EDGE OF THE PLATFORM IS NOT PROTECTED TO PEDESTRIAN CROSS TRAFFIC; AND
 4. BOARDING AREAS AT SIDEWALK OR STREET LEVEL TRANSIT STOPS WHERE THE AREA IS NOT PROTECTED TO PEDESTRIAN CROSS TRAFFIC.
- ⑥ DETECTABLE WARNING SURFACES SHALL CONTRAST VISUALLY WITH THE ADJACENT GUTTER, HIGHWAY, OR PEDESTRIAN ACCESS ROUTE SURFACE, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. FEDERAL YELLOW COLOR IS PREFERRED, HOWEVER, OTHER COLORS MAY BE USED IF APPROVED BY THE ENGINEER.
- ⑦ IN ALTERATIONS, TO AVOID CHASING GRADE INDEFINITELY ON STEEP ROADWAYS, A CURB RAMPS LENGTH IS NOT REQUIRED TO EXCEED 15 FEET REGARDLESS OF THE RESULTING RAMP RUNNING SLOPE.
- ⑧ ALL SLOPES ARE MEASURED WITH RESPECT TO A LEVEL PLANE.
- ⑨ DRAINAGE STRUCTURES, TRAFFIC SIGNAL EQUIPMENT, OR OTHER OBSTRUCTIONS SHALL NOT BE INSTALLED ON THE CURB RAMP, OR TURNING SPACE AREAS.
- ⑩ IN NEW CONSTRUCTION, PULL BOXES, METER BOXES, MAINTENANCE HOLE COVERS, VAULT LIDS, OR SIMILAR, SHALL NOT BE CONSTRUCTED WITHIN ANY PART OF CURB RAMP OR TURNING SPACE. IN ALTERATIONS, WHERE THESE ITEMS CANNOT BE RELOCATED OUTSIDE OF THE CURB RAMP OR TURNING SPACE, THEY MUST NOT CREATE A VERTICAL DISCONTINUITY GRATER THAN 1/2 INCH. ANY VERTICAL DISCONTINUITY BETWEEN 1/4 INCH AND 1/2 INCH SHALL BE BEVELED WITH A SLOPE NOT STEEPER THAN 1V:2H. THE BEVEL SHALL BE APPLIED ACROSS THE ENTIRE SURFACE DISCONTINUITY.
- ⑪ CONSTRUCTION OF ANY REQUIRED PEDESTRIAN CURB SHALL BE INCLUDED IN THE BID PRICE OF THE CONCRETE CURB RAMP AND WILL NOT BE PAID FOR SEPARATELY.
- ⑫ ALL CURB RAMP JOINTS AND GRADE BREAKS SHALL BE FLUSH (0'-1/8"). THE JOINT BETWEEN THE ROADWAY SURFACE AND THE GUTTER PAN SHALL BE FLUSH.
- ⑬ THE CONTRACTOR SHALL VERIFY REMOVAL LIMITS ARE SUFFICIENT TO PROVIDE POSITIVE DRAINAGE, MAINTAIN EXISTING DRAINAGE PATTERNS, AND AVOID PONDING IN THE FINAL CONFIGURATION.
- ⑭ FLARED SIDE SLOPES MAY EXCEED 10.0% ONLY WHERE THEY ABUT A NON-WALKABLE SURFACE, OR WHERE THE ADJACENT RAMP SURFACE IS BLOCKED TO PEDESTRIAN TRAFFIC.
- ⑮ THE CHANGE IN GRADE AT THE BOTTOM OF THE CURB RAMP SHALL NOT EXCEED AN ALGEBRAIC DIFFERENCE OF 13.33%. THE COUNTER SLOPE OF THE GUTTER AT THE FOOT OF A RAMP, TURNING SPACE, OR BLENDED TRANSITION SHALL NOT EXCEED 5.0%.
- ⑯ GRADE BREAKS AT THE TOP AND BOTTOM OF RAMP RUNS SHALL BE PERPENDICULAR TO THE DIRECTION OF THE RAMP RUN. GRADE BREAKS SHALL NOT BE PERMITTED ON THE SURFACE OF THE RAMP RUN OR TURNING SPACE. SURFACE SLOPES THAT MEET AT GRADE BREAKS SHALL BE FLUSH.
- ⑰ A BROOM FINISH, WITH SWEEPS PERPENDICULAR TO THE DIRECTION OF PEDESTRIAN TRAFFIC, SHALL BE APPLIED TO ALL RAMP AND TURNING SPACE SURFACES.
- ⑱ IN ALTERATIONS, WHERE A RAMP OR TURNING SPACE MUST TIE INTO AN EXISTING GRADE THAT CANNOT BE ALTERED, THE RAMP OR TURNING SPACE MAY BE WARPED TO TRANSITION TO THE REQUIRED CROSS SLOPE. THE TRANSITION TO THE REQUIRED CROSS SLOPE SHALL BE SPREAD EVENLY OVER THE LENGTH OF THE RAMP OR TURNING SPACE TO MINIMIZE THE DEGREE OF WARPING. THE RATE OF CHANGE ON A RAMP OR TURNING SPACE SHALL NOT EXCEED 3% PER LINEAR FOOT.
- ⑲ DESIGN AND CONSTRUCT CURB RAMPS, TURNING SPACES, AND FLARE SLOPES WITH THE FLATTEST SLOPES POSSIBLE. THE SLOPES INDICATED IN THESE DETAILS SHOW THE MAXIMUM SLOPES ALLOWABLE. PREFERRED VALUES TO BE USED DURING DESIGN, LAYOUT, AND CONSTRUCTION ARE:
 - RAMP RUNNING SLOPE 7.5%
 - RAMP CROSS SLOPE 1.5%
 - TURNING SPACE RUNNING SLOPE 1.5%
 - TURNING SPACE CROSS SLOPE 1.5%
 - FLARE SLOPE 8.0-9.0%

GENERAL NOTES & PAY AREAS

- ⑳ WHERE SNOW REMOVAL EQUIPMENT WILL BE USED TO CLEAR THE PEDESTRIAN ACCESS ROUTE, CONSULT THE ENGINEER PRIOR TO CONSTRUCTION TO ENSURE THE WIDTH AND THICKNESS OF CURB RAMPS IS SUFFICIENT TO ACCOMMODATE SUCH EQUIPMENT.
- ㉑ PROVIDE EXPANSION JOINT MATERIAL 1/2" THICK WHERE CURB RAMPS ADJOIN ANY RIGID PAVEMENT, OR STRUCTURE. THE TOP OF THE JOINT FILLER MATERIAL SHALL BE FLUSH WITH ADJOINING CONCRETE SURFACES. THE EXPANSION JOINT MATERIAL SHALL EXTEND FOR THE FULL DEPTH OF THE CONCRETE SURFACE.
- ㉒ PROVIDE TIE BAR REINFORCING BETWEEN INDEPENDENTLY POURED CONCRETE CURB RAMPS OR TURNING SPACES AND CURB AND GUTTER. DRILL AND GROUT NO. 4 12 INCH LONG REINFORCEMENT BARS (EPOXY COATED) AT 18 INCHES CENTER TO CENTER MINIMUM.

