cazenovia preservation foundation

REQUEST FOR BIDS

The Cazenovia Preservation Foundation (CPF) has entered into an agreement with Earl Buyea, Sr. to complete a trail improvement project on the portion of the CPF Gorge Trail at his property at 131 Albany Street in Cazenovia, NY.

CPF is soliciting priced proposals for the completion of the Gorge Trail Gateway as shown in the construction design drawings prepared by Matthew Vredenburgh and dated 4/25/2024. Work may begin on July 1 (July 15th for in-stream components) and must be completed by September 6, 2024.

Construction area is on the north side of U.S. Route 20 immediately west of the Chittenango Creek bridge and along the northern bank of Chittenango Creek. Access to the site is through the Buyea's Hardware Store driveway at 131 Albany Street.

Project consists of the construction of a dedicated pedestrian and bike path from the Albany Street sidewalk to the existing railroad bed and trail, improvements to an informal creekside trail to prevent further erosion, the addition of several trail user amenities in the greenspace on the eastern edge of the existing parking lot, improvements to the existing parking lot to create a dedicated trail parking area and improve the traffic flow, stormwater management and aesthetics of the existing parking lot, and the installation of other landscaping elements to improve the overall appearance of the site (see construction design drawings).

Contractor will be responsible for the following.

A. Coordinating with CPF and Matthew Vredenburgh to obtain any required Village of Cazenovia, NYS DEC and U.S. DOT permits.
B. Traffic control measures during construction.
C. Contractor will follow best management practices regarding stormwater runoff during construction.
D. Contractor will be responsible for coordinating activities to minimize impacts on Buyea's Hardware or McDowell Insurance business activities and the Cazenovia Volunteer Fire Department and will be responsible for coordination of any sub-contractors (ex. paving) to similarly minimize impacts.
E. Contractor will be responsible for the installation of wayfinding or informational sign posts and trail kiosk posts according to specifications to be provided. (Note: CPF will be responsible for the production and installation of kiosks and signage.)
F. Contractor will be responsible for adhering to the general requirements of the project as depicted in the construction design drawings.

At the time of contract signing, contractor will provide proof of insurance naming Cazenovia Preservation Foundation and The Earl J. Buyea Family Trust as additional insureds.

An onsite bidder's conference is scheduled for May 6, 2024 at 3PM. If you are unable to attend at that time, please call Jen Wong at 315-825-5654 to arrange a site visit prior to preparing your bid.

Bids should specify line item costs for the following:

1. Trail construction
    - Bollards (Unit Price)
    - Sign Footers (Unit Price)
2. Streambank Stabilization
3. Guardrails
4. Crosswalk and ROW sidewalk improvements
5. Add Alternate

The deadline for submitting a bid for this project is May 15, 2024 at 5PM.

Bid package materials are available at www.cazpreservation.org. Prospective bidders may also contact Jen Wong at jwong@cazpreservation.org to receive a copy of the bid package by email. Hard copies of the construction design drawings may also be viewed by appointment at the CPF Office (10 Mill Street, Cazenovia, NY).

Proposals may be delivered:

In person at the CPF Offices:
10 Mill Street, Cazenovia, NY
Monday - Friday
9:00 am - 4:30 pm

By U.S. Mail:
Cazenovia Preservation Foundation
PO Box 627
Cazenovia, NY 13035

Electronically:
jwong@cazpreservation.org

Questions regarding the project can be directed to:

Jen Wong, CPF Executive Director
315.825.5654

Matthew Vredenburgh, Landscape Architect
315.481.6271

CPF reserves the right to reject any and all bids, to waive informalities, to re-advertise and to award the Contract in its best interest. Any amendments made will be posted on CPF's website at www.cazpreservation.org.

THE GORGE TRAIL GATEWAY

CAZENOVIA PRESERVATION FOUNDATION

127 ALBANY STREET, CAZENOVIA, NEW YORK 13035

CONSTRUCTION DRAWINGS

April 25, 2024

MDVLA JOB# 22008

Prepared for:

Cazenovia Preservation Foundation
c/o Jen Wong
79 Albany Street
Cazenovia, NY 13035

Prepared by:

Matthew Vredenburgh, RLA
Matthew D Vredenburgh Landscape Architecture
4902 Edgeworth Drive
Manlius, NY 13104

MDVLA

Drawing Index:

1.00 GENERAL REQUIREMENTS

A. JOB CONDITIONS:

1. PERFORM ALL WORK IN COMPLIANCE WITH OSHA POLICIES AND ALL REGULATIONS OF ALL AGENCIES OF GOVERNMENT HAVING JURISDICTION.
2. CONTACT DIG SAFELY NEW YORK AT 1-800-962-7962 TO VERIFY ALL EXISTING UNDERGROUND UTILITY LOCATIONS PRIOR TO PERFORMING ANY EXCAVATIONS.
3. CONTRACTOR SHALL APPLY FOR ALL REQUIRED PERMITS AND PAY ALL REQUIRED FEES.
4. SCHEDULE CONSTRUCTION TO MAINTAIN CONTINUITY OF CONSTRUCTION ACTIVITIES AND TO INSURE OWNER'S UNINTERRUPTED ON-SITE OPERATIONS.
5. THE START OF ANY ON-SITE CONSTRUCTION INCLUDING STRIPPING TOPSOIL, REMOVING CUT OR PLACING FILL ESTABLISHES THAT CONTRACTOR, WITHOUT RESERVATION, ACCEPTS THE CONTRACT DOCUMENTS AS ACCURATELY REPRESENTING EXISTING SITE CONDITIONS.
6. CONTRACTOR SHALL BECOME FAMILIAR WITH SITE CONDITIONS PRIOR TO STARTING CONSTRUCTION.
7. CONTRACTOR SHALL MEET EXISTING GRADES OF ALL SURFACES TO REMAIN AND AT LIMITS OF CONSTRUCTION, SMOOTHLY WITHOUT HUMPS OR DEPRESSIONS.
8. CONTRACTOR SHALL HIRE AND PAY A QUALIFIED TESTING LABORATORY EXPERIENCED IN PERFORMING THE REQUIRED WORK TO PERFORM ALL REQUIRED TESTING. ALL TEST DATA SHALL BE SENT DIRECTLY TO THE OWNER'S REPRESENTATIVE WITH A COPY TO THE CONTRACTOR.
9. STANDARDS FOR IN-PLACE DENSITY TESTING:
   - MOISTURE-DENSITY RELATIONSHIP: ASTM D 1557 MODIFIED PROCTOR METHOD.
   - IN-PLACE DENSITY: ASTM D 1556 OR ASTM D 2922 NUCLEAR DENSITY GAUGE.
10. DEFICIENT WORK: REMOVE, REPAIR AND/OR REPLACE TO OWNER'S SATISFACTION AT CONTRACTOR'S EXPENSE INCLUDING RETESTING COSTS.
11. ALL WORK AND AMENITIES SHOWN ON THE DRAWINGS SHALL BE ASSUMED TO BE "NEW" UNLESS SPECIFICALLY IDENTIFIED AS "EXISTING" OR OTHERWISE INDICATED.

B. SUBMITTALS: SUBMIT 3 COPIES OF ALL SHOP DRAWINGS, SAMPLES, TEST RESULTS AND MANUFACTURER'S LITERATURE TO OWNER'S REPRESENTATIVE FOR REVIEW PRIOR TO INSTALLATION.

C. SUBSTITUTIONS:

1. MATERIALS SPECIFICALLY INDICATED HEREIN BY MANUFACTURER'S NAME SHALL BE CONSIDERED AS MATERIAL STANDARDS OF QUALITY.
2. PROPOSED MATERIAL SUBSTITUTIONS: SUBMIT PROPER SUPPORT DOCUMENTATION TO OWNER'S REPRESENTATIVE FOR REVIEW AND APPROVAL.

D. MAINTENANCE & PROTECTION OF PERSONS, PROPERTY, TRAFFIC AND THE WORK:

1. TAKE ALL NECESSARY PRECAUTIONS TO PREVENT PERSONAL INJURY AND DAMAGE TO EXISTING SITE AMENITIES TO REMAIN AND TO ADJACENT SITES, STRUCTURES AND OTHER FACILITIES. INSTALL TEMPORARY CONSTRUCTION FENCE AS NECESSARY AND AS MAY BE REQUIRED.
2. PROTECT EXISTING VEGETATION TO REMAIN. DO NOT DRIVE VEHICLES OR STORE MATERIALS WITHIN BRANCH SPREAD.
3. COMPLY WITH ALL REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION TO MAINTAIN AND PROTECT PEDESTRIAN AND VEHICULAR TRAFFIC.
4. PROVIDE BARRICADES, SECURITY LIGHTING, ETC. AS MAY BE NECESSARY.
5. PROTECT ALL WORK UNTIL FINAL ACCEPTANCE.
6. REPAIR/RESTORE ALL DAMAGE TO CONDITIONS PRIOR TO DAMAGE TO OWNER'S SATISFACTION AT CONTRACTOR'S EXPENSE. MATCH EXISTING CONSTRUCTION, FABRICATION, MATERIALS, COMPOSITION, AND FINISHES.
7. INSTALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES AS INDICATED AND AS REQUIRED BY THE AGENCIES OF GOVERNMENT HAVING JURISDICTION BEFORE COMMENCING WITH ANY DEMOLITION, CLEARING OR EARTHWORK RELATED OPERATIONS. MAINTAIN DURING CONSTRUCTION.

E. SITE CLEANUP:

1. DURING CONSTRUCTION, MAINTAIN PROJECT SITE IN A NEAT AND ORDERLY CONDITION AS DETERMINED BY OWNER'S REPRESENTATIVE.
2. DO NOT ALLOW DEBRIS TO ACCUMULATE.
3. PERFORM ALL HAULING OF MATERIAL TO AND AWAY FROM SITE IN ACCORDANCE WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
4. UPON COMPLETION OF WORK, CLEAN OUT ALL NEW AND EXISTING STORM DRAINAGE PIPING IN THE VICINITY OF THE WORK AND FLUSH ALL STORM LINES, REMOVING ALL DIRT AND DEBRIS OF EVERY DESCRIPTION.
5. AT COMPLETION OF WORK, LEAVE SITE IN NEAT AND ORDERLY CONDITION ACCEPTABLE TO OWNER'S REPRESENTATIVE.
6. AT COMPLETION OF WORK, RESTORE EXISTING TURF AREAS, PAVEMENT AND OTHER SITE AMENITIES DAMAGED DURING CONSTRUCTION TO THEIR ORIGINAL CONDITION PRIOR TO CONSTRUCTION TO OWNER'S SATISFACTION.

