HOLY CROSS ENERGY CONSTRUCTION SPECIFICATIONS

- TRENCH AND CONDUIT
- 1. The developer or contractor will contact Holy Cross Energy before conduit and vault installation begins to schedule a pre-construction meeting with the project inspector.
- 2. Changes in power facility construction from that shown on the project plans will not be made without advance approval from the Holy Cross Energy inspector
- 3. Holy Cross Energy material shall not be moved from the project to which it was assigned without the advance approval of the inspector and the completion of necessary paperwork. Holy Cross Energy material shall not be installed for any use other than construction of power facilities.
- 4. All roads will be built to subgrade and all drainages will be constructed to grade before any vaults or conduits are installed.
- 5. All trench will be excavated deep enough to ensure that the top of installed power facilities will be 48" below final grade. Special care must be taken to insure that the top of conduits will be 48" below the bottom of drainage ditches and all other low areas.
- 6. Trench will be as straight as possible between vaults and shall have a smooth bottom free from low and high spots. Six inches of 3/4" road base will be placed the entire length of the trench and well compacted prior to conduit installation. When placed in the trench, the conduit shall be in continuous contact with the compacted road base with no hold down weight added. Twelve inches of 3/4" road base, as measured from the top of the conduit, will be placed on the conduit and well compacted prior to returning any native backfill to the trench. Large rocks shall not be placed directly on the road base layer. Care must be taken to avoid conduit damage during backfill and compaction; conduits found to be unusable at the time of power cable installation will be repaired by the developer or contractor before power can be made available.
- 7. Power facilities to be placed parallel to deeper utilities will have a horizontal separation from the deeper utility greater than the depth of such utility below final grade less four feet (see attached drawing). When crossing a deeper utility is unavoidable, the crossing will be made as close to perpendicular as possible.
- 8. Power line conduits will be installed with a minimum separation of 12" from all other new or existing underground utility lines. Wherever possible, this separation will be horizontal. The power line separation from plastic gas lines will be greater than this minimum wherever practicable. Power line conduits will be located deeper in the trench than the facilities of all other utilities unless the inspector grants a waiver prior to the start of construction.
- 9. Backfill and compaction above the road base layer will be as required by the governmental entity or other party having jurisdiction.
- 10. Conduit bell ends will not be allowed in the vaults. Holy Cross Energy will supply factory couplers, 90°, 45°, and 221/2° elbows as needed for job. Non-factory bends and heated bends will not be allowed. No more than two 90° elbows will be allowed in a conduit run of 500 feet. The conduit shall run straight between factory bends. Allowed bends must be further than 5' from a vault. Factory elbows supplied must be used intact; they cannot be cut to make a lesser bend. Bells will not be cut off conduit sticks to use as couplers. Holy Cross Energy elbows and pipe will be used only for the power facility installation.
- 11. The conduit will not be backfilled without the Holy Cross Energy inspector seeing all joints unless the inspector gives prior permission. All joints shall be completely seated to the line marked on the male end of the conduit after sufficient glue is applied to both conduits being jointed, even in areas where the trench cannot be excavated completely straight. Glue in the joint shall be allowed to completely dry prior to any stress being applied to the conduit on either side of the joint. Trench backfilled without the inspector viewing each joint or giving prior permission to cover the conduit will be re-excavated to expose the conduit, or the contractor will put a camera through each conduit in the span which was prematurely backfilled to verify the joint seating and conduit condition. The camera verification will be witnessed by the Holy Cross Energy inspector.
- 12. Individual conduits shall enter each vault at a consistent location. There is to be no crossing of conduits in the trench.
- 13. Both ends of a conduit run shall be securely plugged at the time of installation with Holy Cross Energy supplied material. Conduit ending outside a vault shall be marked with a 4" x 4" post or other approved method.
- 14. Red trench marking tape will be supplied by Holy Cross Energy and shall be installed 18" to 24" above the conduit during backfill.
- 15. At completion of the job, the inspector will do a final inspection. If the job does not meet with Holy Cross Energy's specifications or the approval of inspector, service will not be provided until specifications are met.

<u>II VAULTS</u>

- 1. Vaults shall be installed as follows:
- 1.1. Splice vaults shall be installed with the manhole lid grade being slightly above final grade of the surrounding area, except when the vault is in a roadway, the manhole lid grade shall match the grade of the finished roadway surface.
- 1.2. Splice vaults located in roads or other sloped areas will be installed so that the concrete base and lid are at the slope of the surrounding area. Vaults placed in roads will not be located in areas normally traversed by vehicle wheels. The inspector must approve all vaults installed at a slope.
- 1.3. Transformer vaults and switchgear vaults will be installed with the bottom of the lid at final grade. The lid will be level.
- 1.4. Where transformer and switchgear vaults are set into hillsides or sloped cuts, the downhill side of the vault will be graded according to C above. The slope behind the vault will be laid back sufficiently to prohibit soil or rocks from sloughing onto the vault. If the slope cannot be laid back far enough, a retaining wall shall be constructed behind the vault at the direction of the inspector.
- 1.5. All vault pads will be placed on the vaults at the time of vault installation to protect the public and wildlife, unless otherwise instructed by the inspector. The holes through transformer and switchgear pads will be covered at the time of vault installation with concrete pieces supplied by Holy Cross Energy, unless otherwise instructed by the inspector.
- 1.6. Large vault pieces shall be jointed with a tar type sealant provided by Holy Cross Energy, with the exception of the vault lid, at the direction of the inspector.
- 2. Holes knocked in vaults for conduit installation shall be as small as possible and shall be grouted closed on the outside of the vault prior to backfill.
- 3. Conduit shall enter vaults perpendicular to the vault wall, at least 2" from any adjacent walls and at least 2" above the vault base. There shall be a minimum separation of 1" between conduits. See vault drawings.
- 4. Conduit will extend 4" into the vault (measured from the inside wall of the vault) after backfilling is complete.
- 5. Ground rods in vaults for underground cable installation shall be laid in the trench with the conduits. The end of the rod shall extend approximately 6" into the vault through the conduit knockout. The rod will have a 45° bend located approximately 3" from the vault end, with the bend going away from the conduits. The bent end of the rod must be far enough from the vault wall to allow crimping the grounding conductor onto the rod. The rod must be at least 2" from the conduit at its entrance into the vault. See vault drawings.
- 6. After the vault has been set, pipes extended in and grouted and the ground rod is in place, vaults shall be swept out removing all dirt or rocks. Cleanup shall be completed to the satisfaction of the inspector prior to cable installation being scheduled.
- 7. Pedestals for other utilities shall not be located closer than 10' to a vault on sides where transformers or switchgear will have access doors. Pedestals shall not be located closer than 5' to a vault on sides where the pad-mounted equipment will not have access doors.

CENTURYLINK COMMUNICATIONS STRUCTURAL SPECIFICATIONS

1. CONDUIT:

A. All conduits are to be equipped with minimum $\frac{1}{4}$ " polypropylene pull line.

B. All conduit bends are to be steel sweeps or no less than PVS Schedule-80 fully encased. Long radius sweeps are to be used in main trench sections. Standard radius sweeps may be used at closure locations.

C. All conduit runs are designed on the basis that each separate run will have no more than two (2) 90° bends without the insertion of an appropriately sized pull box.

D. All conduits will be PVC Schedule-40 or better unless specified otherwise. If steel or iron pipe is used between the building and the property line, the pipe must be kept free from contact with any reinforcing steel or other conductors within the building foundation wall.

E. Conduit(s) will be furnished and installed by contractor for the exclusive use of Qwest Communications.

F. Conduit(s) placed in the same trench with power supply conductors/conduits must be separated by a minimum of 12" of compacted soil or 3" of slurry encasement and have minimum depth of cover of not less than 24" on private property and 36" of cover at the property line.

G. Labs, water/gas pipe, flex conduit or plumbing fittings shall not be deemed acceptable for use by Qwest communications.

H. Conduit(s) terminating at a utility pole must be attached to the pole and extend to a minimum height of 12"

2. SPLICE VAULT/MAINTENANCE HOLES:

A. All splice vaults and maintaining holes are to be equipped with ladders and cable racking materials, as may be appropriate for specified size and intended usage.

inspection.

1. Any items that deviate from these specifications must be cleared with the Qwest Communications Engineer prior to the change being made in the field by the Premises Owner/Developer.