CURB RAMP PAY AREAS



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CURB RAMPS

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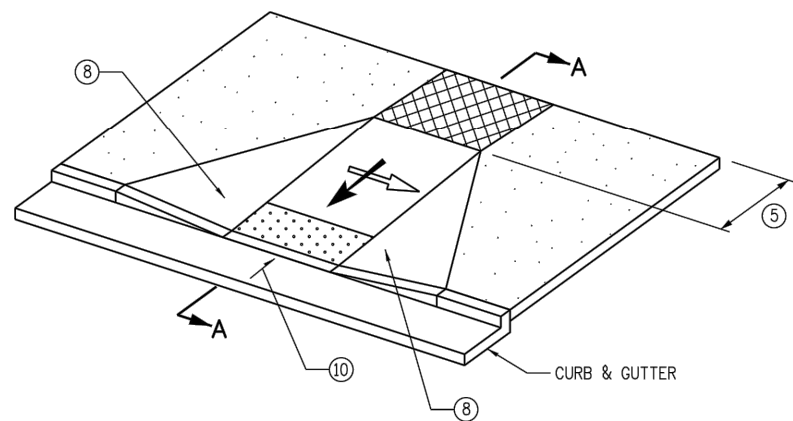
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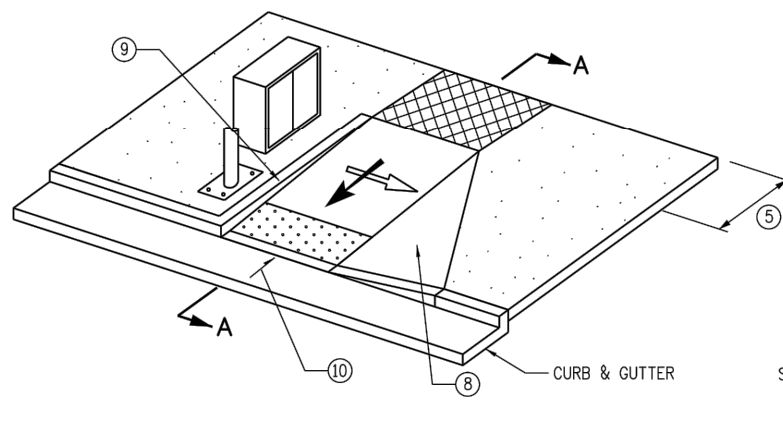
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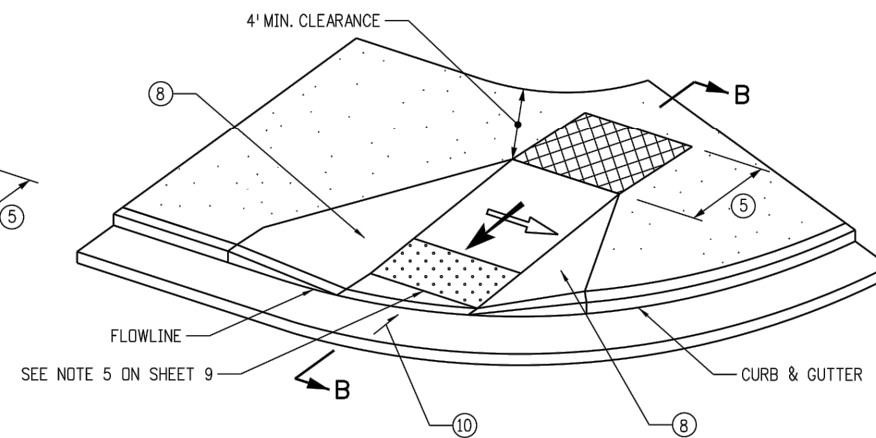
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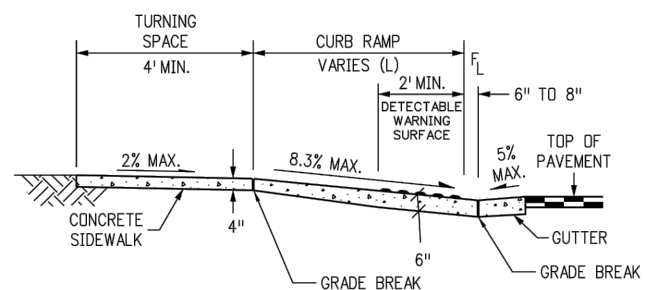
PERPENDICULAR RAMP
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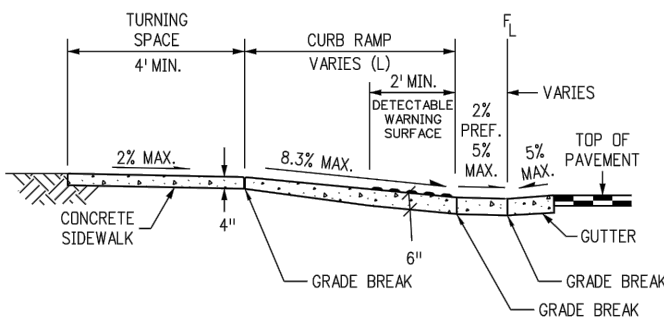
PERPENDICULAR RAMP
(WITH VERTICAL RETURN CURB)



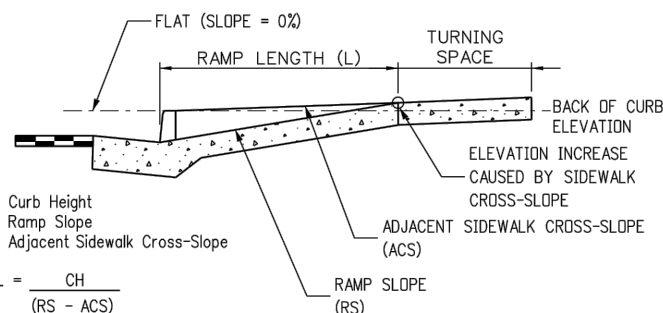
PERPENDICULAR RAMP
(DIRECTIONAL)



