COLORADO OUTDOORS COLORADO YURT COMPANY SITE DEVELOPMENT MONTROSE COLORADO

SITE DEVELOPMENT APPLICATION CIVIL PLANS

DRAWING INDEX

SHEET NO.	SHEET TITLE
C1-1	COVER SHEET
C1 - 2	CONSTRUCTION NOTES
C2-1	HORIZONTAL PLAN
C3-1	OVERALL GRADING PLAN
C3 - 2	DETAILED HANDICAP RAMP GRADING
C3 - 3	MAYFLY ENTRANCE PLAN & PROFILE
C3 - 4	STORM SEWER PLAN & PROFILE
C3-5	EASTERN ROOF DRAIN & SANITARY SEWER PLAN
C3-6	CIVIL DETAILS
C3 - 7	STORM SEWER STRUCTURE GEOMETRY PLAN
C4-1	UTILITY PLAN
C5-1	EROSION CONTROL PLAN
C5-1	EROSION CONTROL PLAN

Construction Plans proudly prepared by:



DMC JOB NO.:
20113

SHEET NO.:

STREET & UTILITY SPECIFICATIONS

<u>General</u>

- 1. Safety Requirements: The Contractor shall have full and complete responsibility for jobsite safety, and shall perform all work in full conformance with all Federal, State, and local safety regulations.
- 2. City of Montrose Specifications and Standard Details: The streets, water, sewer, and storm drainage systems shall be constructed in accordance with current City of Montrose Standards and Specifications. Contractor shall keep a copy of the current City Specification on the job site whenever work is in progress. Contractor must supply a copy of the approved CDPHE permit and SWMP to the City Engineer prior to construction.
- 3. Stormwater Management Plan and Permit: The Contractor shall prepare a Stormwater Management Plan, shall apply for and obtain the requisite Permit from the State of Colorado, shall construct and maintain the requisite facilities necessary to implement the Plan, and shall comply with the requirements of the Permit during construction. Upon completion of the work, and delivery of final payment, the Contractor shall close out the permit with the State.
- 4. Contractor Investigation: The Contractor shall familiarize himself with local conditions and the specifications of the governing entities, evaluate the soils report, and examine the site, make such tests, and perform such explorations as he deems necessary to evaluate the surface and subsurface physical conditions of the site, in order to perform the work under the conditions that exist on the site, in accordance with the Contract Documents for the Contract Price.
- 5. Underground Utility Locates: The Contractor shall have full responsibility to identify, locate, and protect all existing utilities lines. Contractor shall contact the Utility Notification Center of Colorado, 1-800-922-1987, and the individual utility companies as needed, to locate and properly protect existing utilities prior to construction.
- 6. Hazardous Materials: In the event that the Contractor should encounter hazardous materials on the site (including but not limited to asbestos cement pipe), Contractor shall leave such materials undisturbed and shall contact the Owner for directions regarding disposal of said materials.
- 7. Notifications: Contractor shall notify the City of Montrose Public Works Department at least 48 hours prior to commencing construction to arrange for inspection by the City. The City will inspect all public improvements for compliance with the City's standards and specifications and will not accept improvements until all requirements of these standards and specifications are met.
- 8. Connections: The Contractor shall coordinate and/or make the connections to existing water and sewer mains in conformance with City of Montrose requirements.
- 9. Topsoil: Contractor shall manage the work so that all topsoil is preserved for use in final landscaping. Contractor shall separate topsoil from subsoil during grading operations, and shall store the materials separately. In general, topsoil shall be stored on the back of the adjoining lots, and subsoil shall be used for overlot grading.
- 10. Embankment shall be placed and compacted in accordance with CDOT Standard Specifications for Road and Bridge Construction (current edition) Section 203.
- 11. Extra Work: A Change Order signed by the Owner's Representative is required to qualify any extra work for extra payment. Any extra work undertaken by the Contractor without having a Change Order signed by the Owner's Representative, shall be deemed to have been undertaken for the Contractor's convenience, and shall not be eligible for extra compensation.
- 12. Record Drawings: Contractor shall record precise locations of water and sewer fittings, and all variations from the design, on "as—built" drawings showing the locations and dimensions of any element of the utility system that is not installed as designed, and shall provide that information to the Owner prior to release of final payment.

<u>Trenching:</u>

- 1. Trench Compaction: Place all trench backfill in shallow lifts and compact to 95% of Modified Proctor, AASHTO T 180, at $\pm 2\%$ of optimum moisture in accordance with City of Montrose Specifications.
- 2. Moisture Conditioning of Backfill: Contractor shall thoroughly moisture condition (wetting or drying as required, and mixing thoroughly) all backfill materials prior to placement in the trenches. Watering of loose backfill after it has been placed in the trench is prohibited.
- 3. Allowable Lift Depths will depend upon the type, weight, and power of the Contractor's compaction equipment, and are subject to the approval of the Engineer. In general, loose lift depths in excess of 12" will not achieve specified density for the full depth of the lift.
- 4. Density Testing will be provided by the Owner's testing agency. Testing is performed for the benefit of the Owner, to demonstrate general conformance with the design and the specifications. Contractor is responsible to compact all backfill in conformance with the specifications, shall coordinate the testing schedule with the Engineer, and shall normally be responsible for notifying the testing agency of readiness for testing. Contractor may expect density testing on every lift until effective methods have been demonstrated, and testing in conformance with the City's testing frequency protocol thereafter. Retests in areas where density tests failed to meet the specification will be made at the Contractor's expense.
- 5. Trench Subsidence: Contractor is responsible for the quality of the installation of all facilities within this project. Contractor is wholly responsible to thoroughly, diligently, and completely compact all backfill of trenches and excavations around manholes, drainage structures, and other underground facilities in conformance with the specifications. In the event surface subsidence occurs during the warranty period anywhere within the City right of way, the Contractor shall be wholly responsible for all remedial measures necessary to repair such damage. The existence of passing density tests, proof rolling results, or approval or acceptance of the work by the Owner, the Engineer, or the City of Montrose does not relieve the Contractor of responsibility for surface subsidence during the warranty period.
- 6. Trench Stabilization Rock: If unstable conditions are encountered in the bottom of trenches, $1 \frac{1}{2}$ washed rock will be used to stabilize the bottom of the trench prior to installing pipelines.
- 7. Existing Wet Subgrade: Any trenches in the street subgrade that are wet and unstable at the time of trench backfill will be backfilled with select materials as directed by the Engineer. If available, select borrow may be developed on site from sources designated by the Engineer.
- 8. Replacement Stakes: The Contractor shall be responsible to maintain the survey stakes for use in the work. The Engineer will replace lost survey stakes at the Contractor's expense, including replacing any lost stakes needed by the Engineer to evaluate the Contractor's work.
- 9. Grade Transfer: The Contractor is responsible to transfer grades from the stakes to the work.