F. APPLICABLE CODES STANDARDS AND SPECIFICATIONS:

1. NYSDOT: NEW YORK STATE DEPARTMENT OF TRANSPORTATION, STANDARD SPECIFICATIONS.
2. ASTM: AMERICAN SOCIETY OF TESTING MATERIALS, STANDARD SPECIFICATIONS AND METHODS OF TESTING.
3. ANSI: AMERICAN NATIONAL STANDARDS INSTITUTE.
4. ADAAG: AMERICANS WITH DISABILITIES ACT ACCESSIBILITY GUIDELINES FOR FACILITIES AND BUILDINGS.

1.02 SITE PREPARATION

A. SITE DEMOLITION:

1. REMOVE EXISTING ABOVE & BELOW GRADE OBSTRUCTIONS INDICATED.
2. CAREFULLY SALVAGE INDICATED MATERIALS TO OWNER.
3. CAREFULLY SALVAGE INDICATED MATERIALS FOR RE-USE ON-SITE.
4. REMOVAL OF DEMOLISHED MATERIALS, HAULING AND DISPOSAL OFF-SITE SHALL BE IN STRICT COMPLIANCE WITH REQUIREMENTS OF AUTHORITIES HAVING JURISDICTION.
5. BURNING ON-SITE IS NOT PERMITTED.
6. SAW CUT EDGE OF EXISTING PAVEMENT TO BE REMOVED IN ORDER TO PROVIDE STRAIGHT, CLEAN EDGE AGAINST WHICH TO ABUT NEW PAVEMENT.

B. LAYOUT

1. ACCURATELY LOCATE ALL SITE AMENITIES, ELEVATIONS AND DIMENSIONS AS INDICATED.
2. MAKE ALL NECESSARY FIELD CHECKS BEFORE CONSTRUCTION STARTS.
3. NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES IDENTIFIED FOR CLARIFICATION BEFORE PROCEEDING WITH CONSTRUCTION.

C. TEMPORARY EROSION CONTROLS:

1. TAKE ALL PRECAUTIONS NECESSARY TO PREVENT EROSION AND SEDIMENTATION AND AS REQUIRED BY THE AGENCIES OF GOVERNMENT HAVING JURISDICTION.
2. INSTALL EROSION CONTROLS PER NEW YORK GUIDELINES FOR URBAN EROSION AND SEDIMENT CONTROL AND OTHER AUTHORITIES HAVING JURISDICTION AND AS DETAILED.
3. INSTALL SILT FENCE AT TOE OF SLOPES, FOLLOWING THE CONTOURS AND AS CLOSE TO DISTURBED AREAS AS POSSIBLE, WITH AREA BELOW SILT FENCE UNDISTURBED OR STABILIZED; MIRAFI ENVIROFENCE BY T.C. MIRAFI OR APPROVED EQUAL.

D. STRIPPING TOPSOIL:

1. REMOVE HEAVY GROWTH OF GRASS BEFORE STRIPPING TOPSOIL.
2. STRIP ALL AVAILABLE TOPSOIL WITHIN WORK AREAS INCLUDING ALL PAVEMENT INSTALLATION AREAS AND ALL OTHER AREAS WHERE GRADES ARE CHANGED.
3. ADDITIONALLY, STRIP AVAILABLE TOPSOIL IN AREAS TO RECEIVE LAWN INSTALLATION ONLY AS NECESSARY TO MEET TOPSOIL SPREADING DEPTH REQUIREMENTS.
4. TOPSOIL THAT BECOMES MIXED WITH SUBSOIL IS UNACCEPTABLE FOR REUSE AS TOP SOIL OR AS COMMON FILL UNDER PAVEMENT OR STRUCTURES.
5. REPLACE UNACCEPTABLE TOPSOIL WITH HAULED IN TOPSOIL AS SPECIFIED IN EARTHWORK AT CONTRACTOR'S EXPENSE.

1.03 EARTHWORK

A. EXCAVATION AND TRENCHING FOR ALL TRADES:

1. ALL EXCAVATION AND TRENCHING ARE UNCLASSIFIED. REMOVE ALL MATERIAL ENCOUNTERED.
2. ESTABLISH FINISHED SUBGRADE AND FINISHED GRADES FROM BENCHMARK AND AS SHOWN.
3. MACHINE AND HAND EXCAVATION AND TRENCHING AS REQUIRED FOR ALL TRADES TO ELEVATIONS INDICATED.
4. MAINTAIN EXCAVATIONS FREE FROM WATER AT ALL TIMES.
5. REMOVE SOFT MATERIAL IF ENCOUNTERED AND REPLACE WITH APPROVED BACKFILL MATERIAL ALL CONTRACTOR'S EXPENSE.

B. REMOVE OBSTRUCTIONS: REMOVE ALL OBSTRUCTIONS ENCOUNTERED IN EXCAVATIONS INCLUDING BEDROCK, BOULDERS, LEDGE ROCK, ABANDONED CONCRETE FOUNDATIONS, ETC. AND HAUL AWAY OFF-SITE.

C. FILLING, BACKFILLING, COMPACTION, ROUGH & FINISHED GRADING:

1. SOIL MATERIAL: COMMON EARTH, FREE FROM FROST, CLAY, TOPSOIL, CLODS, DEBRIS, DECAYED & ORGANIC MATERIAL, AND ROCK LARGER THAN 2" IN ANY DIMENSION.
2. PERFORM EARTHWORK TO LINES, ELEVATIONS, AND DIMENSIONS INDICTED.
3. DO NOT PLACE FILL AND BACKFILL WHEN MATERIAL IS FROZEN OR MUDDY, OR WHEN FROST OR EXCESSIVE MOISTURE IS IN SUBGRADE.
4. MEET FINISHED GRADES INDICATED. HAUL ONTO SITE ADDITIONAL EARTH FILL AND BACKFILL AS REQUIRED, AND DISPOSAL OF EXCESS EXCAVATED MATERIAL OFF-SITE.
5. PLACE ALL BACKFILL IN MAXIMUM 8" LOOSE LIFTS AND COMPACT AS INDICATED BELOW.
6. FINISHED SUBGRADES SHALL PARALLEL FINISHED GRADES UNLESS OTHERWISE INDICATED.

D. COMPACTION:

1. COMPACT EACH LIFT AT OPTIMUM MOISTURE CONTENT UNTIL MAXIMUM DENSITY IS ACHIEVED (95% DENSITY) BEFORE NEXT LIFT IS PLACED.
2. A MINIMUM OF 3 PASSES WITH COMPACTION EQUIPMENT IS REQUIRED.
3. CONTINUE COMPACTION UNTIL THERE IS NO WEAVING OR YIELDING OF SUBGRADE MATERIAL UNDER COMPACTION EQUIPMENT.
4. PUDDLING METHOD OF COMPACTION IS NOT ACCEPTABLE.

E. SPREADING TOPSOIL:

1. USE ON-SITE STRIPPED TOPSOIL FOR ALL LAWN INSTALLATION AND HAUL IN ADDITIONAL TOPSOIL AS REQUIRED.
2. HAULED IN TOPSOIL: CONFORMING TO NYSDOT 713-01, EXCEPT THAT ORGANIC CONTENT SHALL BE 3%-20% AND PH 5.8-7.0.
3. LOOSEN LAWN AREA SUBGRADE TO MINIMUM 4" DEPTH.
4. SPREAD TOPSOIL AND REMOVE STONES OVER 1½", ROOTS, REFUSE AND ALL OTHER FOREIGN MATERIALS.
5. FINE GRADE TOPSOIL TO 6" THICKNESS AFTER SETTLEMENT TO FORM SMOOTH AND UNIFORM SURFACES. REMOVE HUMPS AND DEPRESSIONS.

1.06 SITE IMPROVEMENTS

A. PRODUCTS:

1. LIMESTONE BOULDERS: LIMESTONE BOULDERS SHALL BE RANDOM SIZES, APPROXIMATELY 12" HIGH, 24" DEEP, AND VARIOUS LENGTHS, AND SHALL BE FLAT TOPPED. OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT BOULDERS BASED ON SIZE.
2. WOODEN BOLLARDS: BOLLARDS SHALL BE PRESSURE TREATED LUMBER SIZED AND MODIFIED AS SPECIFIED IN THE BOLLARD DETAILS. BOLLARDS SHALL BE ERECTED PLUMB AND TRUE, AS INDICATED ON THE CONTRACT DRAWINGS. THE BOLLARDS SHALL BE INSTALLED 6' O.C.
3. REMOVABLE BOLLARD SLEEVES: SLEEVES SHALL BE 8" x 8" x 0.313 GALVANIZED STEEL SQUARE TUBE. A BOLT, AS SPECIFIED IN THE CONTRACT DOCUMENTS, SHALL BE SET IN THE TUBE PRIOR TO THE INSTALLATION.
4. EYE BOLT: 3/4" DIAM. HOT DIP GALVANIZED STEEL SCREW ANCHOR EYE BOLT.
5. TIMBER STEPS: STEPS SHALL CONSIST OF 6" x 6" PRESSURE TREATED MEMBERS CUT TO THE LENGTHS SPECIFIED IN THE CONTRACT DRAWINGS. THE STEPS SHALL BE ANCHORED INTO THE SUBGRADE WITH #5 REBAR, 3' LENGTHS, SET FLUSH WITH THE STEP SURFACE SO AS TO NOT PROVIDE A TRIP HAZARD. STEPS WILL BE FURTHER SECURED USING 3/8" GALVANIZED STEEL LAG SCREWS, 9" IN LENGTH, AND INSTALLED AS DIRECTED IN THE CONTRACT DRAWINGS.

B. PRODUCT HANDLING:

1. STORE MATERIALS PROPERLY TO PREVENT DAMAGE, DETERIORATION, AND CONTAMINATION.
2. WOOD COMPONENTS SHALL BE CAREFULLY ASSEMBLED, HANDLED, STORED, AND ANCHORED TO PREVENT DAMAGE TO THE WOOD AND THE FINISH.