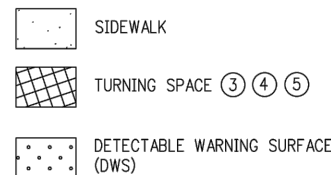
SECTION A-A



SECTION B-B



DETAIL A - RAMP LENGTH



PERPENDICULAR RAMP NOTES

- ① RAMP WIDTH - PROVIDE 5 FT. OR GREATER WHERE POSSIBLE. IF SITE CONSTRAINTS DO NOT PERMIT, PROVIDE 4 FT. MINIMUM. RAMP SERVING SHARED USE PATHS SHALL MATCH THE WIDTH OF THE PATH.
- ② RAMP RUNNING SLOPE - 8.3% MAX.
- ③ TURNING SPACE RUNNING SLOPE - 2.0% MAX. TURNING SPACE RUNNING SLOPE IS MEASURED IN THE SAME DIRECTION AS THE RAMP RUNNING SLOPE.
- ④ RAMP AND TURNING SPACE CROSS SLOPE - 2.0% TYPICAL. AT CROSSINGS WITHOUT YIELD OR STOP CONTROL, OR WITH A SIGNAL WHERE VEHICLES CAN PROCEED THROUGH THE INTERSECTION WITHOUT SLOWING OR STOPPING, THE CROSS SLOPE OF RAMP AND TURNING SPACES MAY EQUAL THE HIGHWAY GRADE. AT MIDDLEBLOCK PEDESTRIAN STREET CROSSINGS THE RAMP AND TURNING SPACE CROSS SLOPE MAY EQUAL THE HIGHWAY GRADE.
- ⑤ TURNING SPACE DIMENSIONS - PROVIDE A TURNING SPACE AT THE TOP OF PERPENDICULAR RAMP WITH A WIDTH EQUAL TO THE WIDTH OF THE CURB RAMP. TURNING SPACE LENGTH MUST BE 4 FT. MINIMUM, MEASURED IN THE DIRECTION OF THE RAMP RUN. WHEN A TURNING SPACE IS CONSTRAINED AT THE BACK OF SIDEWALK, INCREASE LENGTH TO 5 FT. MINIMUM IN THE DIRECTION OF THE RAMP RUN.
- ⑥ RAMP ALIGNMENT - RAMP SHALL BE ALIGNED TO BE FULLY CONTAINED WITHIN THE CROSSWALK OR STREET CROSSING THEY SERVE. PROVIDE ONE RAMP FOR EACH STREET CROSSING DIRECTION. IN ALTERATIONS, WHERE EXISTING PHYSICAL CONSTRAINTS PREVENT PROVIDING ONE CURB RAMP FOR EACH CROSSING DIRECTION, A SINGLE DIAGONAL CURB RAMP (ON THE APEX OF A CORNER) SHALL BE PERMITTED TO SERVE BOTH PEDESTRIAN STREET CROSSINGS. IF A DIAGONAL RAMP IS USED, A CLEAR SPACE 4 FT. X 4 FT. MUST BE PROVIDED AT THE BASE OF THE RAMP. THE CLEAR SPACE MUST BE WITHIN BOTH CROSSWALKS AND WHOLLY OUTSIDE OF ANY ADJACENT VEHICULAR TRAVEL LANES. DIAGONAL RAMP ARE NOT ACCEPTABLE IN NEW CONSTRUCTION, OR FULL-DEPTH RECONSTRUCTION.
- ⑦ RAMP LENGTH - PERPENDICULAR RAMP LENGTH IS DEPENDENT UPON THE RAMP SLOPE, HEIGHT OF CURB, AND ADJACENT SIDEWALK CROSS-SLOPE WHICH MUST BE INTERCEPTED. SEE DETAIL A FOR CALCULATING RAMP LENGTH WHEN CHASING SIDEWALK CROSS-SLOPE. WHERE TERRAIN IS SLOPING A RAMP IS NOT REQUIRED TO CHASE GRADE MORE THAN 15 FT. REGARDLESS OF THE RESULTING RAMP SLOPE.
- ⑧ RAMP FLARES - WHERE A RAMP EDGE ABUTS A WALKABLE SURFACE, A FLARED SIDE SHALL BE PROVIDED. RAMP FLARE SLOPES SHALL NOT EXCEED 10.0%.
- ⑨ VERTICAL CURB RETURNS - VERTICAL CURB RETURNS MAY BE USED ONLY WHERE A RAMP ABUTS A NON-WALKABLE SURFACE, OR WHERE A RAMP IS PROTECTED FROM PEDESTRIAN CROSS TRAFFIC (FOR EXAMPLE BY A SIGNAL CABINET OR UTILITY POLE WHICH BLOCKS PASSAGE).
- ⑩ GUTTER COUNTER SLOPE - 5.0% MAX.