2. Construction work on telephone supporting structure <u>must be completed and inspected 30-days prior</u> to the date that permanent telephone service will be required. Should Premises Owner/Developer fail to meet this time frame, Qwest Communications shall not be obligated to meet the tentative in-service date and shall be allowed the full 30-day period within which to schedule and complete all of its work that may be associated with this project, commencing at the point in time that the Premises Owner/Developer has met the requisite structural

3. FOR INITIAL/FINAL INSPECTION CALL SAM TOOLEY AT LEAST 48-HOURS IN ADVANCE.

WATER NOTES

- 1. Water construction shall conform to Eagle River Water & Sanitation District's standards and specifications.
- 2. All materials and workmanship shall be subject to inspection by the district and/or its representatives. The district reserves the right to accept or reject any materials and workmanship that do not conform to district standards or specifications.
- 3. ERWSD and Alpine Engineering is to be notified by the Contractor at least 48 hours prior to any water line construction for a pre-construction meeting.
- 4. Compaction of all trenches must be attained and compaction test results submitted to Alpine Engineering prior to acceptance. All pipe shall be constructed with pipe bedding as shown in the water plans and details. If trench conditions vary or if rock or water is encountered, Alpine Engineering is to be notified prior to proceeding with construction...
- 5. The Contractor shall at all times keep a separate full set of contract drawings marked up to fully indicate as-built conditions. Said drawings shall be provided to Alpine Engineering upon completion of the work. Contractor is to provide at least two ties from physical monuments to all fittings, tees, curb stops, valves and manholes.
- 6. Water mains shall be constructed with ductile iron pipe, AWWA C151, AWWA C111, class 52, pressure rating 350 psi. All water mains, fire hydrant lines and water service lines shall have a minimum cover of 7' unless noted otherwise.
- 7. All water mains shall be hydrostatically tested in accordance with ERWSD standards. Chlorine testing shall be done in accordance with ERWSD standards.
- 8. Provide thrust blocks and megalugs on all waterline bends and fittings per ERWSD specifications.
- 9. Angles of water line bends are shown only as a guideline; all bends have not been identified or dimensioned, and additional bends may be required during construction.
- 10. Install 10 gauge insulated copper tracer wire along the water mains, and cad-weld, per current ERWSD requirements.
- 11. Verify all existing pipe invert elevations prior to construction.
- 12. As part of these plans, several adjacent properties will be disconnected from the existing water and sewer mains and reconnected to the new mains proposed herein. Prior to beginning any construction, Contractor shall provide to the Engineer, a sequence of construction that outlines the methods and procedures to be used that will maintain water, sewer and fire protection services to these adjacent properties.
- 13. Any service tap fees that may be required as part of these proposed utility installations are to be paid prior to making the connection to the main.
- 14. No fire hydrant extensions are allowed by ERWSD on new installations.
- 15. The center line of the fire hydrant discharge must be a min. of 36" above finished grade. Coordinate all fire hydrant locations in the field with Mike Vaughn (TOV FD) prior to installation of any hydrant. A dielectric fitting shall be installed between dissimilar

SEWER NOTES

- 1. All sanitary sewer construction shall conform to Eagle River Water and Sanitation District's standards and specifications. All sewer mains and service lines proposed herein shall conform to ASTM D2241 "Standard Specifications for PVC, pressure rated pipe (SDR Series)" and shall be constructed to the lines and grades shown herein.
- 2. All materials and workmanship shall be subject to inspection by the districts and/or their representatives. The district reserves the right to accept or reject any such materials and workmanship that do not conform to district standards or specifications.
- 3. The district and its engineer are to be notified by the Contractor at least 48 hours prior to any utility construction.
- 4. The Contractor shall at all times keep a separate full set of contract drawings marked up to fully indicate as-built conditions. Said drawings shall be provided to Alpine Engineering upon completion of the work. Contractor is to provide at least two ties from physical monuments to all fittings, valves and manholes.
- 5. The contractor shall verify existing pipe or manhole inverts at tie-in points prior to construction staking.
- 6. Manhole rims shall be set at an elevation relative to the pavement in accordance with District and Town of Vail requirements. Precast adjusting rings shall be used to adjust rim elevations to final grade. The maximum acceptable vertical adjustment is 12 inches. Manhole steps shall conform to OSHA step standards.
- 7. The Contractor shall take care to properly shape all manhole inverts and benches to promote smooth flow through the manhole. Inverts of lines intersecting at 90 degrees and at highly divergent or flat slopes are especially critical. Manhole inverts shall be constructed with a smooth trowel finish and benches shall be finished with a light broom non-skid finish. All concrete for manhole construction shall be made with Type II cement with a minimum 28-day compressive strength of 3000 psi.
- 8. All pipe shall be constructed with pipe bedding as shown in the sanitary sewer plans and details. If trench conditions vary or if rock or water is encountered, Alpine Engineering is to be notified prior to proceeding with construction. .