1.07 LAWN SEEDING

A. MATERIALS:

1. LAWN SEED MIXTURE: FRESH, CLEAN, NEW CROP OF COMMERCIALLY AVAILABLE ALL-PURPOSE LAWN SEED MIXTURE SPECIFICALLY FORMULATED FOR HEAVY USE AND CONTAINING 50% KENTUCKY BLUE, 35% RED FESCUE AND 15% ANNUAL RYEGRASS.
2. LAWN SEED MIXTURE TEST RESULTS: PROVIDE TO OWNER'S REPRESENTATIVE FOR REVIEW.
3. CONSERVATION SEED MIXTURE: THE SEED MIX TO BE USED FOR THE AREAS OF CONSERVATION SEEDING IS THE EASTERN NATIVE HABITAT & CREP MIX (ITEM # ERNMX-173) FROM ERNST SEEDS, MEADVILLE, PA 16335. PHONE NO. 800-873-3321.
4. EACH CONTAINER OF SEED MIXTURE DELIVERED TO SITE SHALL HAVE ORIGINAL SEED TAG SHOWING SUPPLIER'S GUARANTEED ANALYSIS OF MIXTURE INCLUDING PROPORTIONS BY WEIGHT, PERCENT PURITY AND GERMINATION RATE.
5. FERTILIZER: SLOW RELEASE GRANULAR STARTER FERTILIZER AS RECOMMENDED BY FERTILIZER MANUFACTURER FOR NEW LAWNS.
6. MULCH FOR CONVENTIONAL SEEDING: CLEAN OAT OR WHEAT STRAW.
7. FIBER-MULCH FOR HYDROSEEDING OPTION: BIODEGRADABLE DYED-WOOD CELLULOSE-FIBER MULCH, NON-TOXIC, FREE FROM PLANT GROWTH INHIBITORS, MAX. 15% MOISTURE CONTENT, PH OF 4.5 TO 6.4 CONWED 4,000 OR EQUAL.
8. ASPHALT EMULSION TACKIFIER FOR CONVENTIONAL SEEDING OPTION: ASPHALT EMULSION, ASTM D 977, GRADE SS-1 NON-TOXIC AND FREE FROM PLANT GROWTH AND GERMINATION INHIBITORS.
9. NON-ASPHALTIC TACKIFIER FOR HYDROSEEDING OPTION: COLLOIDAL TACKIFIER RECOMMENDED BY FIBER-MULCH MANUFACTURER FOR SLURRY APPLICATION, NON-TOXIC AND FREE FROM PLANT GROWTH AND GERMINATION INHIBITORS.
10. EROSION NETTING: JUTE MESH - NYSDOT 713-07; OPEN WEAVE (HOLES ⅛" X ⅛" ±) PHOTO/BIODEGRADABLE POLYPROPYLENE GEOTEXTILE FABRIC, "FABRIJUTE", OR APPROVED EQUAL.

B. LAWN INSTALLATION: FINE GRADING, SEEDING & MULCHING

1. PLANTING SEASON: APRIL 1 - MAY 30 AND AUGUST 15 - OCTOBER 15.
2. ADJUSTING TOPSOIL PH TO 5.8 TO 7.0.
3. FINE GRADING IMMEDIATELY BEFORE SEEDING. RAKE AND SCARIFY TOPSOIL UNTIL SURFACE IS SMOOTH, FRIABLE AND UNIFORMLY FINE TEXTURED. FLOAT SURFACE TO LEVEL MINOR HUMPS AND DEPRESSIONS.
4. CONTRACTOR HAS OPTION TO USE CONVENTIONAL SEEDING METHOD OR HYDROSEEDING METHOD.
5. SEEDING RATE: 6 POUNDS OF SEED MIXTURE PER 1,000 SQ. FT. OF LAWN.
6. SEEDING RATE FOR CONSERVATION SEEDING: 11 LB PER ACRE WITH 30 LBS/ACRE OF A COVER CROP. FOR THE COVER CROP, USE EITHER GRAIN OATS (1 JAN TO 31 JULY) OR GRAIN RYE (1 AUG TO 31 DEC).
7. CONVENTIONAL SEEDING METHOD OPTION:
   - APPLY SEED MIXTURE IN 2 PASSES AT 90° TO EACH OTHER, USING ½ OF SEED WITH EACH PASS, AND RAKE SEED INTO SURFACE.
   - FERTILIZER: APPLY FERTILIZER AT MANUFACTURER'S RECOMMENDED RATE FOR NEW LAWNS.
   - INSTALL EROSION NETTING 4' WIDTH IN CONSTRUCTED SWALE INVERTS, ON ALL CONSTRUCTED SLOPES 3' RUN / 1' RISE & STEEPER, AND WHERE INDICTED.
   - SPREAD MULCH AS NECESSARY TO ENCOURAGE SEED GERMINATION AND PLANT GROWTH AND TO PREVENT EROSION.
   - INSTALL ASPHALT EMULSION TACKIFIER IF NECESSARY TO STABILIZE MULCH; APPLY TO RATE OF 10 TO 13 GAL/1000 SQ. FT.
8. HYDROSEEDING METHOD OPTION:
   - APPLY SEED, FERTILIZER AND FIBER MULCH IN HOMOGENOUS SLURRY UNIFORMLY TO LAWN AREAS IN ONE STEP PROCESS.
   - SEED AND FERTILIZER APPLICATION RATE IS SAME AS INDICTED ABOVE FOR CONVENTIONAL SEEDING OPTION.
   - REMOVE ALL OVERSPRAY AND REPAIR ALL SURFACES THAT ARE RUTTED BY EQUIPMENT.
9. CONSERVATION SEED METHOD:
   - FOLLOW SEED SUPPLIER INSTALLATION AND MAINTENANCE RECOMMENDATIONS.
10. FINAL ACCEPTANCE: GUIDELINE FOR AN ACCEPTABLE STAND OF GRASS: SCATTERED BARE SPOTS NOT LARGER THAN 1 SQ. FT. EACH WILL BE PERMITTED UP TO A MAXIMUM OF 3% OF ANY LAWN AREA.

C. MAINTENANCE:

1. MAINTAIN LAWN AREAS UNTIL FINAL ACCEPTANCE, INCLUDING BUT IS NOT LIMITED TO WATERING, RESEEDING, REMULCHING, APPLICATION OF HERBICIDES, FUNGICIDES & INSECTICIDES, REPAIRING ERODED AREAS AND REWORKING SEEDED AREAS.
2. BEFORE ACCEPTANCE, MOW EACH LAWN AREA A MINIMUM OF 3 TIMES, REMOVING NOT MORE THAN ⅓ OF TOTAL GRASS HEIGHT WITH EACH MOWING.
3. PRIOR TO ACCEPTANCE BUT NOT LESS THAN 60 DAYS AFTER SEEDING, REFERTILIZE AT FERTILIZER MANUFACTURER'S RECOMMENDED RATE.

D. INSPECTION & ACCEPTANCE

1. GUIDELINES FOR ACCEPTABLE STAND OF GRASS: SCATTERED BARE SPOTS NOT LARGER THAN ONE (1) SQUARE FOOT EACH WILL BE PERMITTED UP TO A MAXIMUM OF 3% OF ANY LAWN AREA.
2. AT CONCLUSION OF MAINTENANCE PERIOD INCLUDING MINIMUM OF THREE MOWINGS, OWNER'S REPRESENTATIVE WILL INSPECT LAWNS FOR CONFORMANCE AND WILL PROVIDE WRITTEN NOTIFICATION OF ACCEPTANCE OR NOTIFICATION OUTLINING DEFICIENCIES TO BE CORRECTED OR COMPLETED FOR ACCEPTANCE.
3. OWNER'S REPRESENTATIVE WILL RE-INSPECT FOLLOWING CORRECTIVE WORK BEFORE ISSUING NOTIFICATION OF ACCEPTANCE.
4. OWNER ASSUMES RESPONSIBILITY FOR MAINTENANCE FOLLOWING ACCEPTANCE.

1.08 PLANTING

A. PLANT MATERIALS:

1. EACH PLANT - COMPLYING WITH AMERICAN STANDARD FOR NURSERY STOCK ANSI Z60.1, FULLY DEVELOPED, DISEASE FREE, NURSERY GROWN STOCK WITH IDENTIFYING NURSERY TAGS, TRUE TO NAME INDICATED, TYPICAL OF PLANT SPECIES, WITH DENSELY DEVELOPED BRANCHING FREE OF VOIDS, VIGOROUS AND FIBROUS ROOT SYSTEM.
2. PLANT SIZE AS INDICATED ON DRAWINGS BY CALIPER/DIMENSION MEASUREMENT. SIZE LISTED IS MINIMUM SIZE ALLOWABLE FOR THAT GRADE AND INCLUDES FROM THAT SIZE UP TO BUT NOT INCLUDING THE NEXT LARGER GRADE SIZE. PLANTS SHALL BE A GOOD AVERAGE OF SIZE RANGE FOR PLANTS THAT PLANT GRADE. FOR EVERY PLANT OF A SPECIES PROVIDED AT SMALLER END OF INDICATED SIZE RANGE, PROVIDE A PLANT OF THAT SPECIES AT LARGER END OF RANGE.
3. PLANT SIZE AS INDICATED ON DRAWINGS BY CONTAINER SIZE. PLANTS SHALL HAVE WELL ESTABLISHED ROOT SYSTEM REACHING SIDES OF CONTAINER ALL AROUND WITHOUT BEING ROOT BOUND.

B. PLANTING SOIL MIXTURE: COMPOSITION - 4 PARTS TOPSOIL (ON-SITE OR HAULED IN MEETING NYSDOT 713-01, EXCEPT THAT ORGANIC CONTENT SHALL BE 3%-20% AND PH 5.8-7.0), 1 PART SATURATED PEAT MOSS, 1 PART COMPOST AND GELSCAPE MOISTURE RELEASE GRANULES AT RATE RECOMMENDED BY MANUFACTURER. THOROUGHLY MIX ALL COMPONENTS.

C. INSTALLATION:

1. PLANTING SHALL BE DONE DURING FAVORABLE WEATHER CONDITIONS.
2. MACHINE AND HAND EXCAVATE PITS AND BEDS TO DEPTH AND WIDTH TO ACCOMMODATE ROOT SYSTEM AND AS DETAILED.
3. ARRANGE AND SET PLANTS TO STAND VERTICALLY AND AFTER SETTLEMENT, TO BE SET SUCH THAT THEIR NATURAL GRADE ELEVATION IS AT FINISHED GRADE.
4. BACKFILL WITH PLANTING SOIL MIXTURE AND ADD FERTILIZER AT MANUFACTURER'S RECOMMENDED RATE FOR NEW PLANTINGS.
5. THOROUGHLY SETTLE BACKFILL BY TAMPING AND WATERING, FORM SOIL RING AND THOROUGHLY WATER WITHIN 24 HOURS OF PLANTING.
6. TOP DRESS PITS AND BEDS WITH 2" LAYER OF WOOD MULCH.
7. STAKE TREES AS DETAILED.

D. MAINTENANCE:

1. PRUNE DEAD BRANCHING AND UNSIGHTLY GROWTH TO A MAXIMUM OF 10% OF FOLIAGE ON ANY INDIVIDUAL SPECIMEN.
2. MAINTAIN ALL PLANT MATERIALS INCLUDING CULTIVATING, WATERING, PRUNING, WEEDING, AND SPRAYING WITH INSECTICIDES & FUNGICIDES UNTIL FINAL ACCEPTANCE BY OWNER'S REPRESENTATIVE.