TYPE 1 PERPENDICULAR CURB RAMPS

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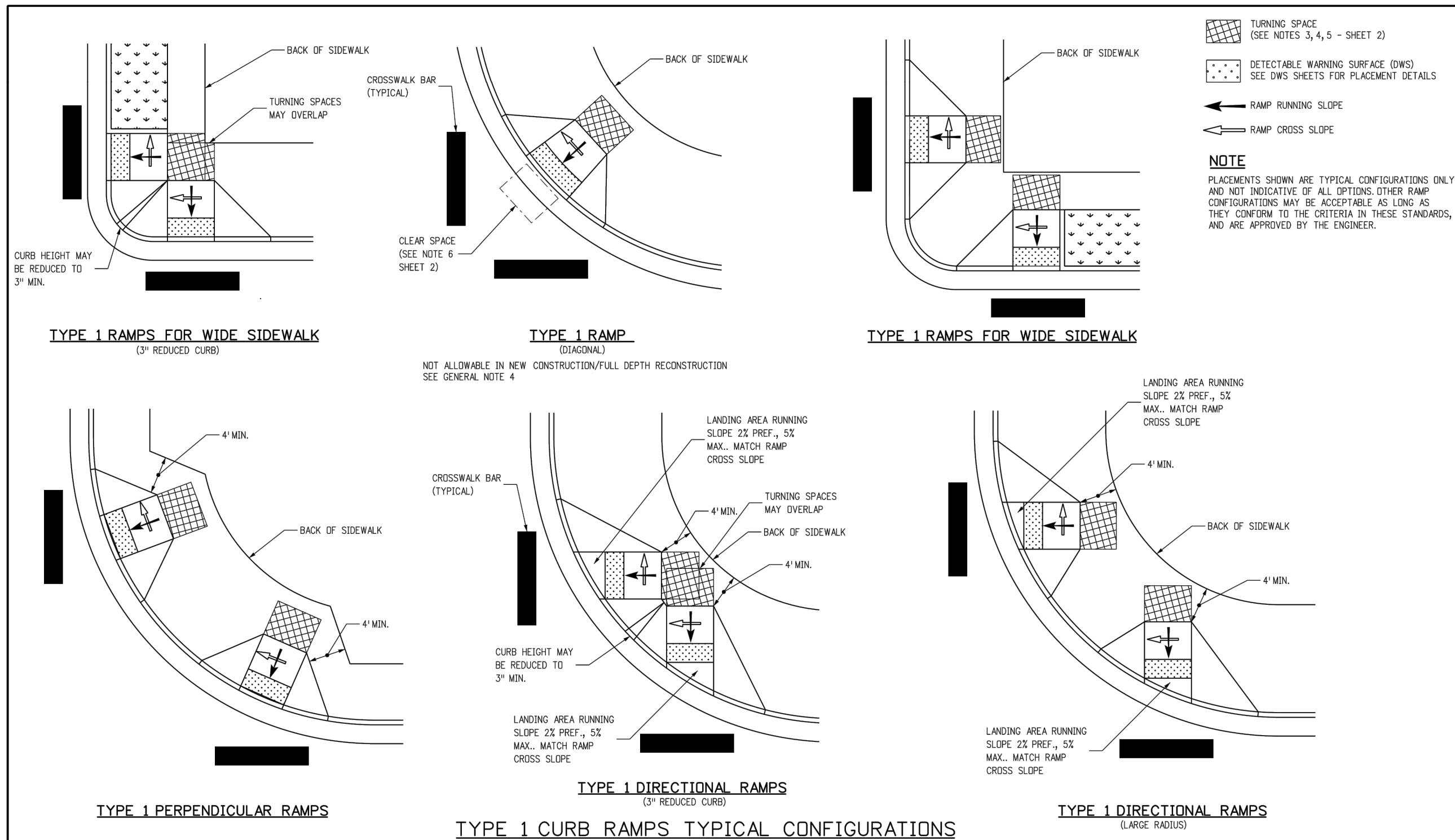
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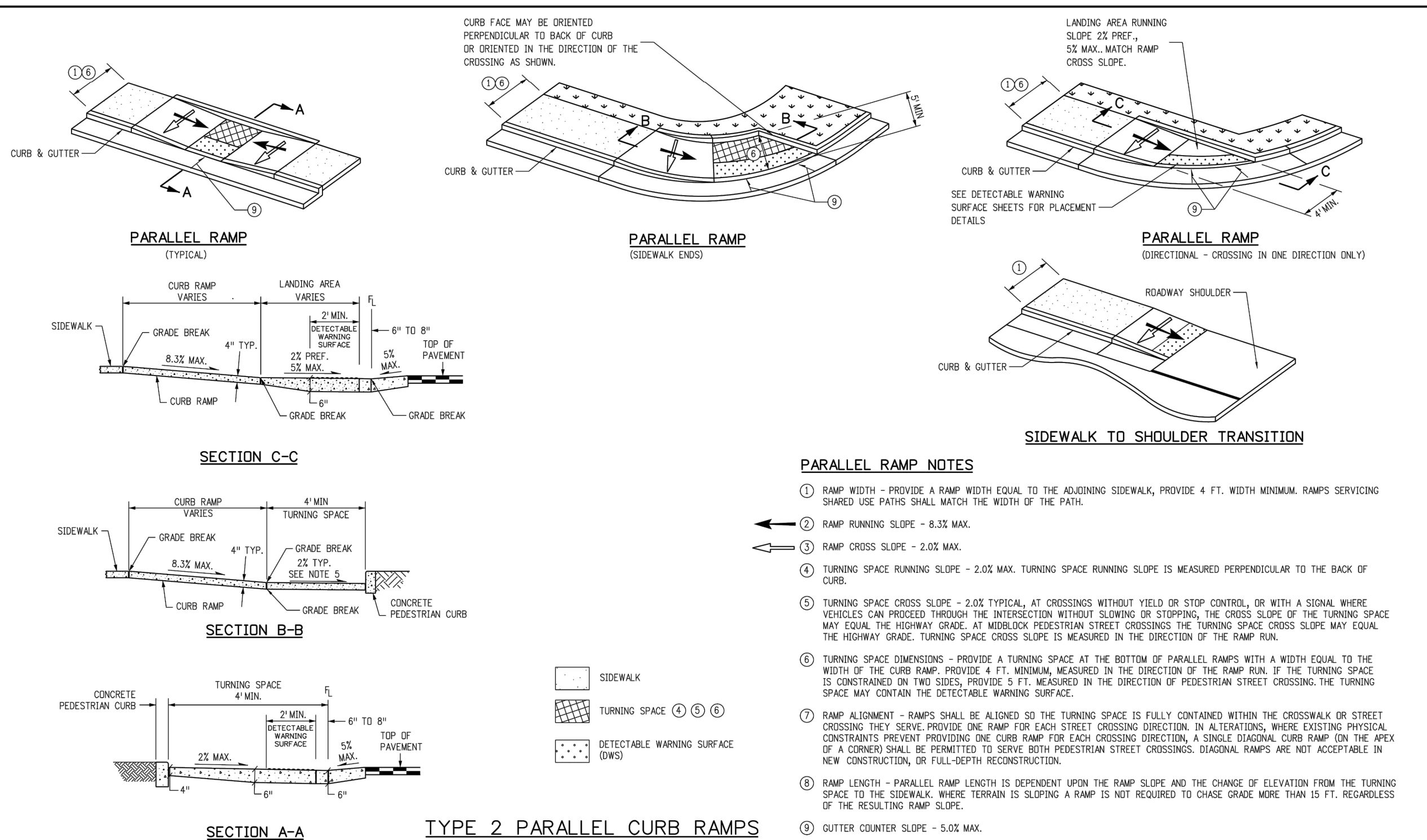
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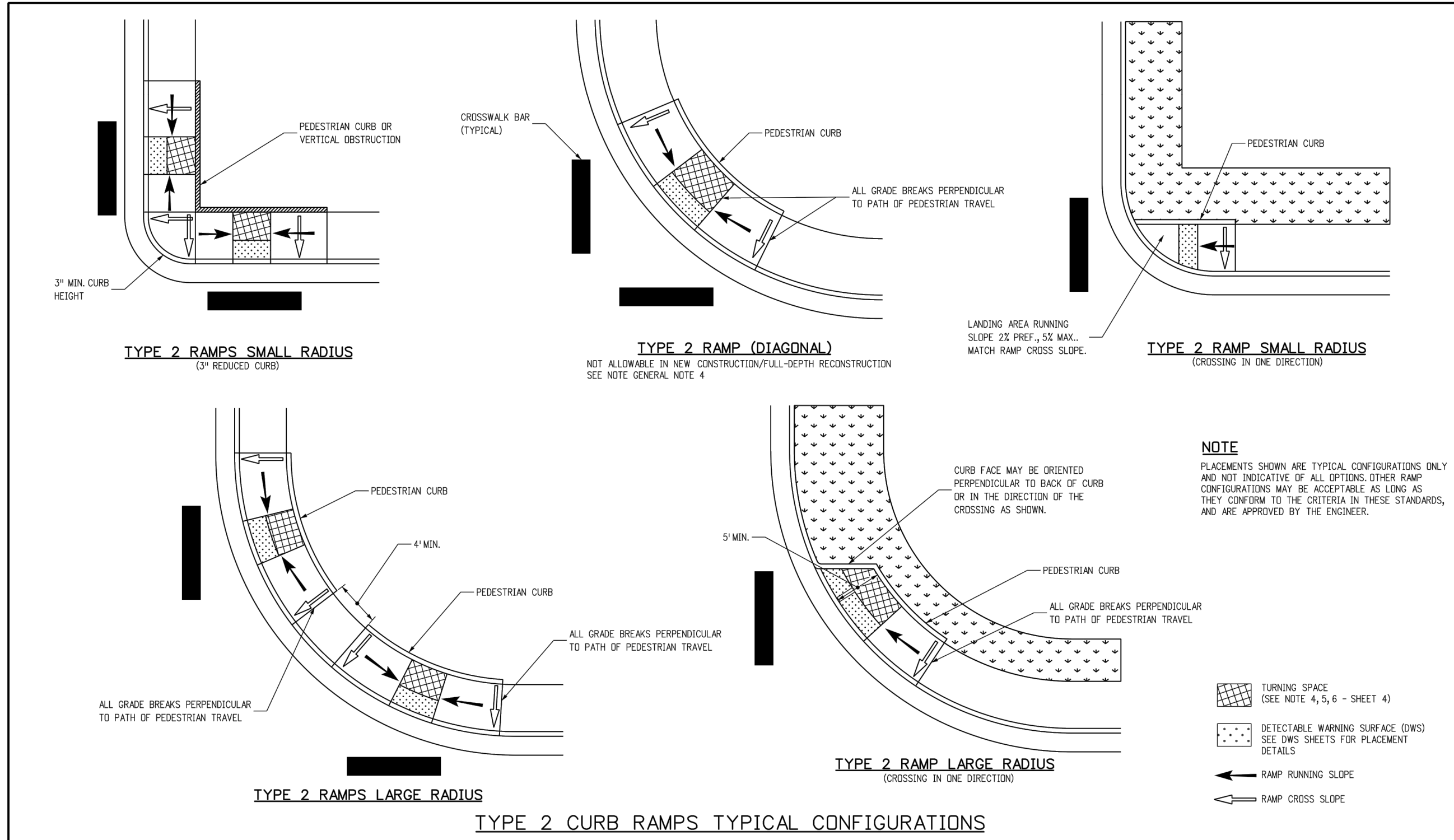
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CURB RAMPS