Sewer Collection System

- 1. City of Montrose Sewer Specifications: The Contractor shall construct the sewer system in conformance with these plans and with the Standards and Specifications of the City of Montrose, current edition, except as modified or augmented herein.
- 2. Sewer Connection: The Contractor shall measure the actual elevation of the existing sewer main at the connection points, and confirm that the design elevations and minimum grades upstream can be met. Notify the Engineer of any discrepancies.
- 3. Sewer Survey Control: The Contractor shall provide one (1) set of stakes at manhole locations and sewer service locations.

- 4. Laser Grade Control: The Contractor shall install sewer and storm drain mains using laser grade control. The Contractor shall provide trained, competent personnel to set, check, and manage the laser. The Contractor shall provide appropriate surveying equipment to establish laser alignment from manhole to manhole. Grade control methods and equipment are subject to approval of the Engineer.
- 5. Adjustments to Grade: At each manhole, the Contractor shall check the actual elevation of the pipeline as installed, and, if necessary, re-calculate the grade to the next manhole to compensate for any error in the previous section. Normal allowable pipeline installation tolerances at each manhole are ± -0.2 vertical, and +/- 1.0' horizontal, unless the variation conflicts with other clearance or separation requirements.
- 6. Sewer Bedding: The Contractor shall bed all sewer mains and services in 3/4" washed rock, at least 6" all
- 7. Manhole Cover Tolerances: See Street Specifications, Note 10.
- 8. Sewer Services shall be installed as detailed, on straight lines and uniform grades, extended fully across the utility easement, capped, and marked with a 4x4 treated wooden post painted green. Services shall be installed at grades not less than 2%, and at a depth of at least 4' at the easement line unless otherwise limited by depth of the main.
- 9. Low Pressure Air Testing: The Contractor shall pressure test the sewer main and services in accordance with City of Montrose specifications. Contractor shall call the City and the Engineer to observe the pressure
- 10. Lamp Testing & Camera Testing in conformance with City Specifications will be performed by the City of
- 11. Other Testing in accordance with the City Specifications may be performed at the discretion of the Engineer.
- 12. Locations for Record Drawings: Contractor shall measure and record the distance of each service elbow and clean out wye from the center of the tie in manhole, and shall include that information in the Record Drawings to be submitted to the Owner prior to release of the final payment.

<u>Water Distribution System</u>

- 1. City of Montrose Specifications: The Contractor shall construct the water system in conformance with these plans and with the Standards and Specifications of the City of Montrose.
- 2. Water System Survey Control: The Contractor shall provide one (1) set of stakes for water line construction designating water main alignment, valve locations, tees, service locations, meter pit locations and elevations, and fire hydrant locations and flange elevations. Hydrants shall be set 2' behind curbs, with flanges set 4" to 6" above top back of curb. Stakes will be set at offsets satisfactory to the Contractor.
- 3. Connection to Existing Water System will be made by City of Montrose and coordinated with the owner's
- 4. Conflicts with Other Utilities: Contractor shall verify clearance between water mains and other buried utilities, including sewer and storm drain lines, and shall adjust the depth of the water main as needed to provide minimum required clearances from other utilities, and minimum required depth of cover on water mains.
- 5. Bedding Materials: Pipe shall be bedded per City Specifications.
- 6. Inspection by City of Montrose: The City will inspect the installation of the water system. Prior to commencing construction the Contractor shall negotiate an inspection protocol with the City to ensure the City has adequate opportunity to observe the work.
- 7. Valves shall be located as shown on the drawings, and are generally isolated "in line" valves. Those valves that are mounted on tees and crosses shall be flange by mechanical joint. Valves for hydrants shall be bolted directly to the tee. All valves shall be installed on concrete pads with a minimum bearing area of 4 sf. The use of pre—cast pads is encouraged. Cast in place pads shall be formed sufficient to preclude contact between concrete and the bolt flanges on the valves. At intersections, space the valves at approximately 20' from the fitting such that no more than one valve is in the intersection.
- 8. Valve Box Tops: See Street Specifications, Note 11.
- 9. Water Services and meter pits shall be constructed in conformance with City of Montrose specifications. Contractor shall furnish all materials except the meter itself.
- 10. Thrust Blocks shall be sized in accordance with the City of Montrose specifications. Concrete for thrust blocks shall be formed to control concrete placement, and to prevent concrete from coming in contact with bolt circles on fittings. Place plastic sheeting between the fitting and the concrete to prevent bonding. Contractor shall call the City to observe thrust block bearing area and forming prior to casting blocks.
- 11. Locations for Record Drawings: Contractor shall measure tap locations from the nearest downstream valve, fitting locations from the nearest downstream fitting or valve and shall include that information in the Record Drawings to be submitted to the Architect prior to release of the final payment.
- 12. Disinfection: The Contractor shall disinfect (chlorinate) and flush the pipelines in conformance with City of Montrose specifications.
- 13. Pressure Testing: The Contractor shall pressure test the water main in conformance with City of Montrose specifications. Contractor shall call the City and the Engineer to observe the pressure testing.

<u>Cable Utilities</u>

- 1. Cable Utilities: The Contractor shall provide trenching, backfilling, and compaction for the installation of power, phone, and cable TV lines in conformance with utility company requirements. Contractor shall coordinate and schedule all such work with the respective utility companies.
- 2. Cable Utility Survey Control: The Contractor shall provide one (1) set of stakes to locate power, gas, phone, and CTV utilities. Contractor shall provide adequate means to ensure that the cable utilities are installed at uniform depth and uniform distance behind the sidewalk, including where necessary incidental grading behind the sidewalk to provide a uniform surface from which to begin the work. Cable utilities will be installed 42" below top back of walk unless otherwise approved by the Engineer.
- 3. Cable Installation: After the utility companies have placed their cables, the Contractor shall be responsible to ensure that all cables and conduits are arranged in a neat, uniform, straight, untangled, uncrossed manner, at uniform depth and spacing, and in trenches that are a uniform distance behind the sidewalk. Cables and conduits shall be hand bedded using select bedding conforming to utility company requirements. In no event shall bedding be dumped directly on the cables and conduits from a loader bucket.
- 4. Cable Backfill & Compaction: No cable utilities shall be backfilled until the installation has been observed by the Engineer for compliance with this specification. All cable utility trenches shall be backfilled in shallow lifts. Trenches on lots shall be compacted to 90% Modified Proctor density at $\pm 2\%$ of optimum moisture. Trenches across streets shall be compacted to 95% Modified Proctor density at $\pm 2\%$ of optimum moisture. Backfill and compaction methods and equipment are subject to the approval of the Engineer. Expect density testing on utility trench backfill.