SCHEMATIC October 31, 2016 NOT FOR CONSTRUCTION

DATE <u>08/12/2016</u>

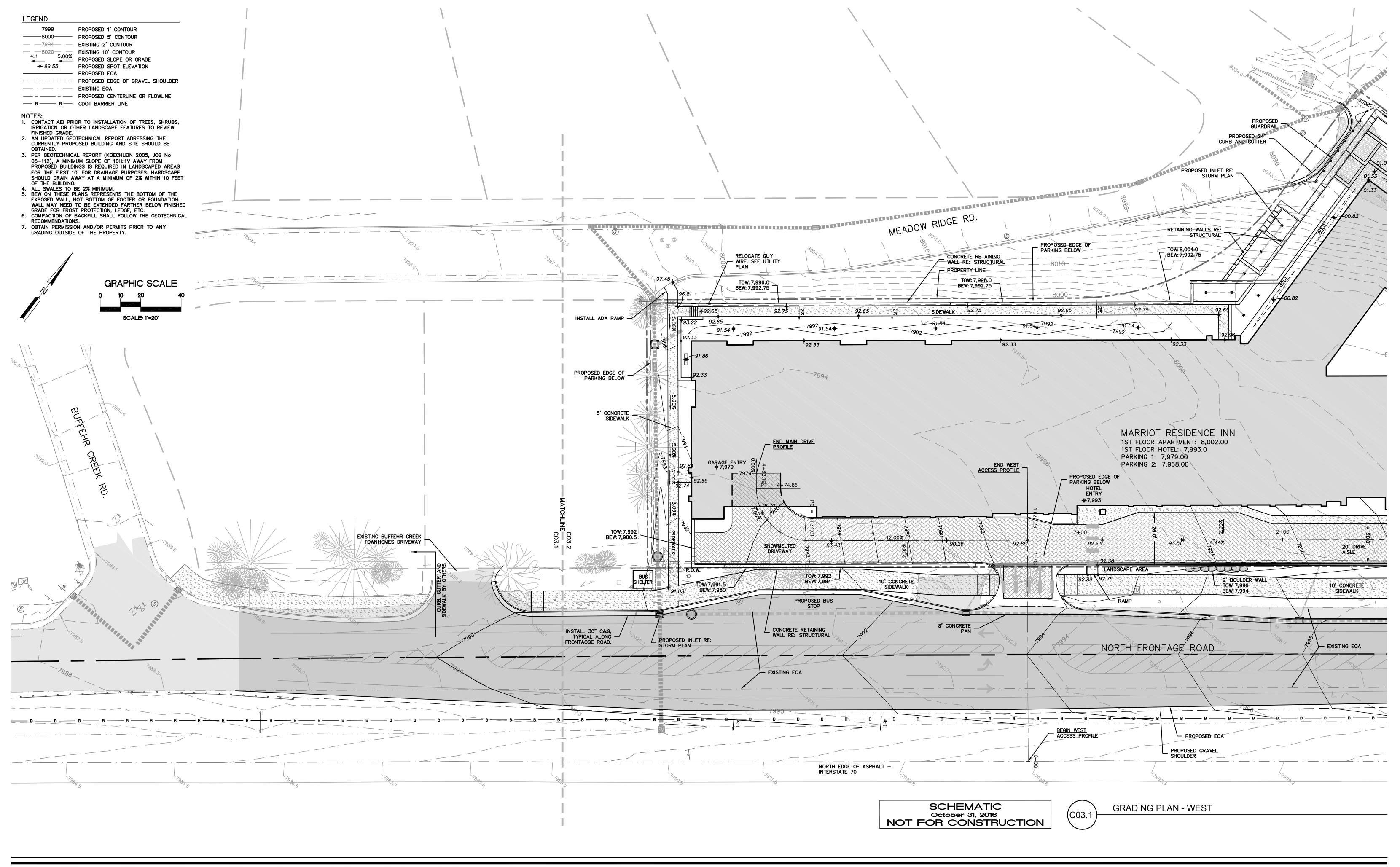


COVER SHEET

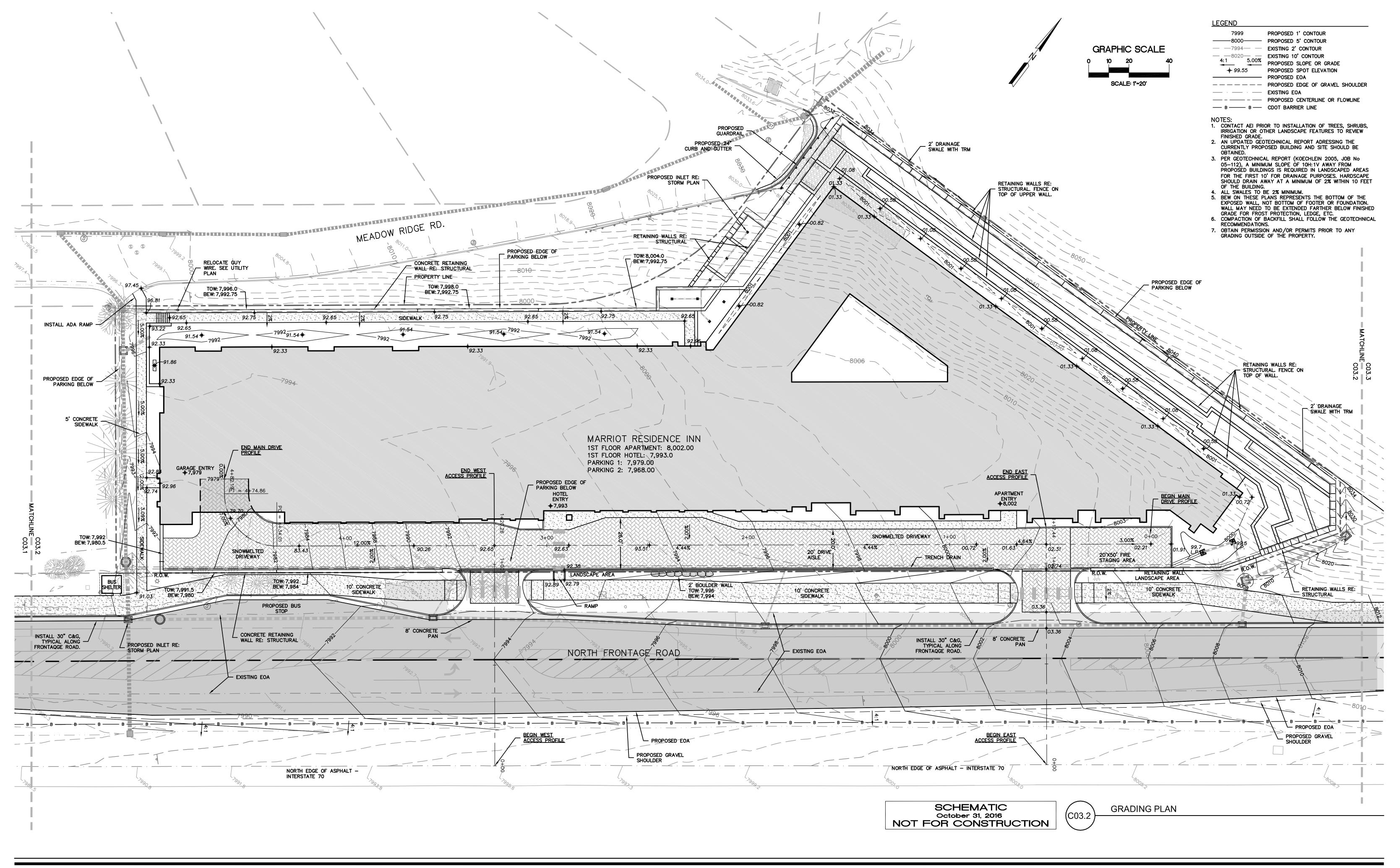


NO. DATE REVISIONS

ARCHITECTS

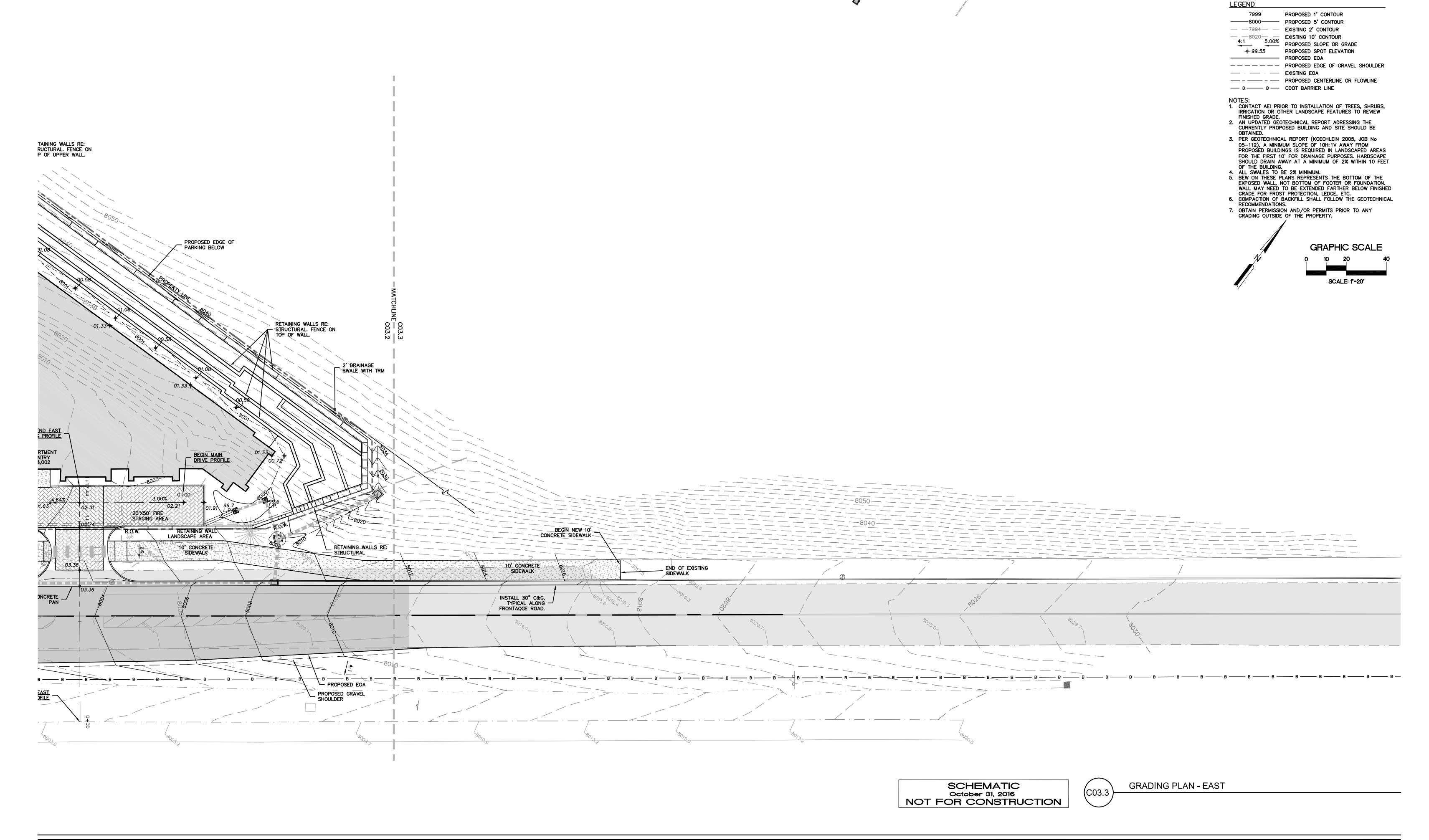


Chicago, Illinois 60603 312.913.1010 Fax 913.1917



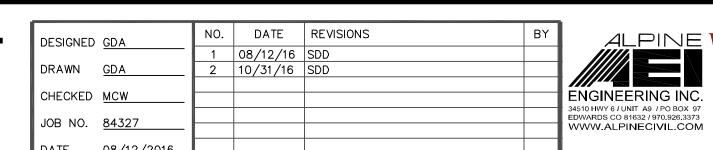
O:\Vail\Marriott Residence Inn- 84327- 2016\Dwg\Master\P-GRADE.dwg