E. INSPECTION & ACCEPTANCE

1. OWNER'S REPRESENTATIVE WILL INSPECT PLANTINGS UPON COMPLETION OF INSTALLATION FOR CONFORMANCE WITHIN 10± DAYS OF REQUEST BY CONTRACTOR.
2. OWNER'S REPRESENTATIVE WILL PROVIDE WRITTEN NOTIFICATION OF ACCEPTANCE OR NOTIFICATION OUTLINING DEFICIENCIES TO BE CORRECTED OR COMPLETED FOR ACCEPTANCE.
3. OWNER'S REPRESENTATIVE WILL RE-INSPECT FOLLOWING CORRECTIVE WORK BEFORE ISSUING NOTIFICATION OF ACCEPTANCE.

F. WARRANTY:

1. FOLLOWING ACCEPTANCE, PLANTINGS SHALL BE WARRANTEED FOR ONE (1) YEAR.
2. MAINTAIN ALL PLANT MATERIALS INCLUDING CULTIVATING, WATERING, PRUNING, WEEDING AND SPRAYING WITH INSECTICIDES & FUNGICIDES UNTIL FINAL ACCEPTANCE BY OWNER'S REPRESENTATIVE.
3. REPLACEMENT PLANTS SHALL ALSO BE WARRANTEED FOR ONE (1) YEAR FOLLOWING THEIR INSTALLATION.

G. FINAL ACCEPTANCE

1. AT END OF WARRANTY PERIOD, REMOVE TREE STAKING, WATERING SAUCERS AND TRUNK WRAP. RENEW MULCH AND RE-FERTILIZE ALL PLANTS.
2. OWNER'S REPRESENTATIVE WILL PERFORM FINAL INSPECTION TO ACCEPT OR PROVIDE NOTIFICATION OUTLINING DEFICIENCIES TO BE CORRECTED OR COMPLETED FOR FINAL ACCEPTANCE.

1.09 STORM SYSTEM

A. MATERIALS

1. PIPE BEDDING AGGREGATE: CRUSHED STONE, MEETING NYSDOT 703-0201, SIZE #1 AND/OR #2.
2. PIPE JOINT GASKET: ELASTOMERIC GASKET WITH JOINT DESIGN PER ASTM D 3212 & LOCKED-IN RUBBER RING PER ASTM F 477.
3. UNDERDRAIN PIPE: MEETING NYSDOT 706-13 PERFORATED CORRUGATED POLYETHYLENE UNDERDRAIN TUBING OR NYSDOT 706-18 PERFORATED POLYVINYL CHLORIDE UNDERDRAIN PIPE.
4. POROUS FILL FOR UNDERDRAINS: MEETING NYSDOT 605-2.02 UNDERDRAIN FILTER TYPE I OR TYPE II.
5. FILTER FABRIC: NON-WOVEN, CONTINUOUS-FILAMENT POLYPROPYLENE FIBERS, ASTM D 4751; MIRAFI 140N OR APPROVED EQUAL.

B. INSTALLATION

1. REMOVE SOFT AND UNSUITABLE MATERIAL FROM TRENCH BOTTOM AND BACKFILL WITH SATISFACTORY SOIL AND/OR BEDDING MATERIAL AS DETAILED AND COMPACT TO SUBGRADE ELEVATION.
2. PIPE BEDDING: PROVIDE MINIMUM 6" THICK BEDDING CUSHION BENEATH PIPE, ROUND TRENCH BOTTOM TO PROVIDE FIRM BEARING FOR ⅓ PIPE CIRCUMFERENCE: EXCAVATE BELL HOLES AS REQUIRED.
3. PLACE PIPE FROM LOWER ELEVATION TO HIGHER ELEVATION.
4. PLACE PIPE TRUE TO PIPE ALIGNMENT AND GRADIENT, SPIGOTS CENTERED IN BELLS, INVERTS SMOOTH AND UNIFORM.
5. BACKFILL TO ½ PIPE DIAMETER AND TAMP TO SUPPORT PIPE.
6. CONTINUE BACKFILL IN MAXIMUM 8" LOOSE LIFTS AND COMPACT EACH LIFT.
7. REFER TO "EARTHWORK" FOR FILL, BACKFILL, COMPACTION AND TESTING REQUIREMENTS.
8. TIGHTLY PLUG UPSTREAM END OF EXPOSED PIPE AT EACH WORK STOPPAGE INCLUDING END OF WORK DAY TO PREVENT INFILTRATION OF FOREIGN MATERIAL.
9. FLUSH PIPES TO NEXT DOWNSTREAM STRUCTURE TO REMOVE ALL DEPOSITS. COLLECT AND REMOVE DEPOSITS FROM DOWNSTREAM STRUCTURE.
10. AFTER INSTALLATION, CHECK PIPE INTERIOR ALIGNMENT BETWEEN STRUCTURES FOR A FULL CIRCLE OF LIGHT AND CHECK FOR DAMAGE.

1.04 FLEXIBLE PAVING & SURFACING

A. GENERAL:

1. SUBGRADE: COMPACT SUBGRADE AT OPTIMUM MOISTURE CONTENT UNTIL MAXIMUM DENSITY IS ACHIEVED (95% DENSITY).
2. REMOVE AND REPLACE SOFT, YIELDING MATERIAL WITH APPROVED BACKFILL.
3. FOR SUBGRADE AND ALL PAVEMENT COURSES, USE 5-TON SMOOTH-WHEELED ROLLER FOR WALKS, AND 10-TON SMOOTH-WHEELED ROLLER FOR ALL OTHER PAVEMENTS. USE VIBRATORY COMPACTOR WHERE ROLLER WILL NOT FIT.
4. MINIMUM 3 PASSES WITH COMPACTION EQUIPMENT IS REQUIRED. CONTINUE COMPACTION UNTIL THERE IS NO WEAVING OR YIELDING OF THE SUBGRADE MATERIAL UNDER COMPACTION EQUIPMENT.
5. WHERE PAVEMENT ABUTS EXISTING PAVEMENT OR CURBING TO REMAIN, FINISHED PAVEMENT SURFACE SHALL MEET EXISTING PAVEMENT AND TOP OF CURB SMOOTHLY WITHOUT HUMPS OR DEPRESSIONS.
6. FINISHED SURFACE SHALL BE SMOOTH, TIGHT AND UNIFORMLY FINE TEXTURED.

B. SUBBASE COURSE FOR ALL ASPHALT CONCRETE AND STONE DUST PATH PAVING:

1. CONTRACTOR'S OPTION LIMITED TO ONE (1) MATERIAL:
   - CRUSHED STONE: NYSDOT SUBBASE COURSE TYPE 4, ITEM 304.14, MEETING NYSDOT 703-0201.
   - CRUSHED GRAVEL: NYSDOT SUBBASE COURSE TYPE 4, ITEM 304.14, MEETING NYSDOT 703-0202.
   - SCREENED GRAVEL: NYSDOT SUBBASE COURSE TYPE 3, ITEM 304.13, MEETING NYSDOT 702-0203.
2. SUBBASE COMPACTION: MIN 3 PASSES WITH COMPACTION EQUIPMENT. CONTINUE COMPACTION UNTIL THERE IS NO WEAVING OR YIELDING OF SUBBASE MATERIAL.
3. IN-PLACE DENSITY TESTING: PROVIDE ONE (1) COMPACTION TEST FOR EACH 1,000 SQUARE FEET OF FINISHED SUBGRADE.

C. HEAVY DUTY ASPHALT CONCRETE PAVING:

1. GEOTEXTILE FABRIC ON SUBGRADE: MIRAFI 500X.
2. SUBBASE COURSE GRANULAR MATERIAL: SEE ABOVE.
3. ASPHALT CONCRETE BASE COURSE: NYSDOT HOT MIX ASPHALT, TYPE 1 BASE, ITEM 403.11.
4. ASPHALT CONCRETE BINDER COURSE: NYSDOT HOT MIX ASPHALT, TYPE 3 BINDER, ITEM 403.13.
5. ASPHALT CONCRETE TOP COURSE: NYSDOT HOT MIX ASPHALT, TYPE 7 TOP, ITEM 403.19.

D. PAINTED PARKING LINES & SYMBOLS:

1. PAINT: WHITE REFLECTORIZED TRAFFIC PAINT FOR PARKING LINES, MEETING NYSDOT 727-09.
2. APPLY PAINT WHEN SURFACES ARE CLEAN AND DRY, AND WHEN AIR AND PAVEMENT TEMPERATURE IS BETWEEN 40°F AND 95°F.
3. LINES: 4" WIDE WITH EDGES SHARPLY OUTLINED.

MDVLA
MATTHEW D VREDENBURGH
LANDSCAPE ARCHITECTURE
4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

north

DRAWING REVISIONS

NO.	DATE	REVISION	BY

PROJECT TITLE: GORGE TRAIL GATEWAY
PROJECT LOCATION: ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK
CLIENT: CAZENOVIA PRESERVATION FOUNDATION
DRAWING TITLE: SPECIFICATIONS ON DRAWINGS