<u>Natural Gas</u>

1. Natural Gas pipelines will be installed by Black Hills Energy. Contractor shall provide the trenches, coordinate the work with Black Hills Energy, and backfill and compact the trenches. Contractor is responsible for ensuring that all road crossing conduits, in proper size, type, and quantity, are in place at the locations required by the gas company to allow road construction to progress in advance of gas line installation. Trenches on lots shall be compacted to 90% Modified Proctor density at $\pm 2\%$ of optimum moisture. Trenches across streets shall be compacted to 95% Modified Proctor density at $\pm 2\%$ of optimum moisture.

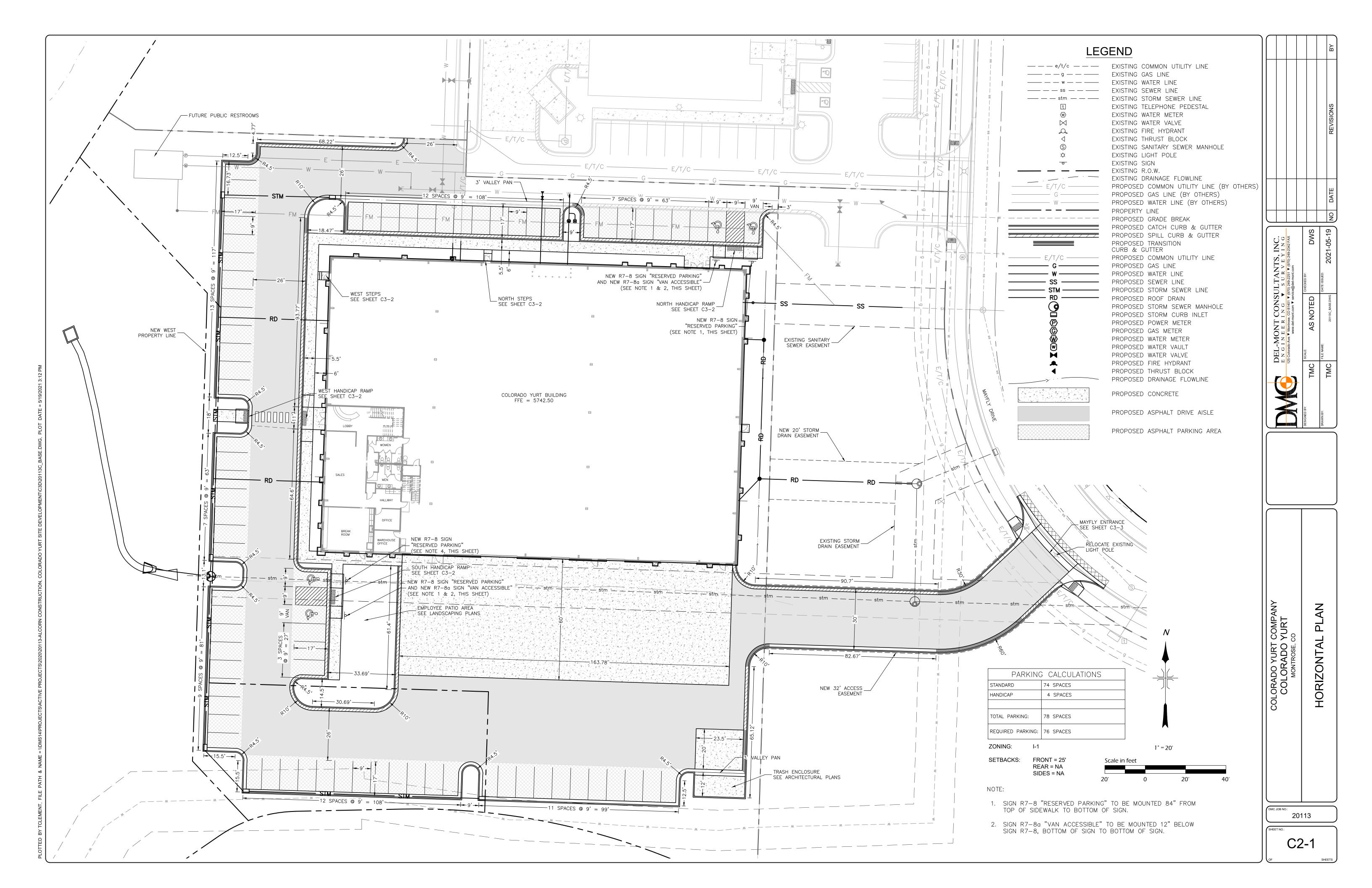
<u>Streets</u>

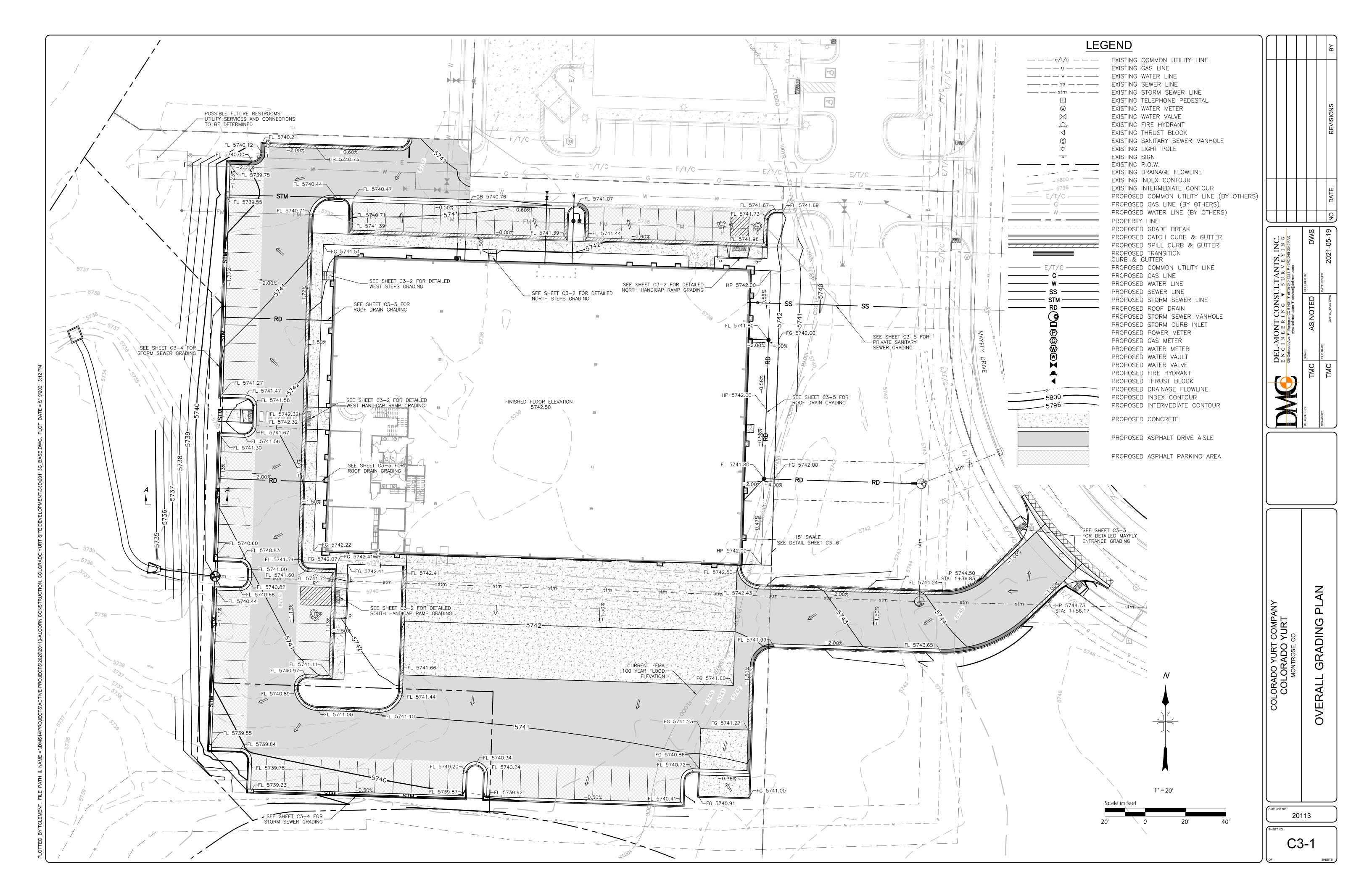
- 1. City of Montrose Specifications: All street construction work shall be performed in conformance with these Plans and with City of Montrose Standards and Specifications, supplemented as needed by CDOT Standard Specifications for Roads and Bridges, latest edition.
- 2. Survey Control: The Contractor shall provide one (1) set of cut / fill stakes at 50' intervals, plus PC's, PT's, and grade breaks, at offsets designated by the Contractor, for street excavation and subgrade preparation. Contractor shall preserve street excavation stakes during utility installation for use in final subgrade preparation. Stakes lost during construction will be replaced at the Contractor's expense, including stakes needed for the Engineer to evaluate the Contractor's work.
- 3. Subgrade Preparation: Scarify the subgrade to 12" deep, moisture condition, and compact to 95% of Standard Proctor, AASHTO T 99 at $\pm 2\%$ of optimum moisture, prior to placement of base course gravel, unless otherwise directed by the Engineer. Density testing will be provided by the owner. Retesting in area where density tests failed to meet the specification will be made at the Contractor's expense. Contractor shall finish the subgrade to within +.05' / -0.15' of design elevation. Contractor shall set bluetop hubs at not more than 50' grid intervals to control subgrade finishing operations, and shall replace any hubs lost during finishing operations to facilitate final elevation checks by the Engineer.
- 4. Subsurface Soil Conditions: Existing native soil conditions at subgrade elevation may not be satisfactory for road construction without remedial measures at some locations within the project. The Geotechnical Engineer will evaluate the subgrade prior to placement of subbase. At any location where unstable subgrade conditions are encountered, the Geotechnical Engineer will determine appropriate remedial measures, and the Engineer will issue a Change Order to compensate the Contractor for the cost of correcting the unstable subgrade conditions.
- 5. Proof Roll Observation by the Engineer: Contractor shall proof roll the base course gravel to demonstrate the stability, uniformity, and compaction of the base material. Proof rolling is incidental to the work, and the cost thereof shall be included in Contractor's unit prices. Any areas that yield excessively, in the judament of the Engineer, will be reprocessed and recompacted to specifications at the Contractor's expense, and shall be proof rolled again to demonstrate competence of the base material.
- 7. Subbase Gravel, if required, shall conform to CDOT Class 2 Specifications, compacted to 95% Modified Proctor, AASHTO T 180, at $\pm 1/2$ of optimum moisture. Density testing will be provided by the Owner. Retesting in greas where density tests failed to meet the specification will be made at the Contractor's
- 8. Base Course Gravel shall conform to CDOT Class 6 Specifications, compacted to 95% Modified Proctor, AASHTO T 180, at $\pm 1/2$ of optimum moisture. Density testing will be provided by the Owner. Retesting in areas where density tests failed to meet the specification will be made at the Contractor's expense.
- 9. Proof Roll Observation by the Engineer: Contractor shall proof roll the base course prior to placement of pavement or concrete to demonstrate to the Engineer the stability, uniformity, and compaction of the base. Any areas that yield excessively, in the judgment of the Engineer, will be reprocessed and recompacted to meet specifications and to adequately carry the proof roll load.