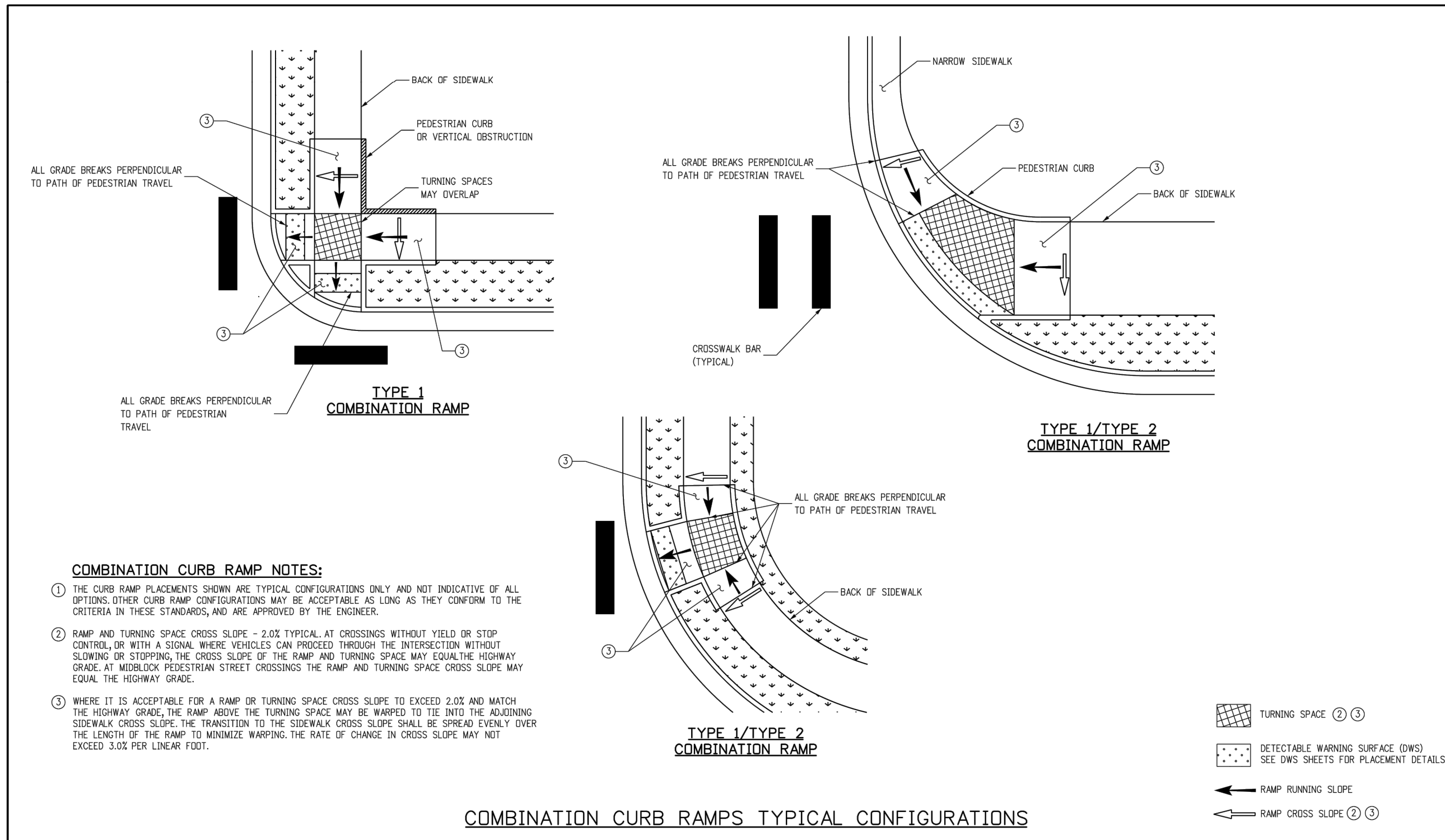
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COMBINATION CURB RAMP NOTES:

- ① THE CURB RAMP PLACEMENTS SHOWN ARE TYPICAL CONFIGURATIONS ONLY AND NOT INDICATIVE OF ALL OPTIONS. OTHER CURB RAMP CONFIGURATIONS MAY BE ACCEPTABLE AS LONG AS THEY CONFORM TO THE CRITERIA IN THESE STANDARDS, AND ARE APPROVED BY THE ENGINEER.
- ② RAMP AND TURNING SPACE CROSS SLOPE - 2.0% TYPICAL. AT CROSSINGS WITHOUT YIELD OR STOP CONTROL, OR WITH A SIGNAL WHERE VEHICLES CAN PROCEED THROUGH THE INTERSECTION WITHOUT SLOWING OR STOPPING, THE CROSS SLOPE OF THE RAMP AND TURNING SPACE MAY EQUAL THE HIGHWAY GRADE. AT MIDBLOCK PEDESTRIAN STREET CROSSINGS THE RAMP AND TURNING SPACE CROSS SLOPE MAY EQUAL THE HIGHWAY GRADE.
- ③ WHERE IT IS ACCEPTABLE FOR A RAMP OR TURNING SPACE CROSS SLOPE TO EXCEED 2.0% AND MATCH THE HIGHWAY GRADE, THE RAMP ABOVE THE TURNING SPACE MAY BE WARPED TO TIE INTO THE ADJOINING SIDEWALK CROSS SLOPE. THE TRANSITION TO THE SIDEWALK CROSS SLOPE SHALL BE SPREAD EVENLY OVER THE LENGTH OF THE RAMP TO MINIMIZE WARPING. THE RATE OF CHANGE IN CROSS SLOPE MAY NOT EXCEED 3.0% PER LINEAR FOOT.

COMBINATION CURB RAMPS TYPICAL CONFIGURATIONS

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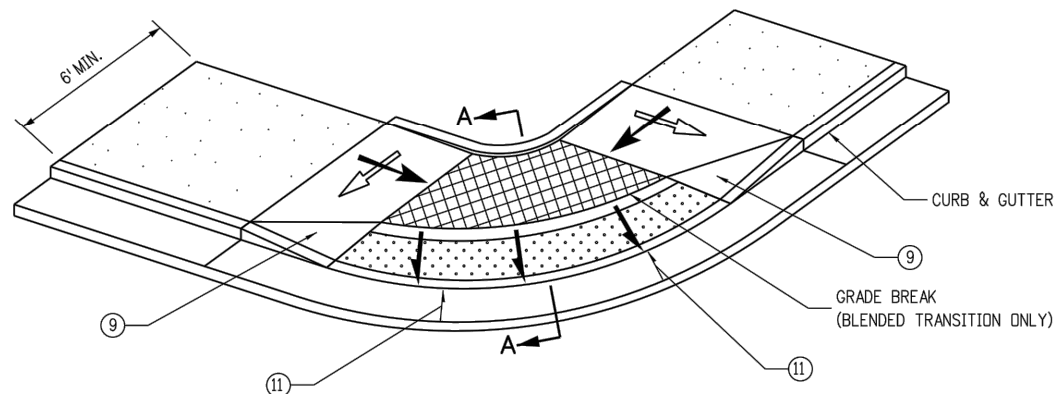
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 Division of Project Support JBK/LTA

CURB RAMPS
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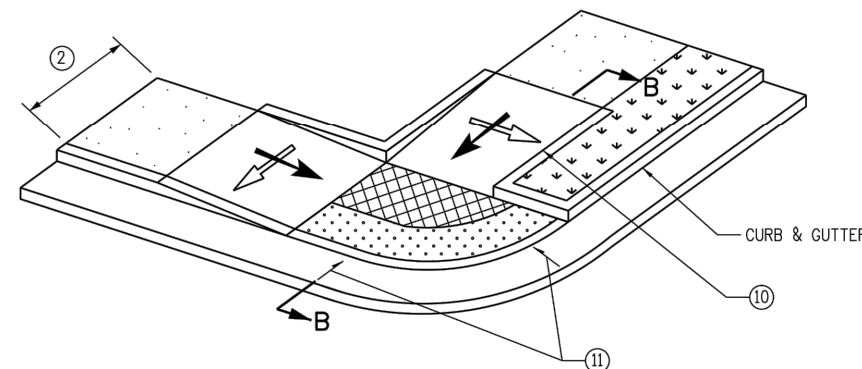
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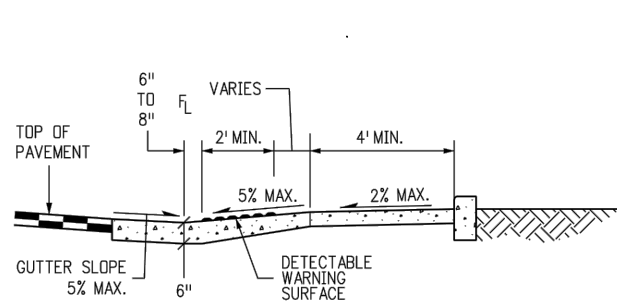
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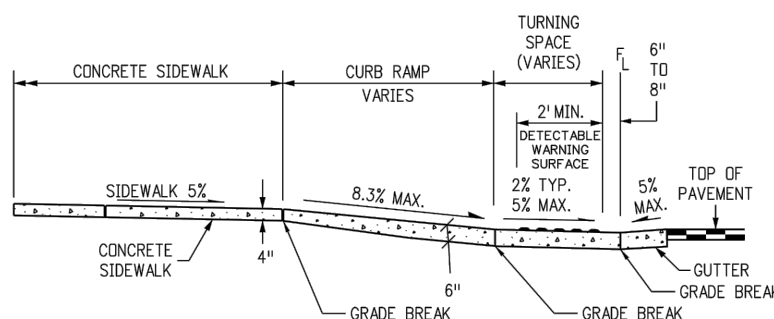
BLENDED TRANSITION