DATE: APRIL 25, 2024
SCALE:
mdvla Job#: 22008
DRAWN BY: MDV
FILE NAME: 22008 CPF 5.DWG
DRAWING NUMBER: L-001

MDVLA

MATTHEW D VREDENBURGH
LANDSCAPE ARCHITECTURE
4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

north

DRAWING REVISIONS

NO.	DATE	REVISION	BY
#			
#			
#			
#			
#			

PROJECT TITLE: **GORGE TRAIL GATEWAY**

PROJECT LOCATION: **ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK**

CLIENT: **CAZENOVIA PRESERVATION FOUNDATION**

DRAWING TITLE: **EXISTING CONDITIONS PLAN**

DATE: **APRIL 25, 2024**

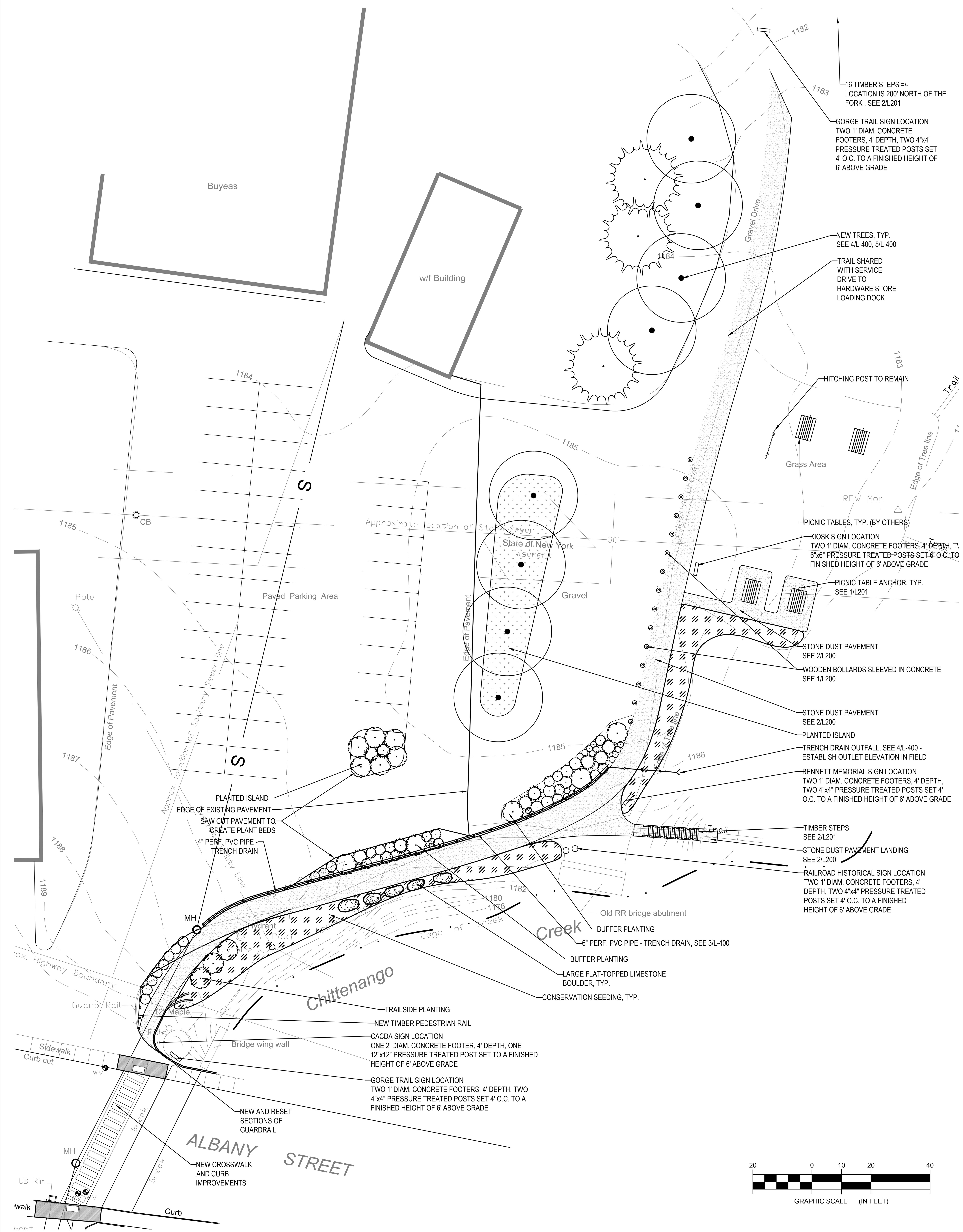
SCALE: **1" = 20'**

mdvla Job#: **22008**

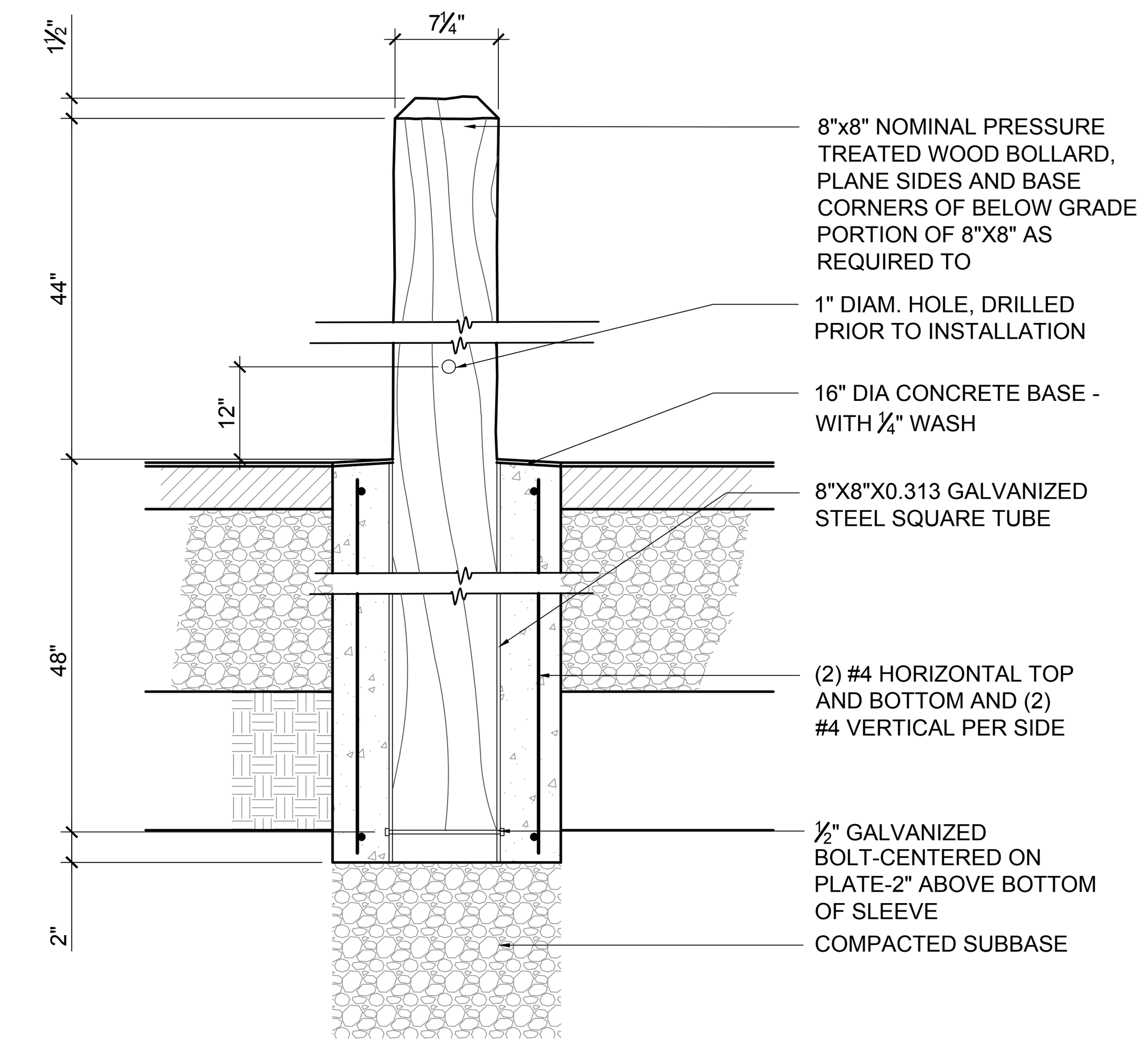
DRAWN BY: **MDV**

FILE NAME: **22008 CPF 5.DWG**

DRAWING NUMBER: **L-100**

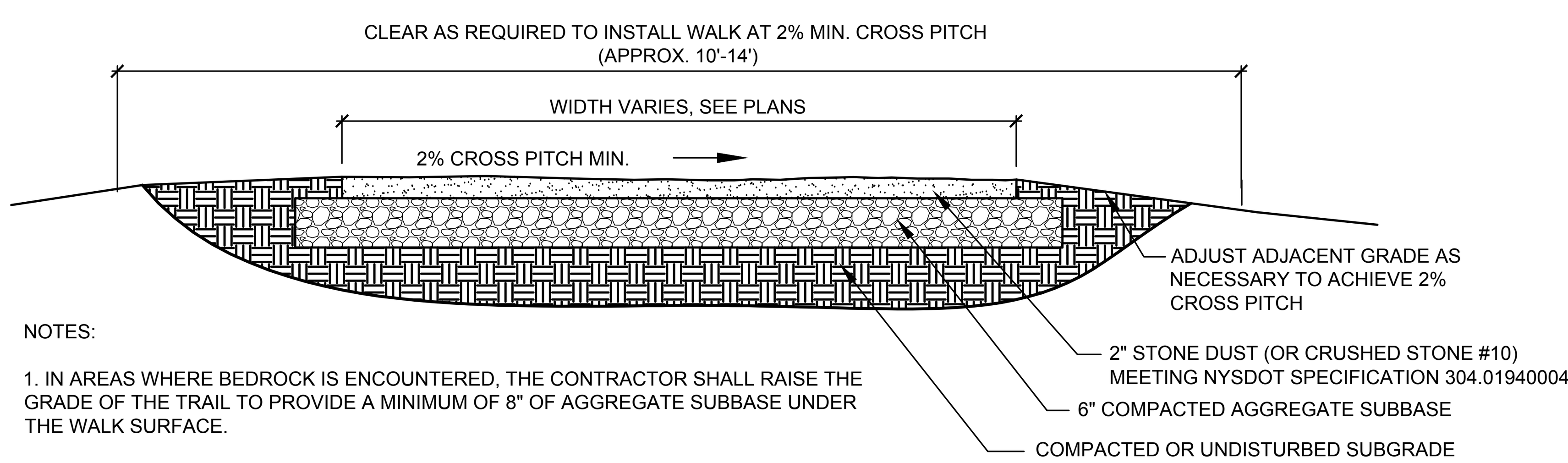


1 TIMBER BOLLARD
L-200
Scale: 3/4" = 1'-0"



REMOVABLE TIMBER BOLLARD SLEEVED IN CONCRETE

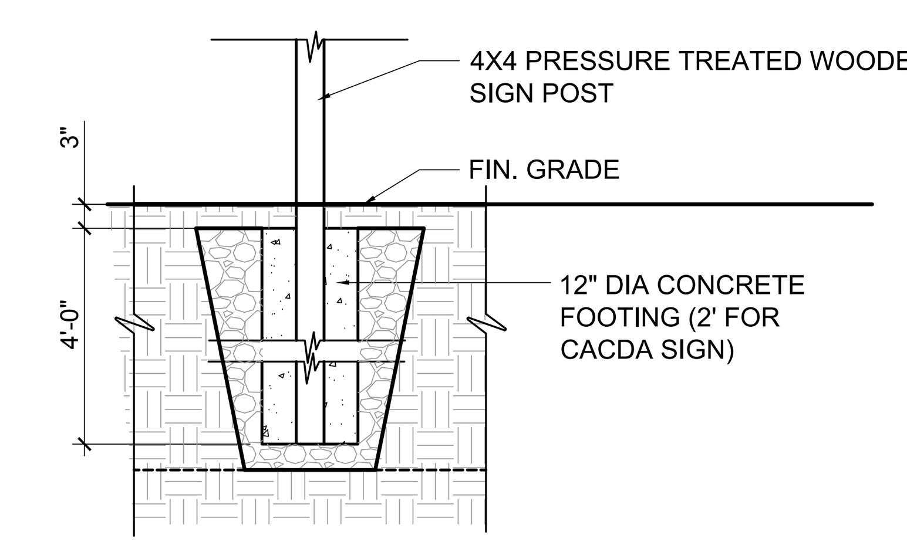
2 STONE DUST PAVEMENT
L-200
Scale: 1/2" = 1'-0"



NOTES:

1. IN AREAS WHERE BEDROCK IS ENCOUNTERED, THE CONTRACTOR SHALL RAISE THE GRADE OF THE TRAIL TO PROVIDE A MINIMUM OF 8" OF AGGREGATE SUBBASE UNDER THE WALK SURFACE.
2. TRAILS SHALL BE PITCHED TOWARD LOWER SIDE OF SITE.