- 10. Manhole Covers shall be installed flush to 1/2" below finish grade of the base course gravel. Upon completion of paving operations the top of the cover shall be set to match street grade longitudinally, and to match the cross slope perpendicularly (generally 2%.) Grout placed under the ring shall be full width of the base of the ring. Allowable tolerance from design elevation and slope shall be $\pm 1/4$ ". Expect the Engineer to check manhole ring placement with a 10' straightedge. Compaction tests will be performed adjacent the ring. At the time of placement of the 3" thick asphalt mat, a 2" or 2 1/2" manhole riser ring shall be installed, leaving the top of the cover 1" maximum to 1/2" minimum below finished pavement surface.
- 11. Water Valve Boxes shall be installed vertical, with the tops set 1" to 2" below top of gravel, and marked with steel fence posts pending completion of street construction. Tops shall be raised to within 1/2" to 3/4" of finished pavement grade during paving operations.
- 12. Concrete Survey Control: The Contractor shall provide one (1) set of cut/fill stakes at 50' intervals, plus BCR's, ECR's, grade breaks, and radius points, on both sides of each street, to construct the curb, gutter, and sidewalks. Stakes lost during construction will be replaced at the Contractor's expense.
- 13. Concrete shall conform to City of Montrose Specifications. Contractor shall submit a concrete mix design to the Engineer for approval at least 10 days prior to the first concrete placement. Concrete shall be CDOT Class B or D from the CDOT Approved Products List (APL) 4500 psi mix with 1.5 lbs of fiber reinforcement per cubic yard. Slump shall not exceed 4". Sprinkling water on the surface during finishing is prohibited. Freshly placed concrete surfaces shall be protected from rain for 24 hours. Concrete flatwork shall be protected with curing compound approved by the Engineer applied immediately after finishing work is complete. Concrete shall be protected from freezing for at least 5 days after placement. If daytime temperatures are consistently below 60 F, and fall below freezing at night, ACI specifications for cold weather concrete placement will be implemented. The Owner will provide quality assurance testing.
- 14. Concrete Ponding Tolerance: All concrete surfaces shall be finished to drain. Gutters and pans shall be checked for ponding by the Engineer. Any area that holds water more than 1/2" deep, or which covers more than 2 sf, shall be repaired or reconstructed as determined by the Engineer.
- 15. Tolerances for Paving Preparation: base course gravel shall be finished to match curb or pan at a depth of $2 ext{ 1/2}$ " below the lip of the gutter prior to paving. Allowable tolerance for compacted base course prior to paving shall be $\pm 1/4$ " at curbline Contractor shall set bluetop hubs on 50' grid intervals to control gravel finishing operations. Call the Engineer to observe base course finishing tolerances at least 48 hours prior to
- 16. Asphalt Pavement: Paving shall conform to City of Montrose Specifications. The hot bituminous pavement mixture shall be a mix currently being used on CDOT work in this area, and shall conform to the tolerances specified in Table 401—1, CDOT Standards for Road & Bridge Construction, current edition. Pavement shall meet an N—Design value of 75 gyrations and use a PG64—22 asphalt binder. Contractor shall submit a mix design to the Engineer for approval at least 10 days prior to paving. Aggregate gradation shall be CDOT Grading S or SX, or a substitute approved by the Engineer. Three inch mats shall be placed in a single lift, and 4" mats placed in two each two inch lifts. Pavement shall be compacted to 92% to 96% of maximum theoretical density. CDOT temperature restrictions for asphalt placement will be fully observed. Quality assurance testing will be provided by the Owner. Contractor shall notify the Engineer at least 72 hours in advance of paving in order to schedule testing.
- 17. Pavement shall be finished off 1/4" to 1/2" above the lip of catch gutter, 1/2" above the lip of all cross pans, and flush with the lip of spill gutter.