DEPRESSED CORNER



SECTION A-A

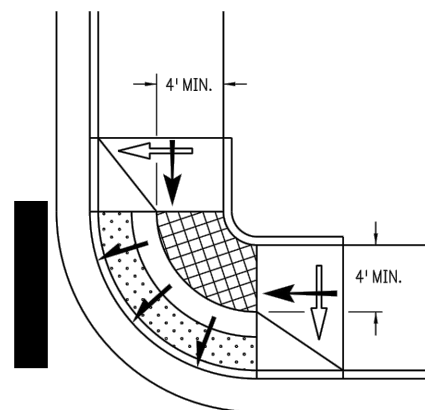


SECTION B-B

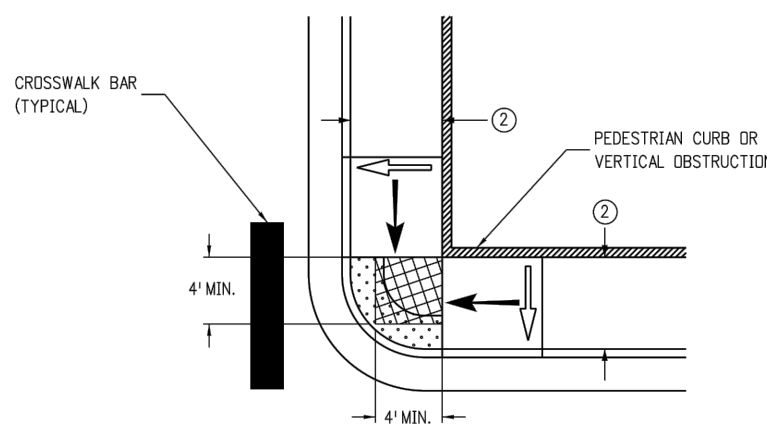
- SIDEWALK
- TURNING SPACE ④ ⑤ ⑥
- DETECTABLE WARNING SURFACE (DWS)

BLENDED TRANSITION & DEPRESSED CORNER NOTES

- ① PERPENDICULAR AND PARALLEL RAMP CONFIGURATIONS ARE PREFERRED. BLENDED TRANSITIONS AND DEPRESSED CORNERS SHOULD ONLY BE USED WHERE SITE CONDITIONS MAKE THEM A MORE APPROPRIATE OPTION, OR WHERE PERPENDICULAR OR PARALLEL RAMPS CANNOT BE INSTALLED DUE TO A PHYSICAL SITE CONSTRAINT.
- ② RAMP WIDTH - PROVIDE 5 FT. OR GREATER WHERE POSSIBLE. IF SITE CONSTRAINTS DO NOT PERMIT, PROVIDE 4 FT. WIDTH MINIMUM. RAMPS SERVICING SHARED USE PATHS SHALL MATCH THE WIDTH OF THE PATH.
- ③ RAMP RUNNING SLOPE - 8.3% MAX.
- ④ BLENDED TRANSITION RUNNING SLOPE - 5.0% MAX.
- ⑤ RAMP AND TURNING SPACE CROSS SLOPE - 2.0% TYPICAL. AT CROSSINGS WITHOUT YIELD OR STOP CONTROL, OR WITH A SIGNAL WHERE VEHICLES CAN PROCEED THROUGH THE INTERSECTION WITHOUT SLOWING OR STOPPING, THE CROSS SLOPE OF RAMPS AND TURNING SPACES MAY EQUAL THE HIGHWAY GRADE.
- ⑥ TURNING SPACE DIMENSIONS - PROVIDE A 4 FT. X 4 FT. MIN. TURNING SPACE AT THE BOTTOM OF RAMP RUNS. THE TURNING SPACE MAY CONTAIN THE DETECTABLE WARNING SURFACES.
- ⑦ RAMP ALIGNMENT - TURNING SPACE SHALL BE ALIGNED TO BE FULLY CONTAINED WITHIN THE CROSSWALK OR STREET CROSSING(S) THEY SERVE.
- ⑧ RAMP LENGTH - RAMP LENGTH IS DEPENDENT UPON THE RAMP SLOPE AND THE CHANGE OF ELEVATION FROM THE TURNING SPACE TO THE SIDEWALK. WHERE TERRAIN IS SLOPING A RAMP IS NOT REQUIRED TO CHASE GRADE MORE THAN 15 FT. REGARDLESS OF THE RESULTING RAMP SLOPE.
- ⑨ RAMP FLARES - WHERE A RAMP EDGE ABUTS A WALKABLE SURFACE, A FLARED SIDE MUST BE PROVIDED. RAMP FLARE SLOPES SHALL NOT EXCEED 10.0%.
- ⑩ VERTICAL CURB RETURNS - VERTICAL CURB RETURNS MAY BE USED ONLY WHERE A RAMP ABUTS A NON-WALKABLE SURFACE, OR WHERE A RAMP IS PROTECTED FROM PEDESTRIAN CROSS TRAFFIC (FOR EXAMPLE BY A SIGNAL CABINET OR UTILITY POLE WHICH BLOCKS PASSAGE).
- ⑪ GUTTER COUNTER SLOPE - 5.0% MAX.
- ⑫ DWS PLACEMENT - DWS SHALL BE PLACED AROUND THE RADIUS AND LOCATED AT THE BACK OF CURB ON BLENDED TRANSITION AND DEPRESSED CORNER RAMPS.