140 S. Dearborn St. Suite 200 Chicago, Illinois 60603 312.913.1010 Fax 913.1917



the harp group

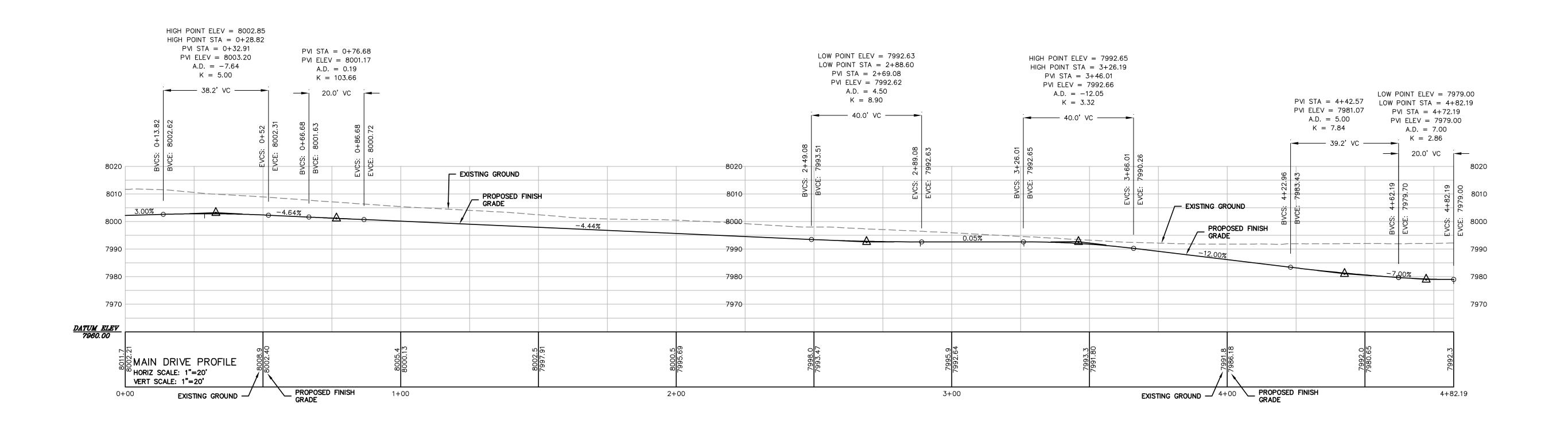
PROPOSED HOTEL - RESIDENTIAL DEVELOPMENT VAIL, COLORADO

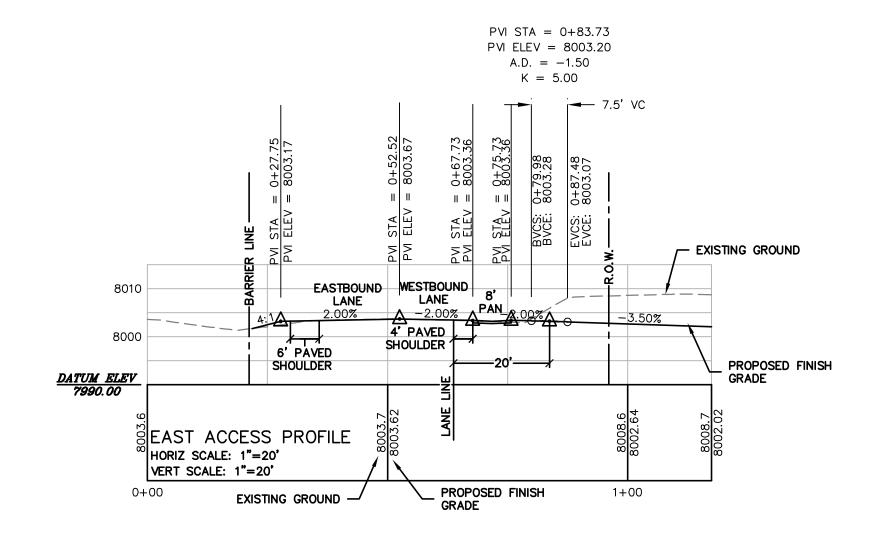


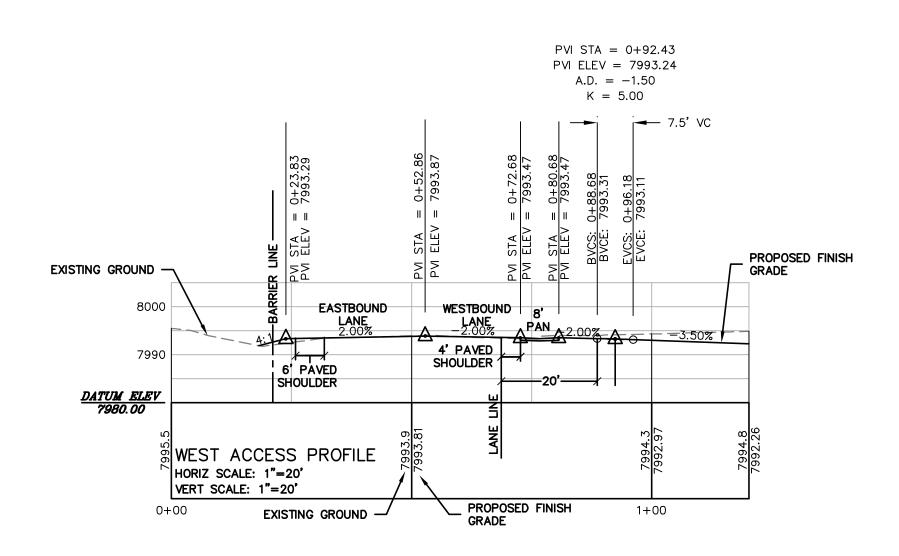
ALPINE WRIGHT HEEREM
ENGINEERING INC.