3 SIGN FOOTER
L-200
Scale: 1/2" = 1'-0"



SITE PLAN AND LAYOUT NOTES:

1. THE CONTRACTOR SHALL APPLY FOR ALL REQUIRED PERMITS AND PAY ALL REQUIRED FEES.
2. ALL WORK AND AMENITIES SHOWN ON THE CONTRACT DOCUMENTS SHALL BE CONSIDERED AS "NEW" UNLESS INDICATED TO BE "EXISTING".
3. THE CONTRACTOR SHALL SCHEDULE THE CONSTRUCTION SEQUENCE TO MAINTAIN CONTINUITY OF ACTIVITIES WITHOUT DELAYS.
4. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE EXISTING SITE CONDITIONS PRIOR TO THE START OF ANY CONSTRUCTION SITE DISTURBANCE.
5. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS AND MAKE ALL NECESSARY PROVISIONS FOR PROTECTION OF THE PUBLIC, THE WORKMEN AND THE WORK, AND FOR MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC AS REQUIRED BY THE AGENCIES OF GOVERNMENT HAVING JURISDICTION.
6. SITE ACCESS IS RESTRICTED TO THE LOCATIONS SPECIFICALLY DESIGNATED ON PLAN.
7. THE CONTRACTOR SHALL ADHERE TO ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA), STATE AND LOCAL SAFETY REGULATIONS.
8. PROMPTLY REPORT TO THE OWNER'S REPRESENTATIVE ANY DISCREPANCIES FOUND ON THE SITE OR IN THE CONTRACT DOCUMENTS FOR REVIEW AND RESOLUTION BEFORE PROCEEDING WITH THE WORK IN THE AREA IN QUESTION. PROVIDE FIELD INFORMATION SPECIFIC TO THE DISCREPANCY TO EXPEDITE RESOLUTION.
9. LOCATE, PROTECT, AND MAINTAIN BENCHMARKS, MONUMENTS, CONTROL POINTS AND PROJECT ENGINEERING REFERENCE POINTS.
10. AVOID ANY DISTURBANCE OF EXISTING VEGETATION ON THE SITE EXCEPT THE VEGETATION SPECIFICALLY DESIGNATED TO BE REMOVED.
11. TAKE ALL PRECAUTIONS NECESSARY TO PREVENT EROSION AND CONTROL SEDIMENTATION AS REQUIRED BY THE AGENCIES OF GOVERNMENT HAVING JURISDICTION.
12. COMPLY WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS REGARDING MATERIALS, METHODS OF WORK AND DISPOSAL OF EXCESS AND WASTE MATERIALS.
13. BURNING OF MATERIALS OF ANY DESCRIPTION ON THE SITE IS PROHIBITED.
14. THE TOPOGRAPHIC SURVEY INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DAVID A VREDENBURGH, L.L.S. DATED SEPTEMBER 2022 .
15. PRIOR TO PERFORMING ANY EXCAVATION WITHIN THE CONSTRUCTION AREA, CONFIRM WITH DIG SAFELY NEW YORK AT 1-800-962-7962 THAT ALL EXISTING UNDERGROUND UTILITY LOCATIONS ARE CURRENTLY VERIFIED, OR ARRANGE FOR VERIFICATION.
16. THE OWNER'S REPRESENTATIVE WILL REVIEW THE LAYOUT OF ALL BUILDINGS, PAVEMENTS, UTILITIES, PONDS AND PLANTINGS IN THE FIELD BEFORE INSTALLATION. THE CONTRACTOR SHALL SCHEDULE ADVANCED NOTIFICATION TO THE OWNER'S REPRESENTATIVE TO FACILITATE TIMELY REVIEW.
17. EXISTING UTILITIES (LOCATIONS, SIZES AND INVERT ELEVATIONS) SHOWN ON THE PLANS HAVE BEEN PLOTTED FROM FIELD SURVEYS AND RECORDED MAPS AND SHALL BE INTERPRETED AS APPROXIMATE ONLY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR FIELD VERIFYING THE EXISTING INFORMATION AT LOCATIONS IN CLOSE PROXIMITY TO UTILITIES UNDER CONSTRUCTION.

MDVLA
MATTHEW D VREDENBURGH LANDSCAPE ARCHITECTURE
4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

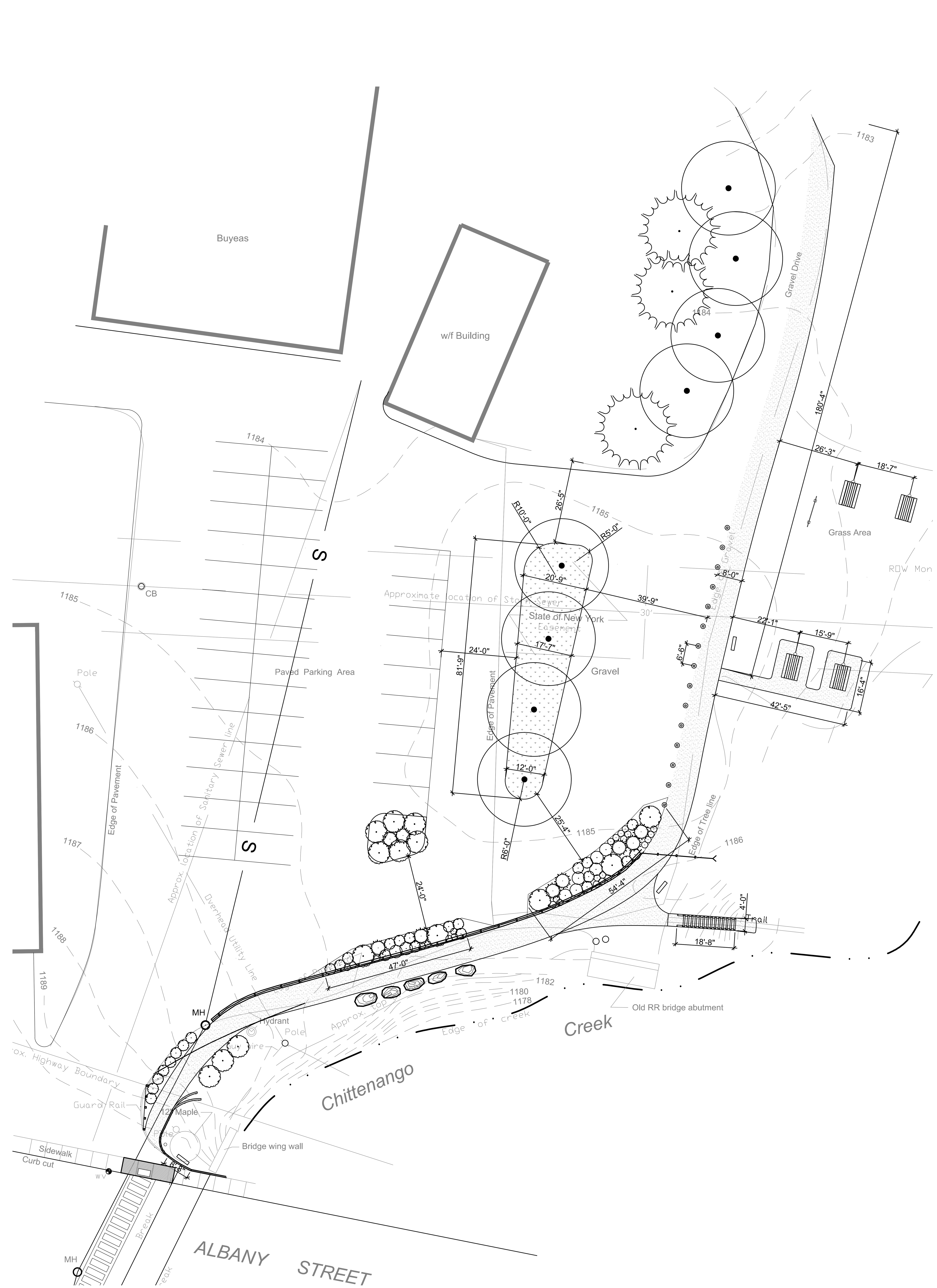
north

DRAWING REVISIONS

NO.	DATE	REVISION	BY

PROJECT TITLE: GORGE TRAIL GATEWAY
PROJECT LOCATION: ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK
CLIENT: CAZENOVIA PRESERVATION FOUNDATION
DRAWING TITLE: SITE PLAN AND DETAILS