BLENDED TRANSITION



DEPRESSED CORNER

TYPE 5 - DEPRESSED CORNER/BLENDED TRANSITION

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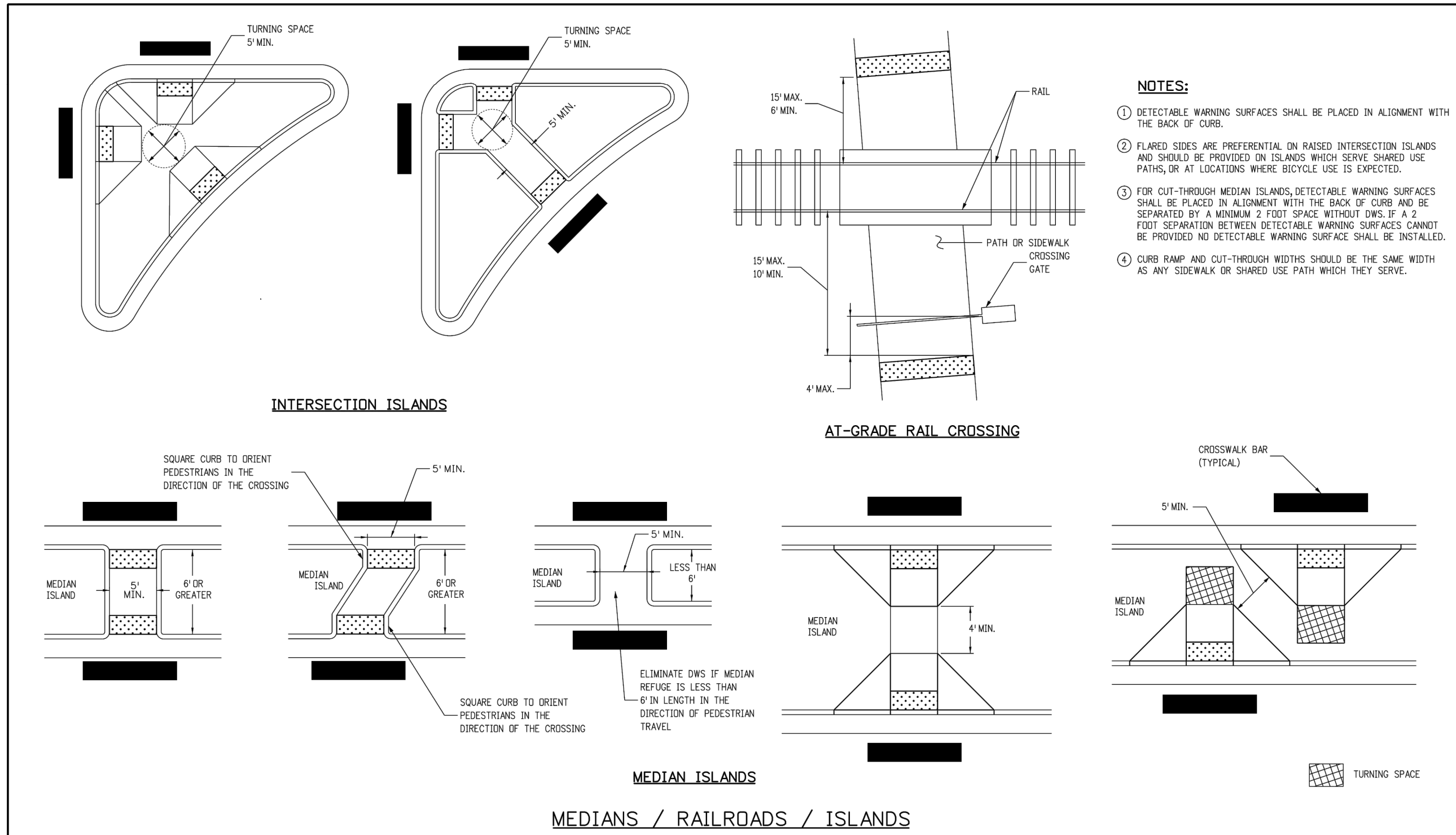
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- NOTES:**
- ① DETECTABLE WARNING SURFACES SHALL BE PLACED IN ALIGNMENT WITH THE BACK OF CURB.
 - ② FLARED SIDES ARE PREFERENTIAL ON RAISED INTERSECTION ISLANDS AND SHOULD BE PROVIDED ON ISLANDS WHICH SERVE SHARED USE PATHS, OR AT LOCATIONS WHERE BICYCLE USE IS EXPECTED.
 - ③ FOR CUT-THROUGH MEDIAN ISLANDS, DETECTABLE WARNING SURFACES SHALL BE PLACED IN ALIGNMENT WITH THE BACK OF CURB AND BE SEPARATED BY A MINIMUM 2 FOOT SPACE WITHOUT DWS. IF A 2 FOOT SEPARATION BETWEEN DETECTABLE WARNING SURFACES CANNOT BE PROVIDED NO DETECTABLE WARNING SURFACE SHALL BE INSTALLED.
 - ④ CURB RAMP AND CUT-THROUGH WIDTHS SHOULD BE THE SAME WIDTH AS ANY SIDEWALK OR SHARED USE PATH WHICH THEY SERVE.

Designer	PH
Detailer	PH
Checked	MM

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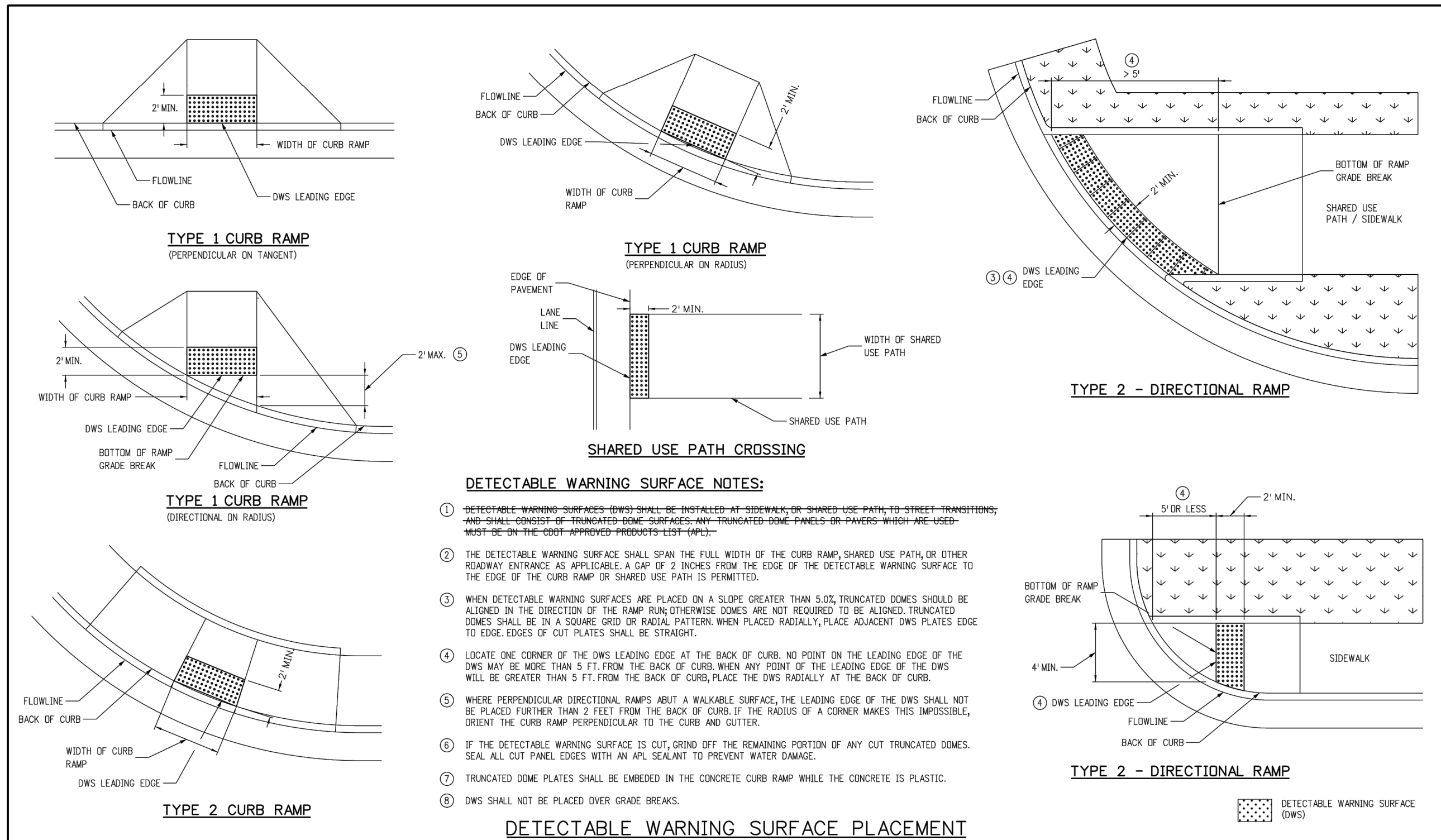
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PATH: PH
 PLOTTED BY: Paul Hitzges
 PLOT DATE: 04/26/2024