Chicago, Illinois 60603 312.913.1010 Fax 913.1917

O:\Vail\Marriott Residence Inn- 84327- 2016\Dwg\Master\P-GRADE.dwg







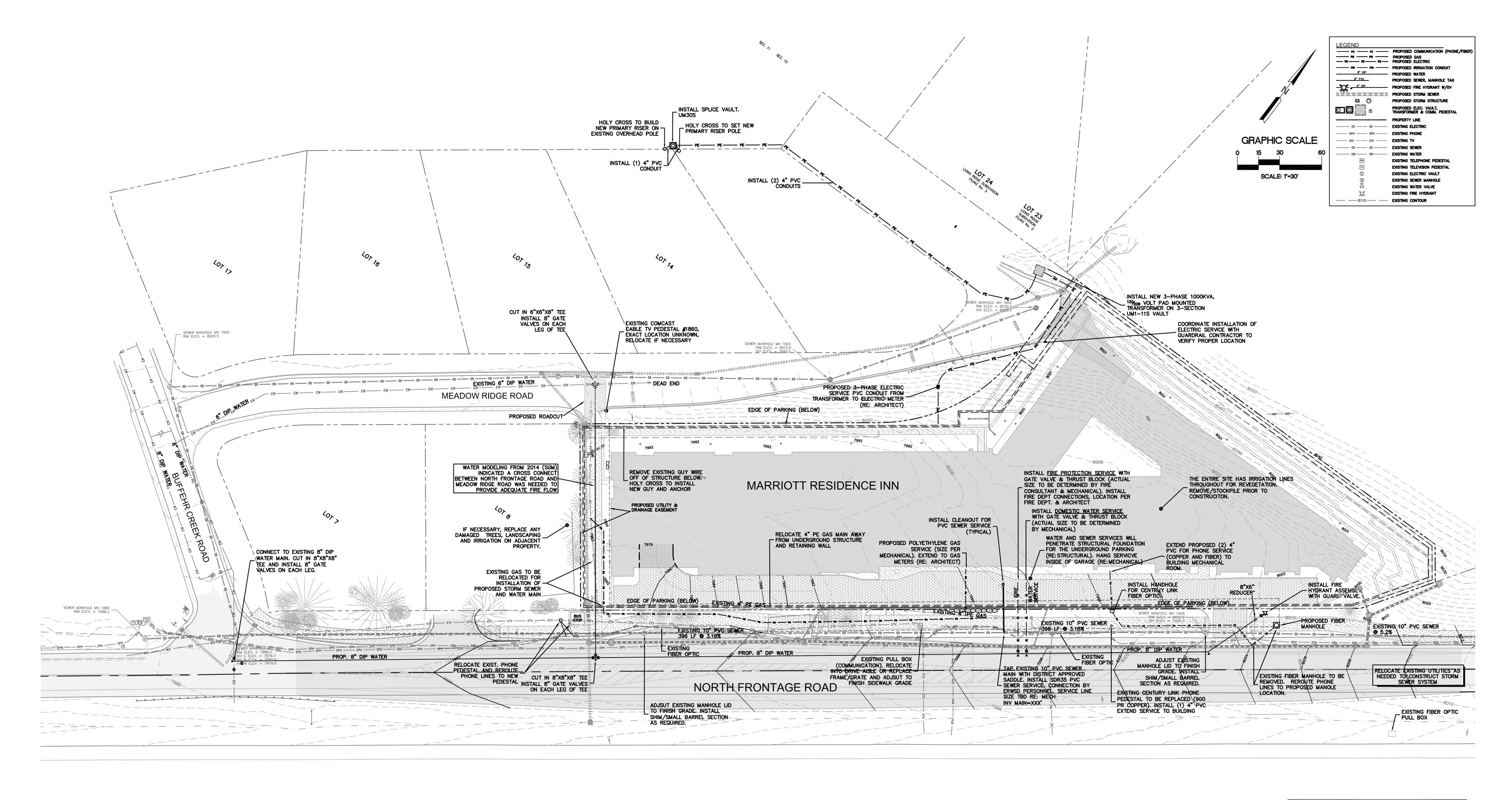
C04.1

DRIVEWAY PROFILES



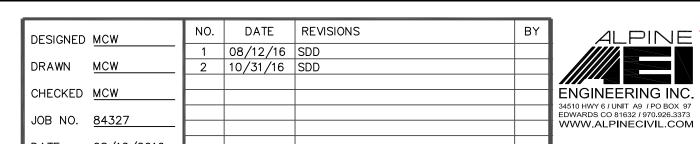
Chicago, Illinois 60603 312.913.1010 Fax 913.1917