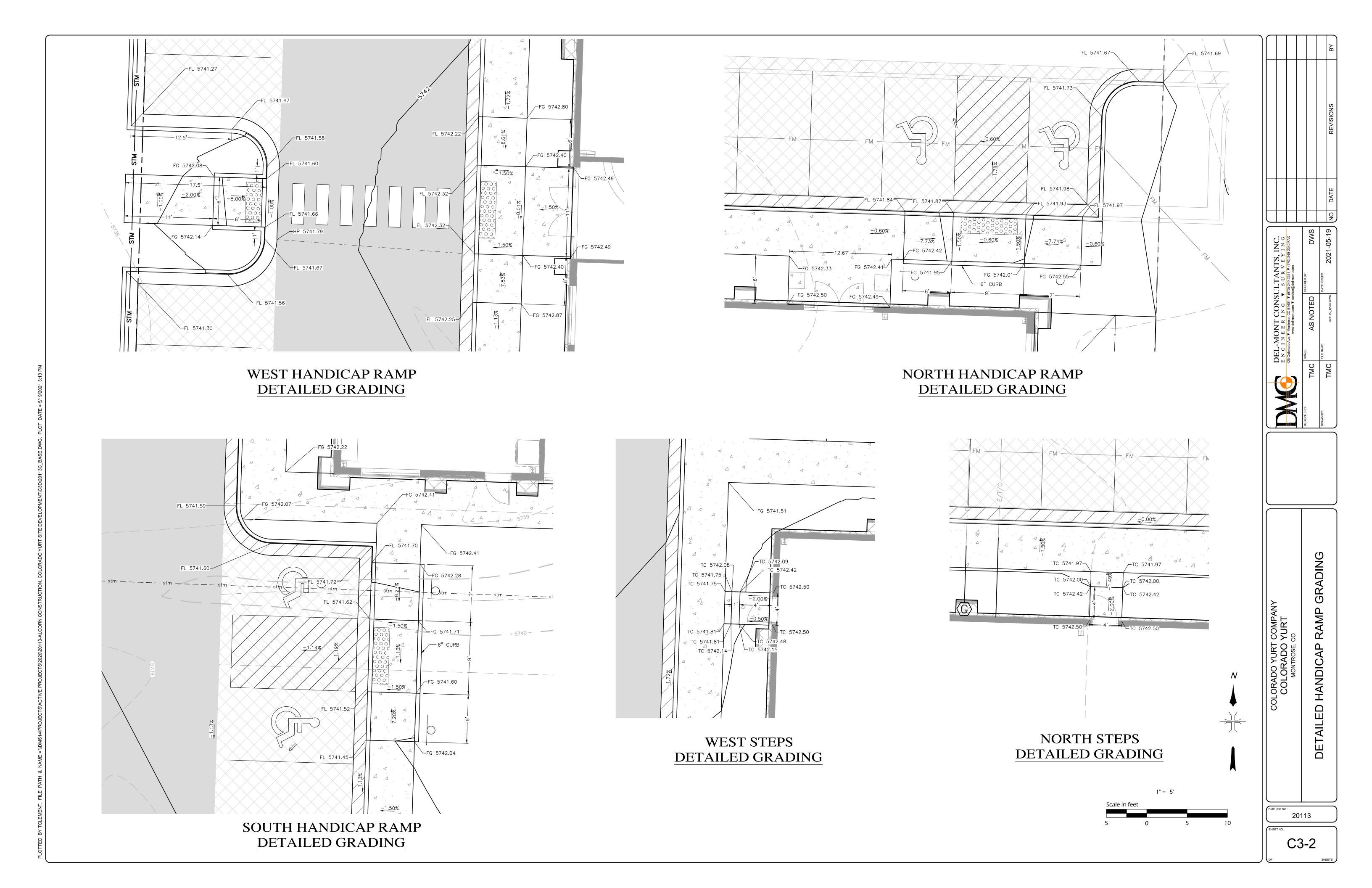
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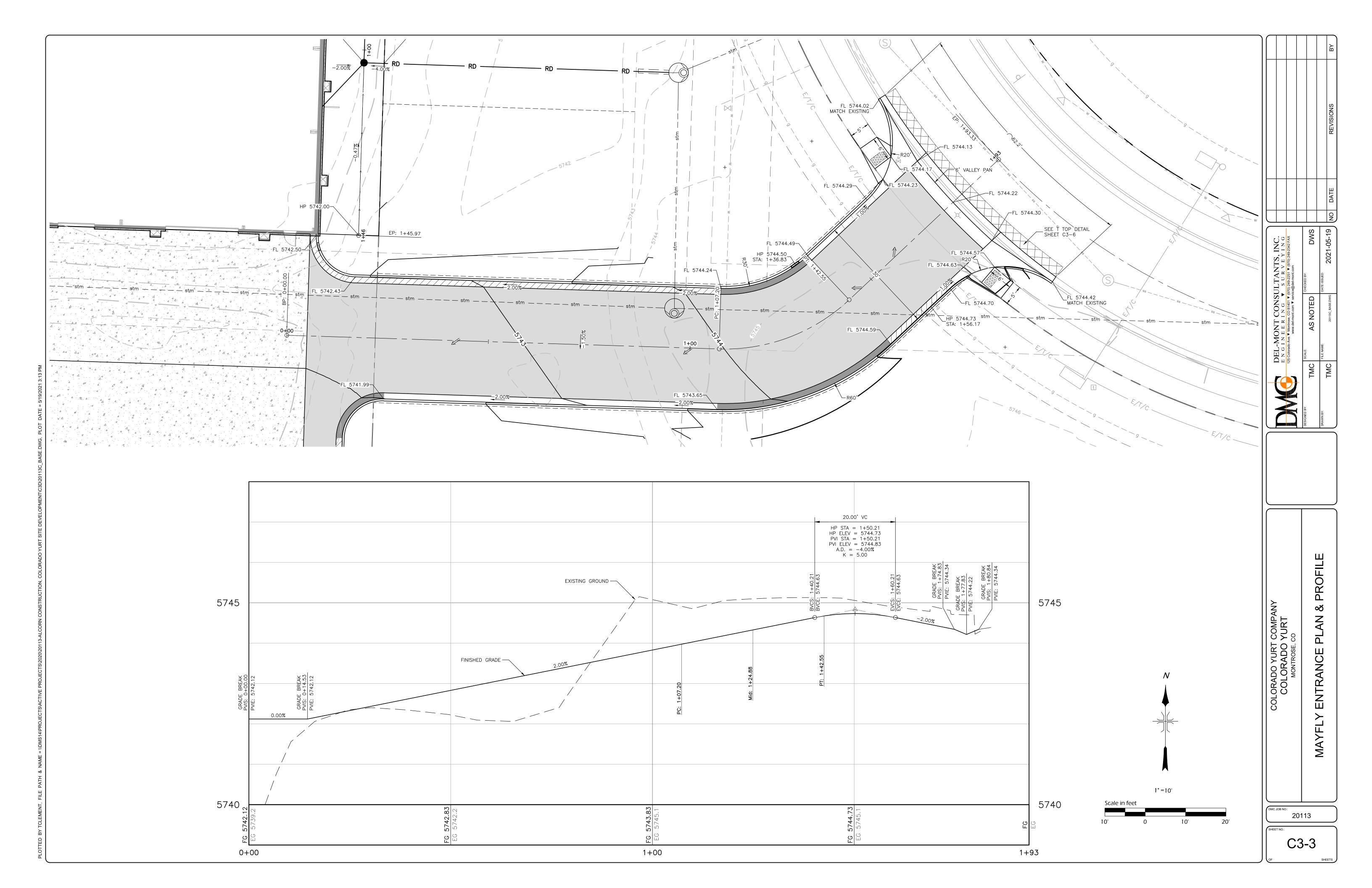
C1-2