DATE: APRIL 25, 2024
SCALE: 1" = 20'
mdvla Job#: 22008
DRAWN BY: MDV
FILE NAME: 22008 CPF 5.DWG
DRAWING NUMBER: L-200



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5. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS AND MAKE ALL NECESSARY PROVISIONS FOR PROTECTION OF THE PUBLIC, THE WORKMEN AND THE WORK, AND FOR MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC AS REQUIRED BY THE AGENCIES OF GOVERNMENT HAVING JURISDICTION.
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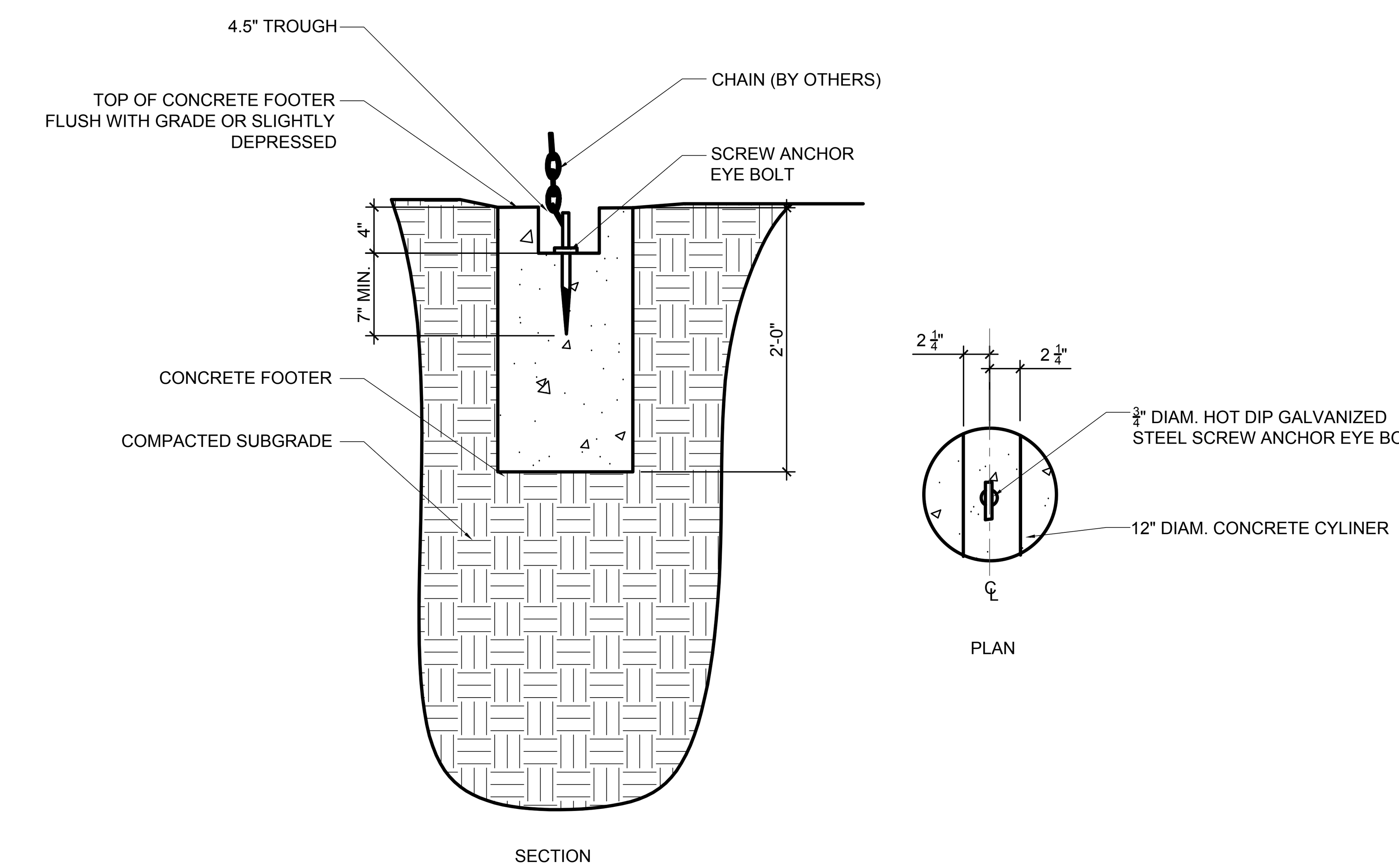
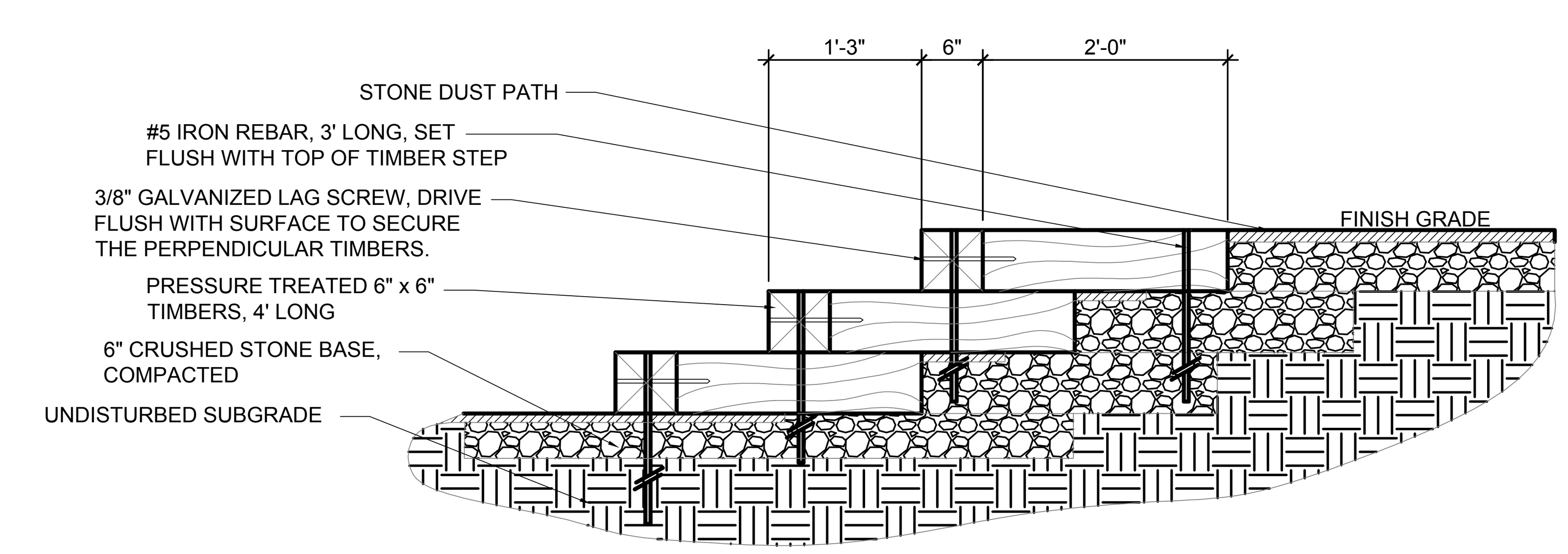
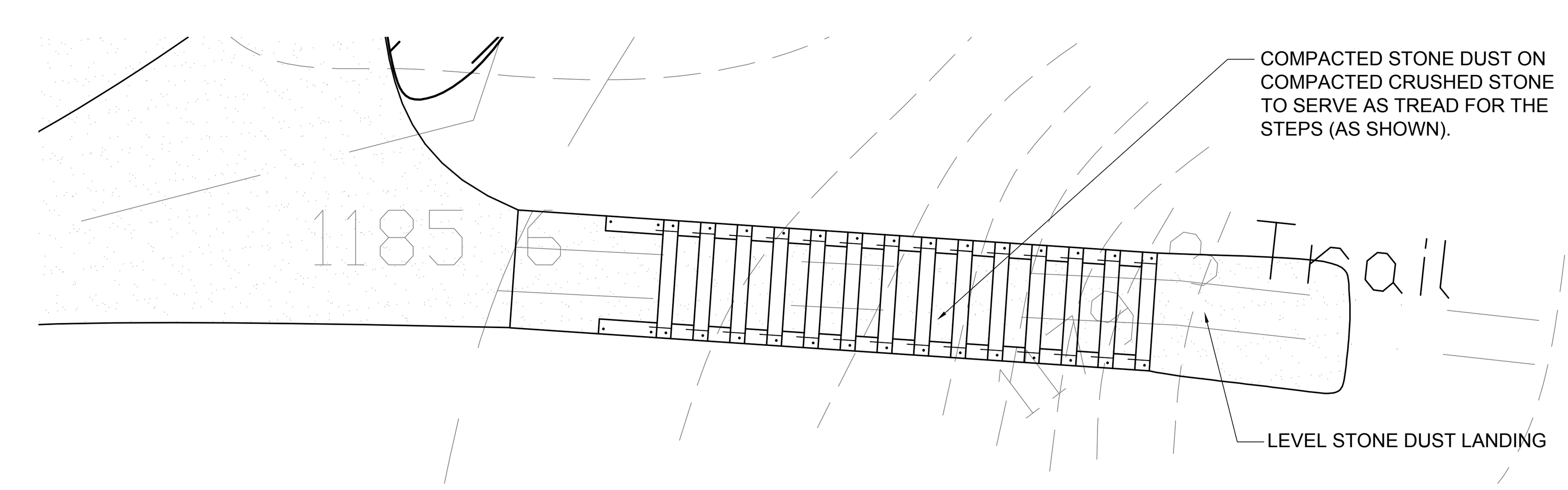


1 / L-201 PICNIC TABLE ANCHOR

Scale: 1/2" = 1'-0"





TIMBER STEPS IN PLAN VIEW

2 / L-201 TIMBER STEPS

Scale: 1/2" = 1'-0"

20 0 10 20 40

GRAPHIC SCALE (IN FEET)

MDVLA

MATTHEW D VREDENBURGH LANDSCAPE ARCHITECTURE

4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

north

DRAWING REVISIONS

NO.	DATE	REVISION	BY

PROJECT TITLE: **GORGE TRAIL GATEWAY**

PROJECT LOCATION: **ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK**

CLIENT: **CAZENOVIA PRESERVATION FOUNDATION**

DRAWING TITLE: **LAYOUT PLAN AND DETAILS**

DATE: **APRIL 25, 2024**

SCALE: **1" = 20'**

mdvla Job#: **22008**

DRAWN BY: **MDV**

FILE NAME: **22008 CPF 5.DWG**

DRAWING NUMBER: **L-201**

PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE/ROOT	SPACING
AR	ACER RUBRUM 'OCTOBER GLORY'	OCTOBER GLORY RED MAPLE	2.5" CAL. B&B	AS SHOWN
DY	DEUTZIA 'YUKI SNOWFLAKE'	YUKI SNOWFLAKE DEUTZIA	#3 CONTAINER	2' O.C.
IJ	ILEX VERTICILLATA 'JIM DANDY'	JIM DANDY WINTERBERRY	#5 CONTAINER	3.5' O.C.
IV	ILEX VERTICILLATA 'RED SPRITE'	RED SPRITE WINTERBERRY	#5 CONTAINER	3.5' O.C.
JP	JUNIPERUS X PFITZERIANA 'KALLAY'S COMPACT'	KALLAY'S COMPACT JUNIPER	#5 CONTAINER	4.5' O.C.
PA	PLATANUS ACERIFOLIA 'BLOODGOOD'	BLOODGOOD LONDON PLANETREE	2.5" CAL. B&B	AS SHOWN
PS	PINUS STROBUS	WHITE PINE	2.5" CAL. B&B	AS SHOWN
PV	PANICUM VIRGATUM 'SHENANDOAH'	SHENANDOAH SWITCHGRASS	2 GAL. CONT.	3.5' O.C.
RA	RHUS AROMATICA 'GRO-LOW'	GRO-LOW AROMATIC SUMAC	#3 CONTAINER	7' O.C.