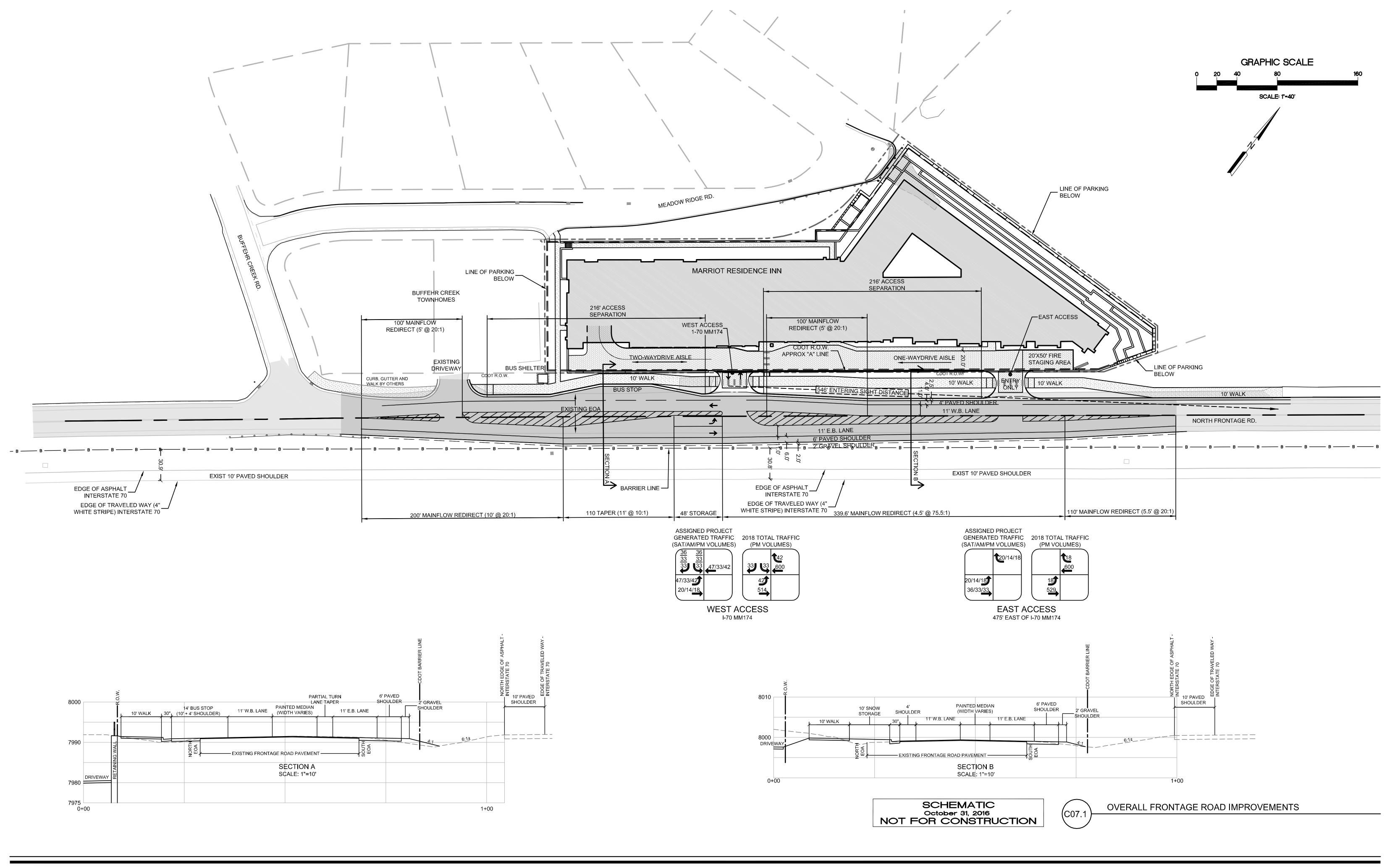
the harp group

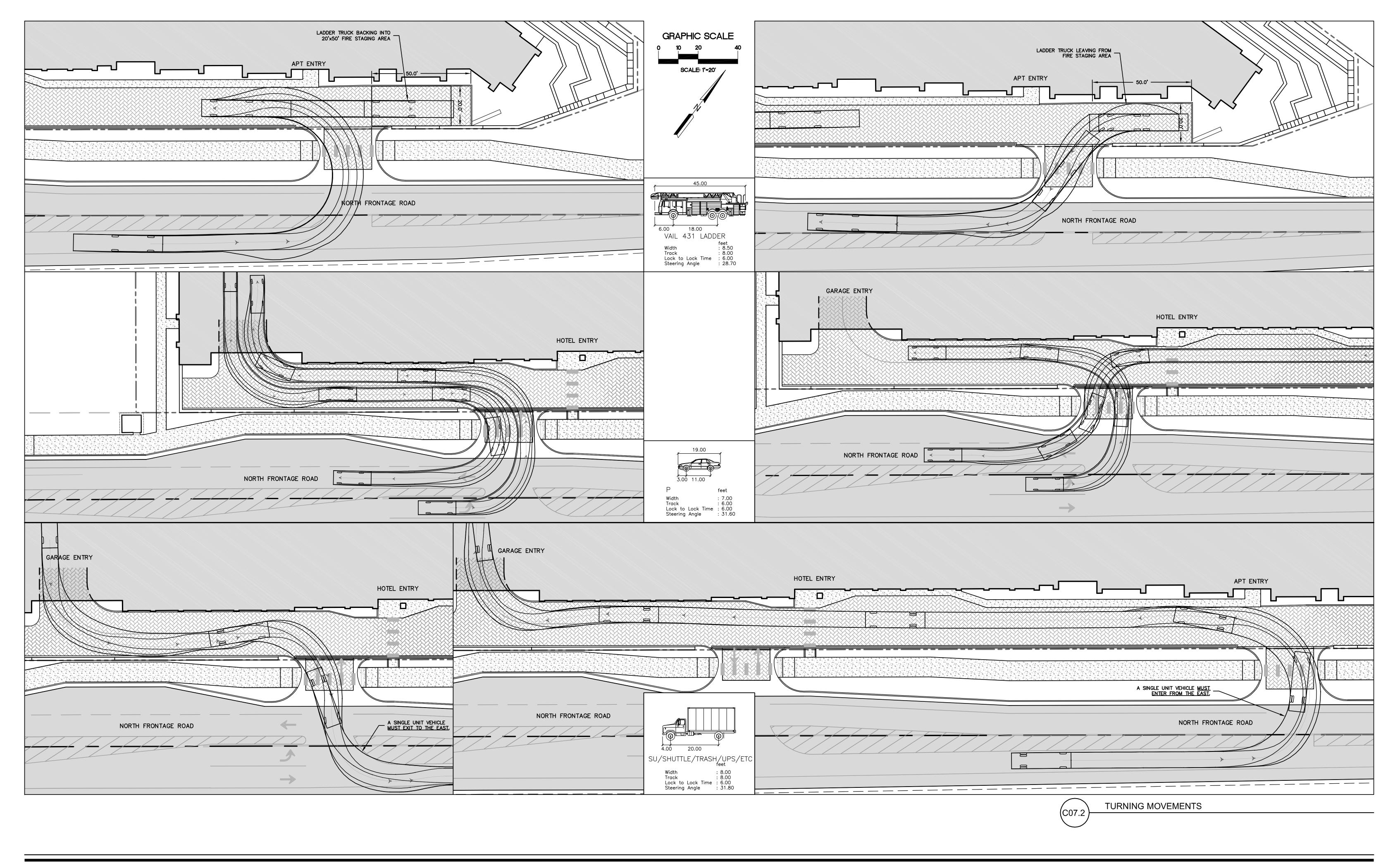














DESIGNED GDA

DRAWN GDA

CHECKED GLB

JOB NO. 84327

DATE 08/12/2016

NO. DATE REVISIONS

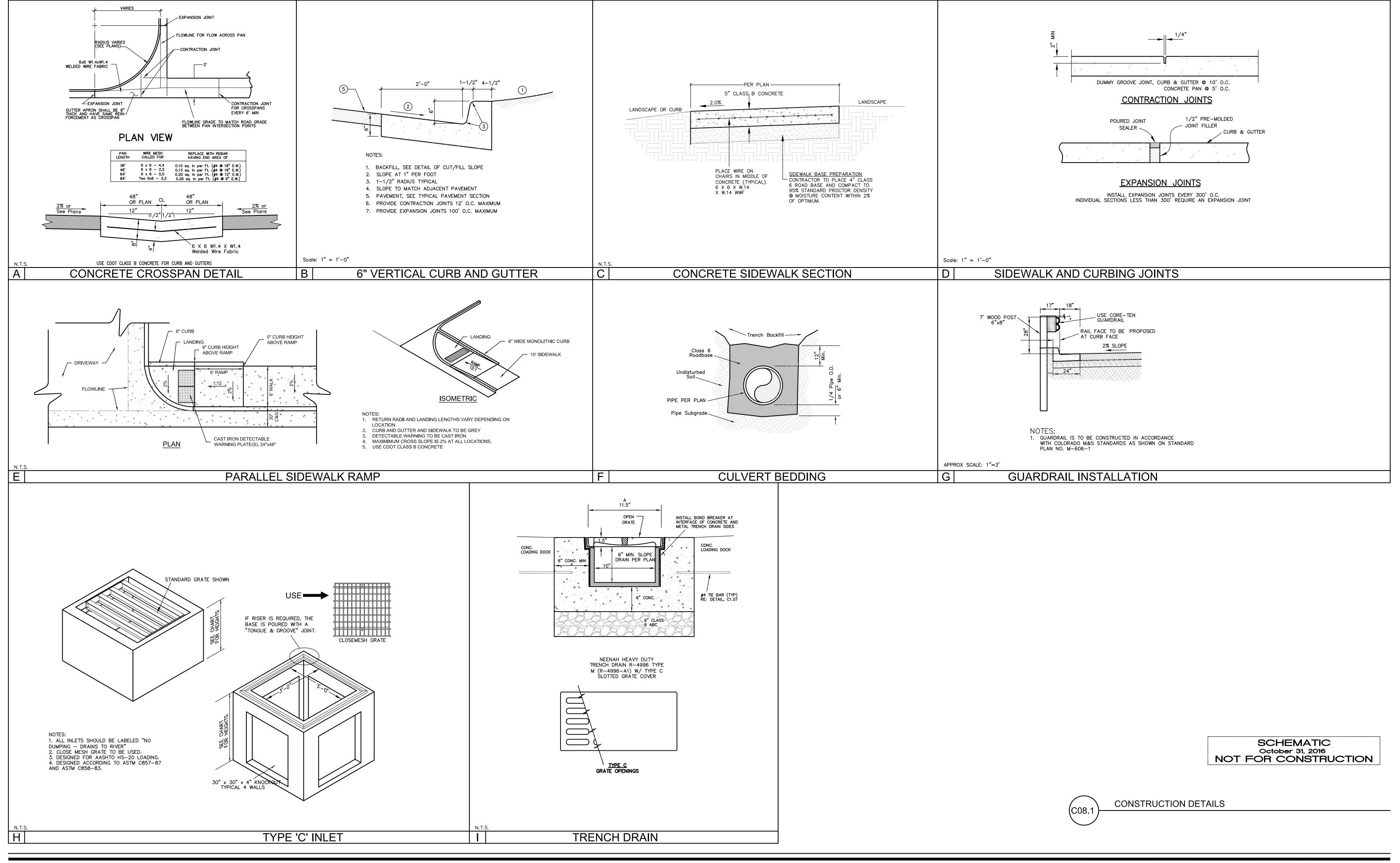
BY

1 08/12/16 SDD

2 10/31/16 SDD

ENGINEE

34510 HWY 6 /UNI
EDWARDS CO 816
WWWW.ALPIN



WRIGHT HEEREMA

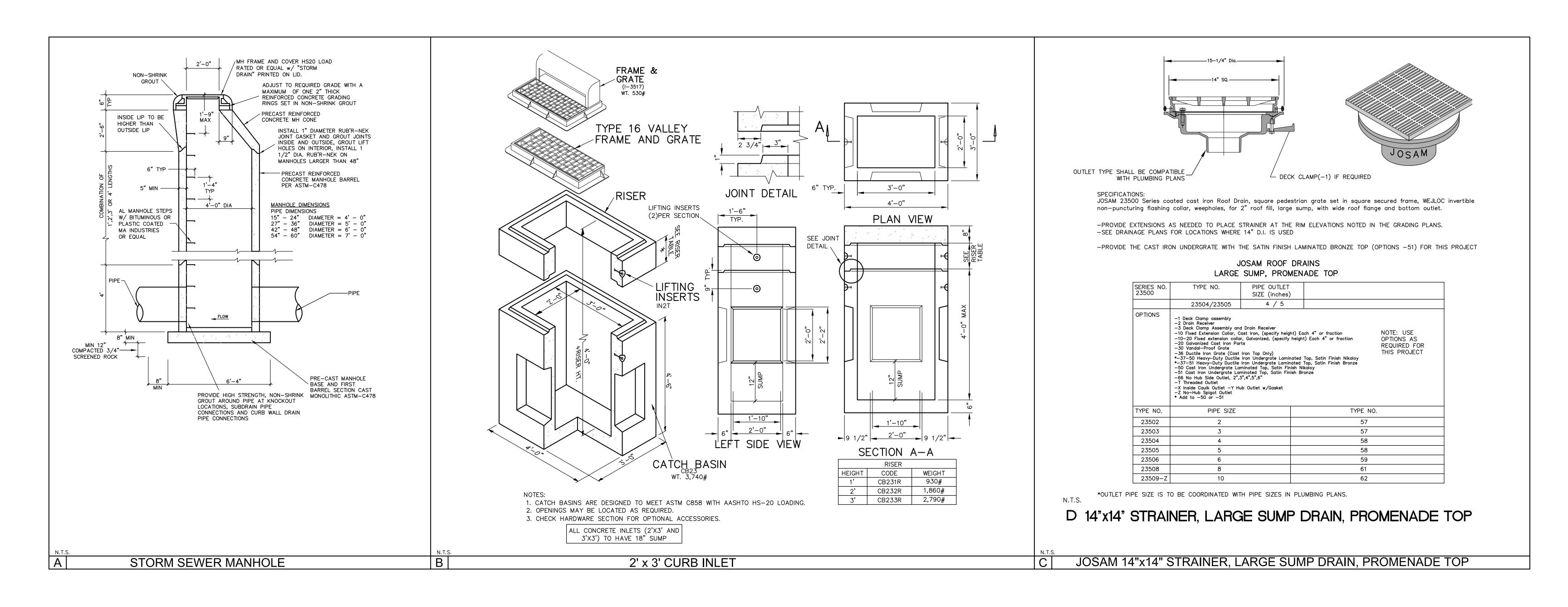
AR

140 S.

Chica
312.91