- DETECTABLE WARNING SURFACE NOTES:**
- DETECTABLE WARNING SURFACES (DWS) SHALL BE INSTALLED AT SIDEWALK, OR SHARED USE PATH, TO STREET TRANSITIONS, AND SHALL CONSIST OF TRUNCATED DOME SURFACES. ANY TRUNCATED DOME PANELS OR PAVERS WHICH ARE USED MUST BE ON THE CDOT APPROVED PRODUCTS LIST (APL).
 - THE DETECTABLE WARNING SURFACE SHALL SPAN THE FULL WIDTH OF THE CURB RAMP, SHARED USE PATH, OR OTHER ROADWAY ENTRANCE AS APPLICABLE. A GAP OF 2 INCHES FROM THE EDGE OF THE DETECTABLE WARNING SURFACE TO THE EDGE OF THE CURB RAMP OR SHARED USE PATH IS PERMITTED.
 - WHEN DETECTABLE WARNING SURFACES ARE PLACED ON A SLOPE GREATER THAN 5.0%, TRUNCATED DOMES SHOULD BE ALIGNED IN THE DIRECTION OF THE RAMP RUN; OTHERWISE DOMES ARE NOT REQUIRED TO BE ALIGNED. TRUNCATED DOMES SHALL BE IN A SQUARE GRID OR RADIAL PATTERN. WHEN PLACED RADIALY, PLACE ADJACENT DWS PLATES EDGE TO EDGE. EDGES OF CUT PLATES SHALL BE STRAIGHT.
 - LOCATE ONE CORNER OF THE DWS LEADING EDGE AT THE BACK OF CURB. NO POINT ON THE LEADING EDGE OF THE DWS MAY BE MORE THAN 5 FT. FROM THE BACK OF CURB. WHEN ANY POINT OF THE LEADING EDGE OF THE DWS WILL BE GREATER THAN 5 FT. FROM THE BACK OF CURB, PLACE THE DWS RADIALY AT THE BACK OF CURB.
 - WHERE PERPENDICULAR DIRECTIONAL RAMPS ABUT A WALKABLE SURFACE, THE LEADING EDGE OF THE DWS SHALL NOT BE PLACED FURTHER THAN 2 FEET FROM THE BACK OF CURB. IF THE RADIUS OF A CORNER MAKES THIS IMPOSSIBLE, ORIENT THE CURB RAMP PERPENDICULAR TO THE CURB AND GUTTER.
 - IF THE DETECTABLE WARNING SURFACE IS CUT, GRIND OFF THE REMAINING PORTION OF ANY CUT TRUNCATED DOMES. SEAL ALL CUT PANEL EDGES WITH AN APL SEALANT TO PREVENT WATER DAMAGE.
 - TRUNCATED DOME PLATES SHALL BE EMBEDDED IN THE CONCRETE CURB RAMP WHILE THE CONCRETE IS PLASTIC.
 - DWS SHALL NOT BE PLACED OVER GRADE BREAKS.

DETECTABLE WARNING SURFACE PLACEMENT

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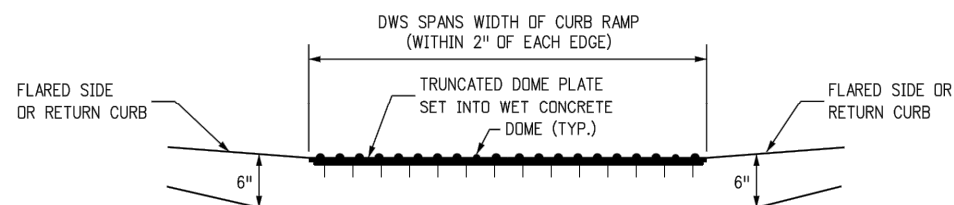
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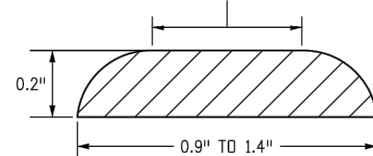
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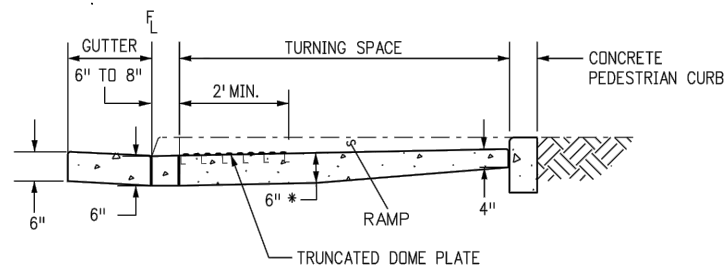
SECTION VIEW OF DETECTABLE WARNING SURFACE PLATE

(LOOKING AT PERPENDICULAR RAMP RUN FROM STREET)

THE TOP DIAMETER OF THE TRUNCATED DOMES SHALL BE 50% TO 65% OF THE BASE DIAMETER

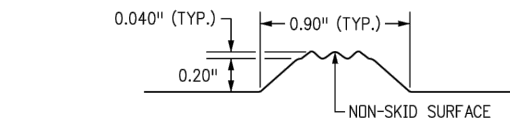


ELEVATION VIEW OF SINGLE TRUNCATED DOME

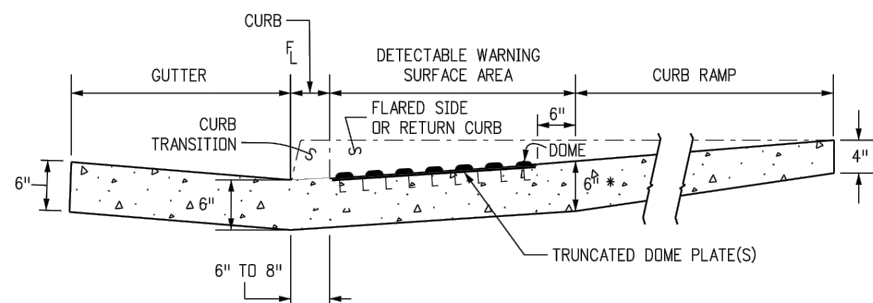


SECTION VIEW FOR PARALLEL CURB RAMP TYPES

(LOOKING PERPENDICULAR TO TURNING SPACE)

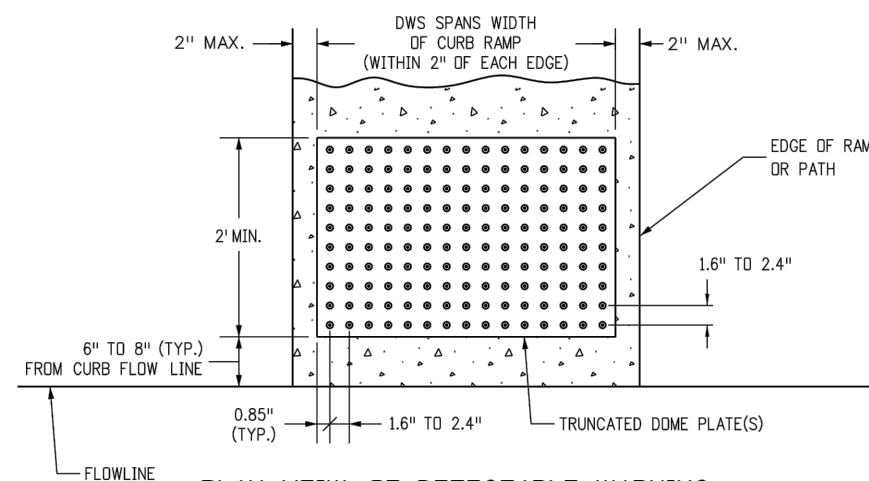


ELEVATION VIEW OF TRUNCATED DOME FOR DETECTABLE WARNING PLATE



SECTION VIEW FOR PERPENDICULAR CURB RAMP TYPES

(LOOKING PERPENDICULAR TO RAMP RUN)



PLAN VIEW OF DETECTABLE WARNING SURFACE PLATE

DETECTABLE WARNING SURFACE DETAILS

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Detailer	PH
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