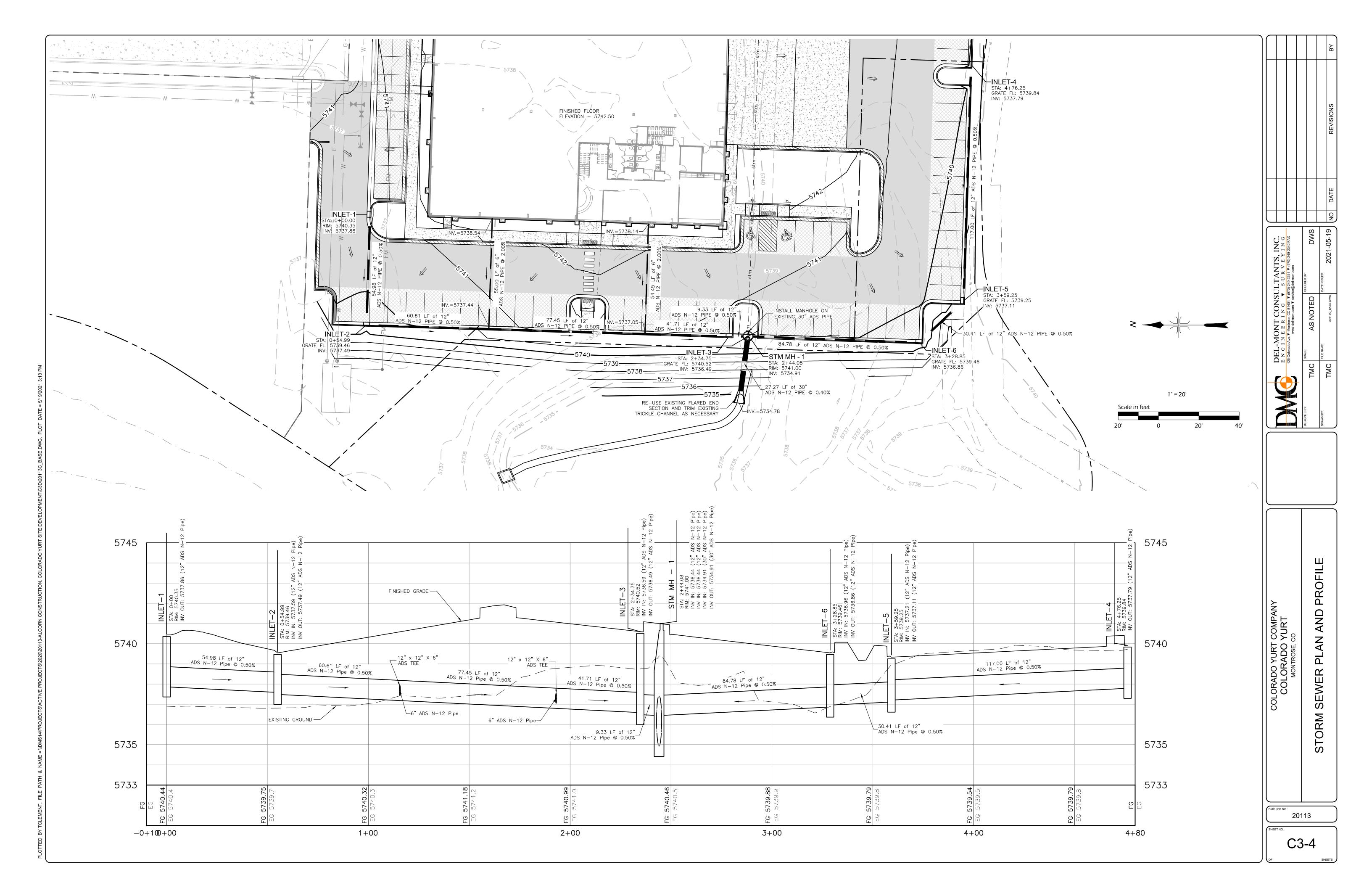
PRELIMINARY

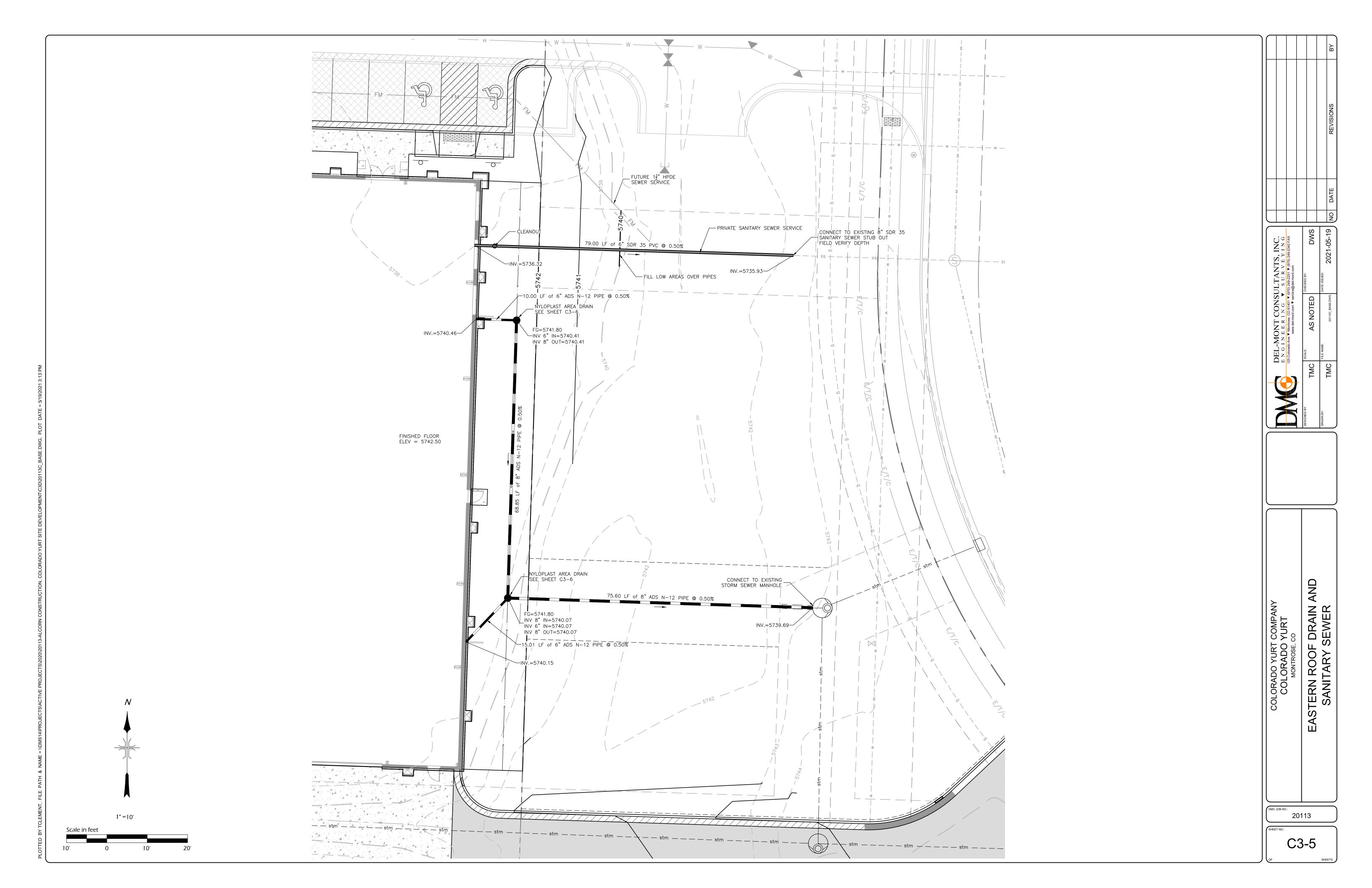


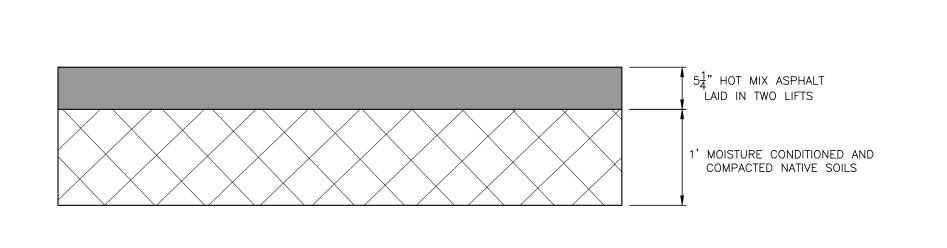






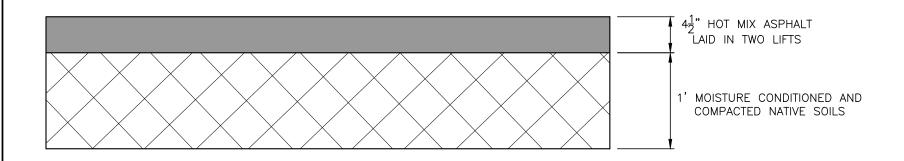






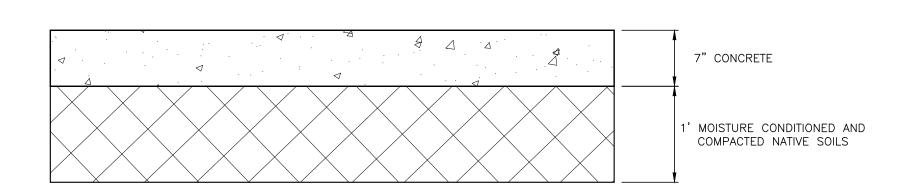
TYPICAL DRIVE AISLE PAVEMENT THICKNESS DETAIL

N.T.S.