140 S. Dearborn St. Suite 200 Chicago, Illinois 60603 312.913.1010 Fax 913.1917

O:\Vail\Marriott Residence Inn- 84327- 2016\Dwg\Master\DETAILS.dwg



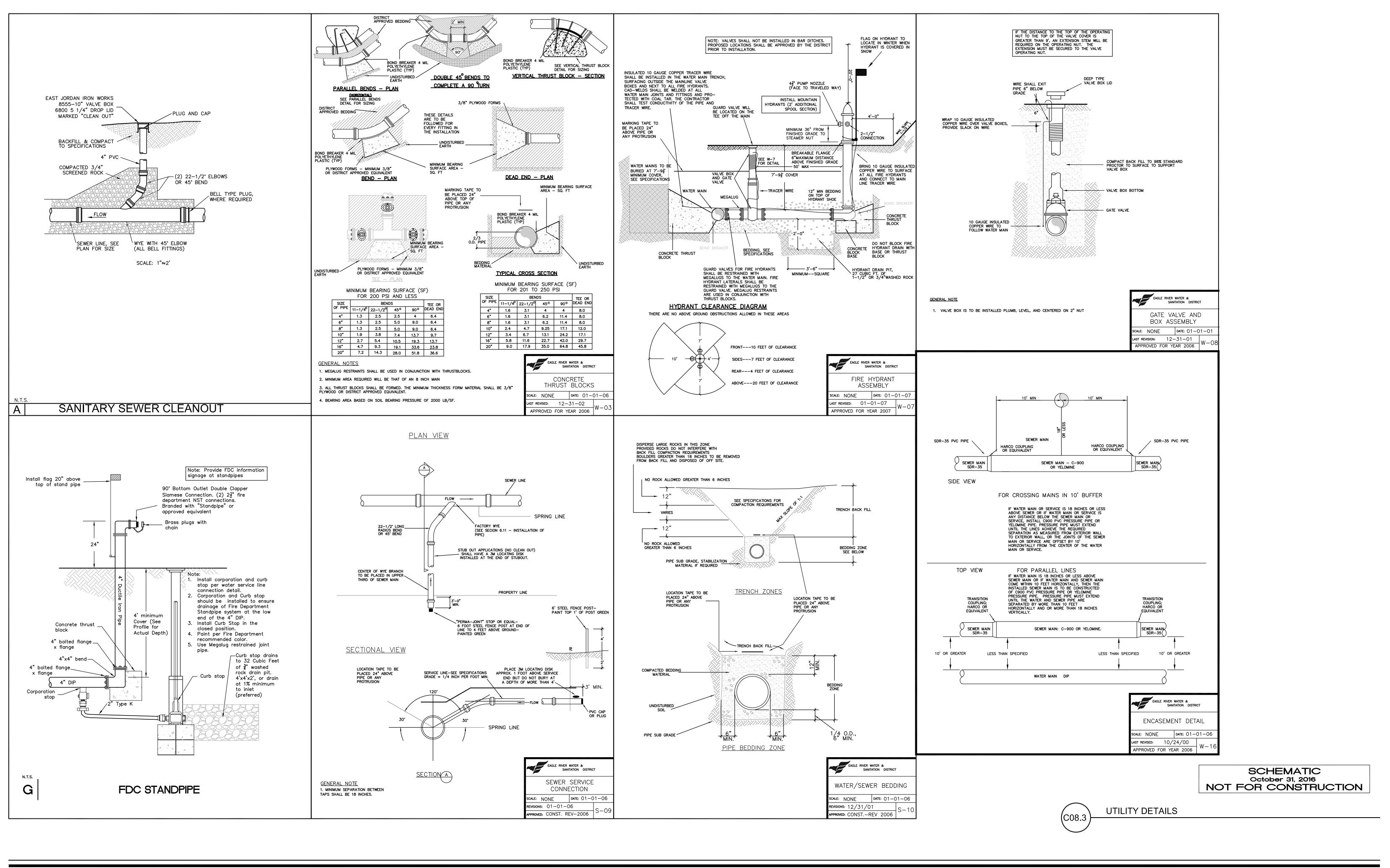


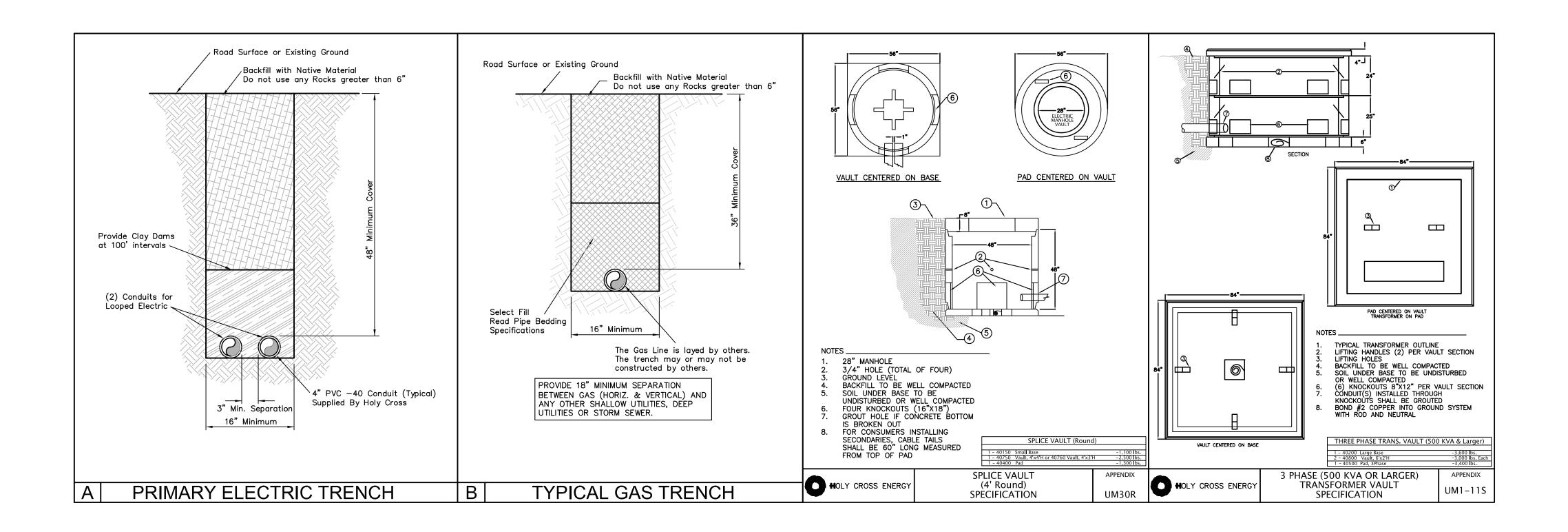
CONSTRUCTION DETAILS

WWW ALPINECIVIL.COM



DATE <u>08/12/2016</u>



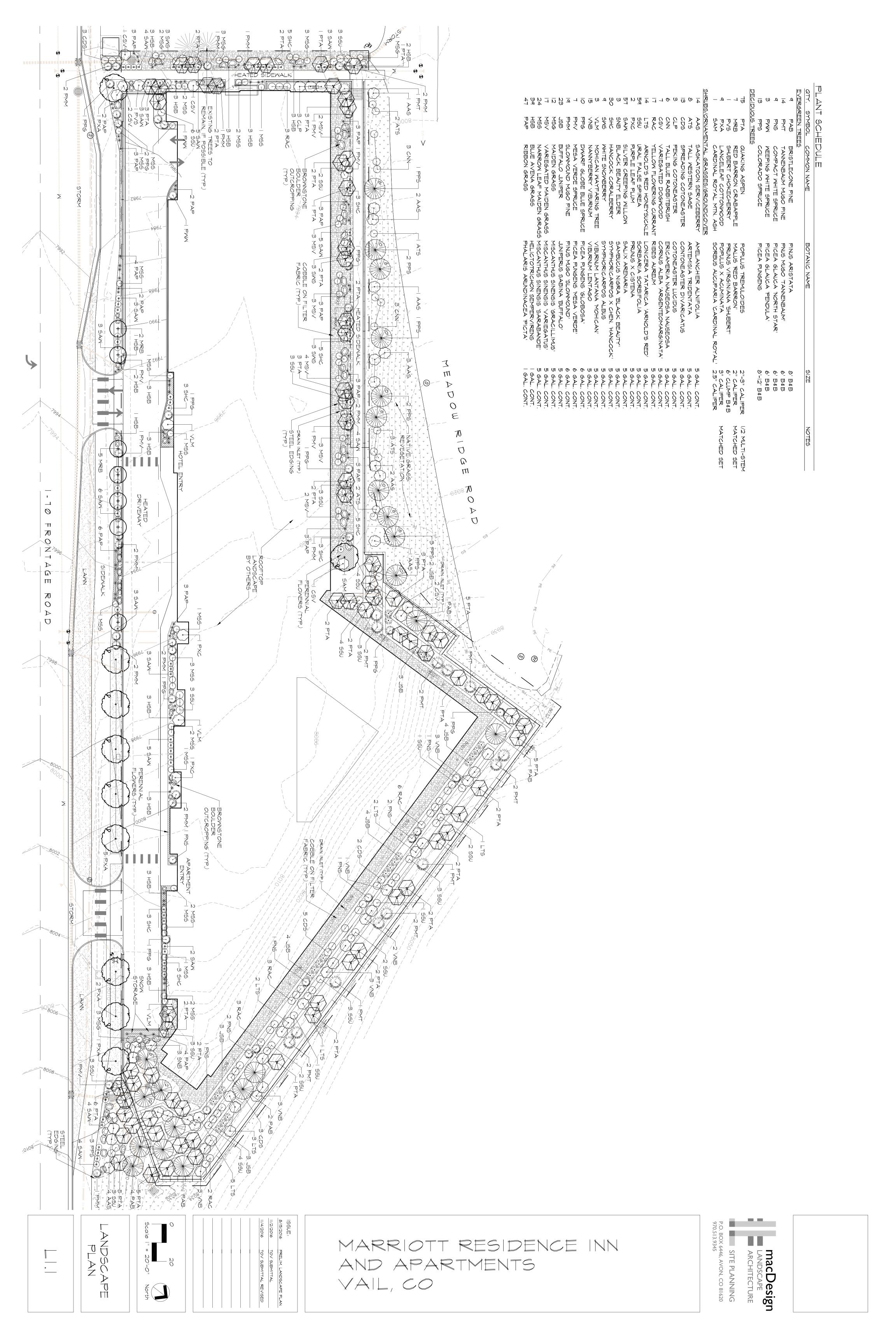


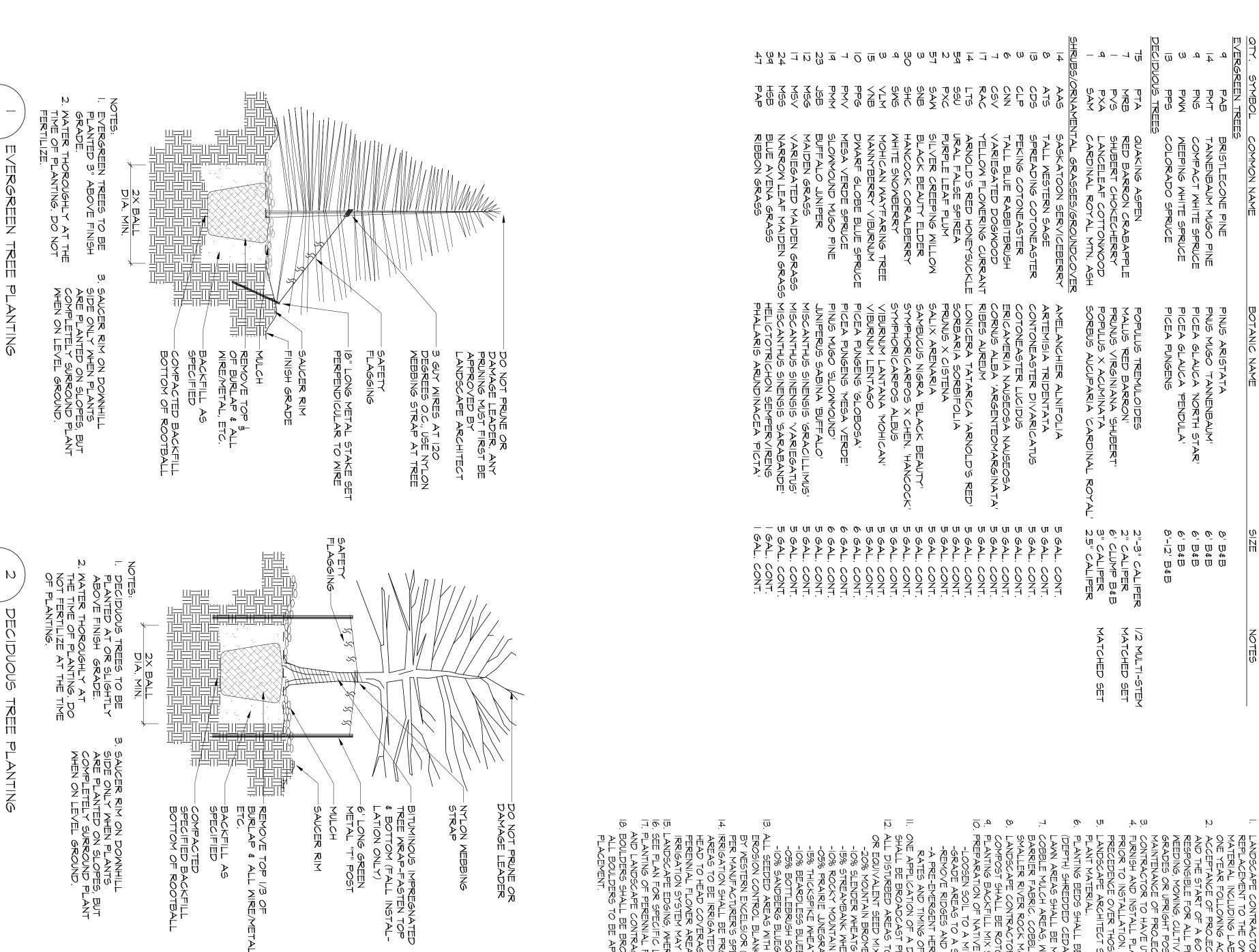
Chicago, Illinois 60603 312.913.1010 Fax 913.1917

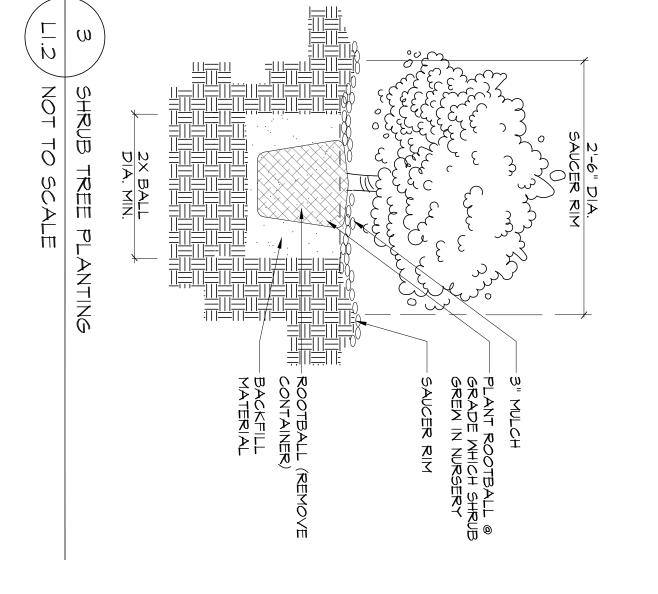












I DIVIDENCE CONTRACTOR SHALL SIGNIT A NETTELL DOCUMENT RESIDNO 16 ITS POLICY ON PLANT SURVANITE AND NETTELL DOCUMENTS. THE STATE OF THE NINW STRUME STATE AND THE AND

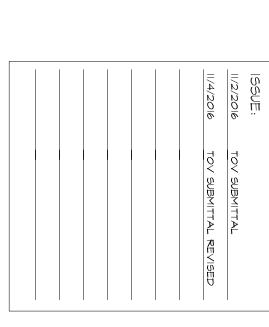
PLANT LEGEND NOTES/DETAILS

NOT TO SCALE

<u>_</u>

H N

O



MARRIOTT RESIDENCE INN AND APARTMENTS VAIL, CO macDesign
LANDSCAPE
ARCHITECTURE

SITE PLANNING
P.O. BOX 6446, AVON, CO 81620
970.513.9345