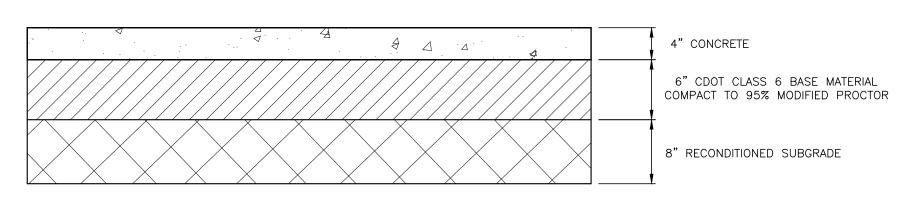
TYPICAL PARKING STALL PAVEMENT THICKNESS DETAIL

N.T.S.

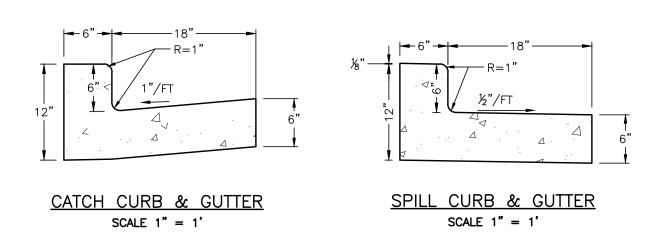


TYPICAL DELIVERY AREA CONCRETE THICKNESS DETAIL

N.T.S.

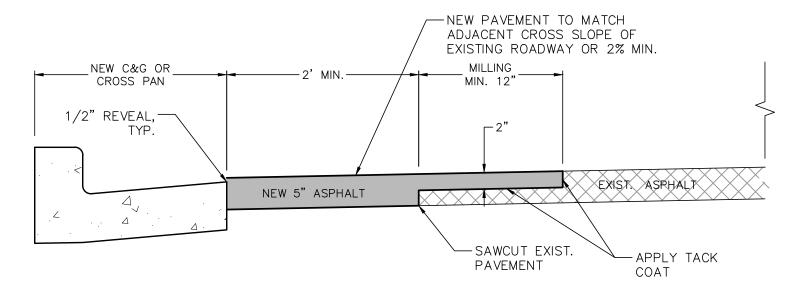


TYPICAL SIDEWALK
CONCRETE THICKNESS DETAIL
N.T.S.

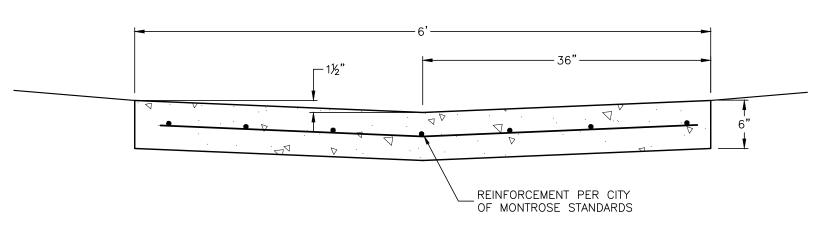


TYPICAL CURB & GUTTER DETAILS

N.T.S.

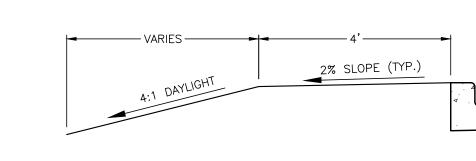


MAYFLY CURB RETURN ASPHALT PATCH DETAIL N.T.S.



6' VALLEY PAN

SCALE 1" = 1'



NON TRAFFIC INSTALLATION

AREA DRAIN

N.T.S.

GRATE RIM ELEVATION PER PLANS

TOP SOIL

12" DIA. NYLOPLAST DRAIN BASIN OR APPROVED EQUAL

4" MIN —

INVERT ELEVATION PER PLANS

ADS N-12 PIPE

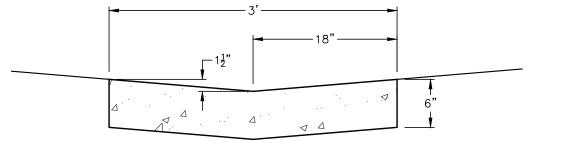
SIZE VARIES, SEE PLANS

TYPICAL WEST CURB SECTION A-A

THE BACKFILL MATERIAL SHALL BE CRUSHED STONE OR OTHER GRANULAR MATERIAL MEETING THE REQUIREMENTS OF CLASS I.

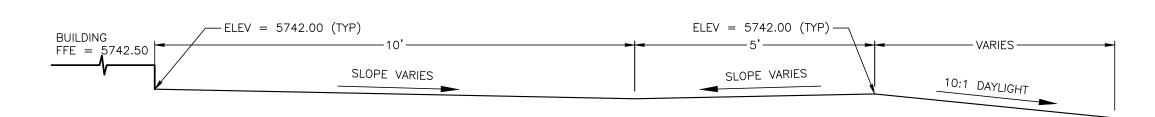
CLASS II, OR CLASS III MATERIAL AS DEFINED IN ASTM D2321.
BEDDING & BACKFILL FOR SURFACE DRAINAGE INLETS SHALL BE
PLACED & COMPACTED UNIFORMLY IN ACCORDANCE WITH ASTM D2321.

N.T.S.



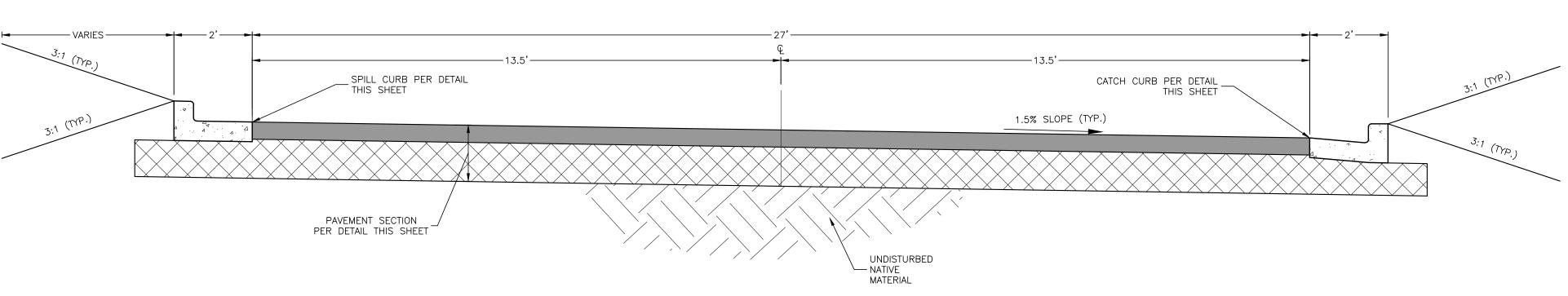
3' VALLEY PAN

SCALE 1" = 1'



TYPICAL SWALE SECTION

N.T.S.



TYPICAL SHEET ROAD SECTION

N.T.S.

PRELIMINARY

DMC JOB NO.: 20113

C3-6