PLANTING PLAN NOTES

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3. THE CONTRACTOR SHALL SCHEDULE THE CONSTRUCTION SEQUENCE TO MAINTAIN CONTINUITY OF ACTIVITIES WITHOUT DELAYS.
4. THE CONTRACTOR SHALL BECOME FAMILIAR WITH THE EXISTING SITE CONDITIONS PRIOR TO THE START OF ANY CONSTRUCTION SITE DISTURBANCE.
5. THE CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS AND MAKE ALL NECESSARY PROVISIONS FOR PROTECTION OF THE PUBLIC, THE WORKMEN AND THE WORK, AND FOR MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC AS REQUIRED BY THE AGENCIES OF GOVERNMENT HAVING JURISDICTION.
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9. LOCATE, PROTECT, AND MAINTAIN BENCHMARKS, MONUMENTS, CONTROL POINTS AND PROJECT ENGINEERING REFERENCE POINTS.
10. AVOID ANY DISTURBANCE OF EXISTING VEGETATION ON THE SITE EXCEPT THE VEGETATION SPECIFICALLY DESIGNATED TO BE REMOVED
11. TAKE ALL PRECAUTIONS NECESSARY TO PREVENT EROSION AND CONTROL SEDIMENTATION AS REQUIRED BY THE AGENCIES OF GOVERNMENT HAVING JURISDICTION.
12. COMPLY WITH ALL LOCAL, STATE AND FEDERAL REQUIREMENTS REGARDING MATERIALS, METHODS OF WORK AND DISPOSAL OF EXCESS AND WASTE MATERIALS.
13. BURNING OF MATERIALS OF ANY DESCRIPTION ON THE SITE IS PROHIBITED.
14. THE TOPOGRAPHIC SURVEY INFORMATION SHOWN ON THIS PLAN WAS PREPARED BY DAVID A VREDENBURGH, L.L.S. DATED SEPTEMBER 2022.
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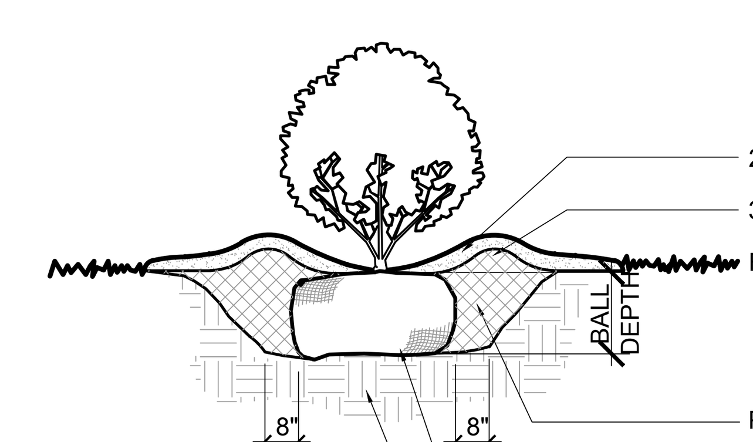
16. THE PLANTING OPERATION SHALL ONLY BE PERFORMED BY EXPERIENCED WORKMAN FAMILIAR WITH PLANTING PROCEDURES AND UNDER THE DIRECTION OF A QUALIFIED SUPERVISOR.
17. ALL PLANT MATERIALS SHALL COMPLY WITH AMERICAN STANDARDS FOR NURSERY STOCK ANSI 260.1.
18. THE CONTRACTOR SHALL LAYOUT ALL PLANT BEDS AND PLACE THE INDIVIDUAL PLANTS ON FINISHED GRADE IN THE LOCATIONS INDICATED ON PLAN FOR REVIEW BY THE OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION, AND PROVIDE ADEQUATE ADVANCED NOTIFICATION FOR TIMELY REVIEW.
19. THE TOPSOIL FOR THE PROPOSED PLANT BEDS SHALL BE HAULED IN AND SHALL MEET REQUIREMENTS IDENTIFIED IN THE PROJECT SPECIFICATIONS (1.03 EARTHWORK).

PLANTING PLAN NOTES (CONTINUED)

20. UPON NOTIFICATION, THE OWNER'S REPRESENTATIVE WILL REVIEW IN THE FIELD THE LAYOUT OF ALL PLANT BED EDGES AND INDIVIDUAL PLANT LOCATIONS BEFORE INSTALLATION IS PERMITTED, AND RESERVES THE RIGHT TO INTERCHANGE THE PLANTS AND TO SHIFT THE PLANT LOCATIONS AND PLANT BED CONFIGURATION IF IT IS POSSIBLE IN THEIR JUDGMENT TO ACHIEVE A BETTER EFFECT BY THE CHANGES.
21. INSTALL PLANT MATERIALS AT THE CORRECT GRADE. CONFIRM THAT THE FINISHED GRADING IS COMPLETED IN THE AREAS WHERE PLANT MATERIALS ARE TO BE INSTALLED.
22. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING AND MAINTAINING THE INSTALLED PLANT MATERIALS UNTIL SUBSTANTIAL COMPLETION OF THE CONSTRUCTION OR UNTIL FINAL ACCEPTANCE OF THE PLANT MATERIALS, WHICHEVER OCCURS LAST.
23. THE SEED MIX TO BE USED FOR THE AREAS OF CONSERVATION SEEDING IS THE EASTERN NATIVE HABITAT & CREP MIX (ITEM # ERNMX-173) FROM ERNST SEEDS, MEADVILLE, PA 16335.

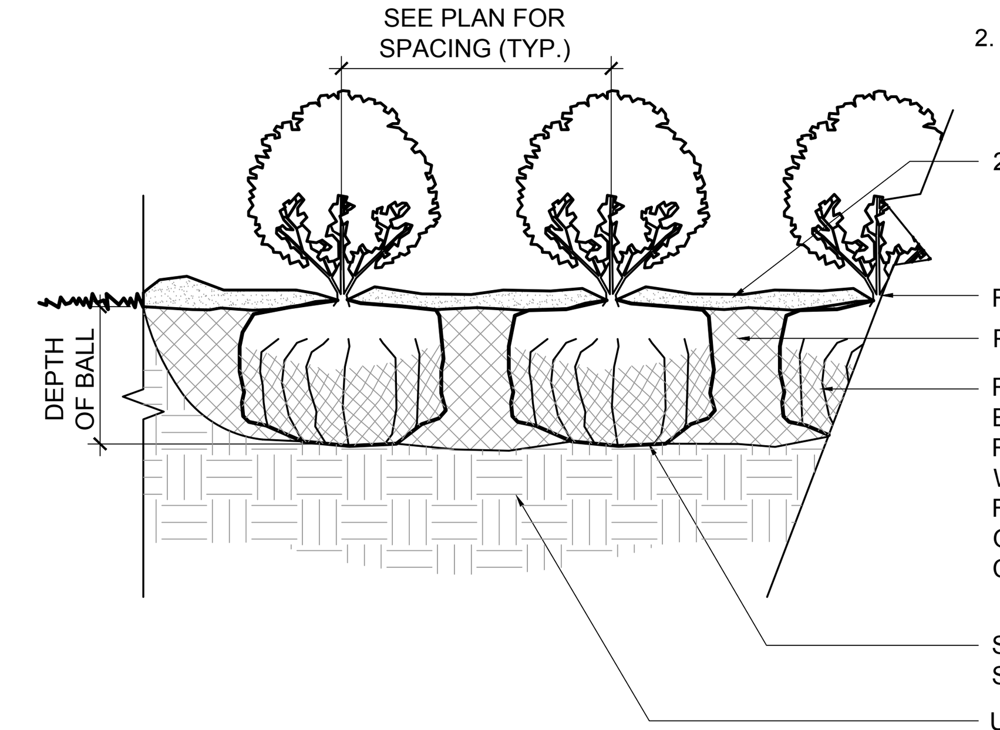


NOTES:
1. TOP OF ROOT BALL SHALL BE SET FLUSH WITH SURROUNDING FINISHED GRADE.
2. SET PLANTS PLUMB

1 L-300 SHRUB PLANTING

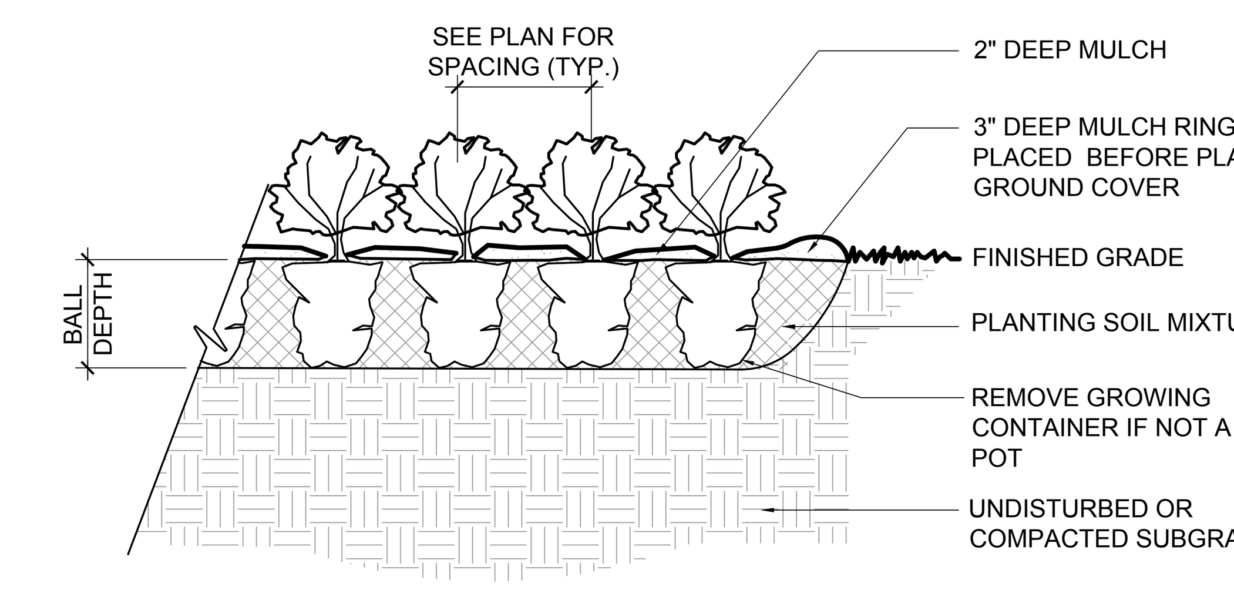
Scale: 1/2" = 1'-0"

NOTES:
1. TOP OF ROOT BALL SHALL BE SET FLUSH WITH SURROUNDING FINISHED GRADE.
2. SET PLANTS PLUMB



2 L-300 SHRUB MASS PLANTING

Scale: 1/2" = 1'-0"

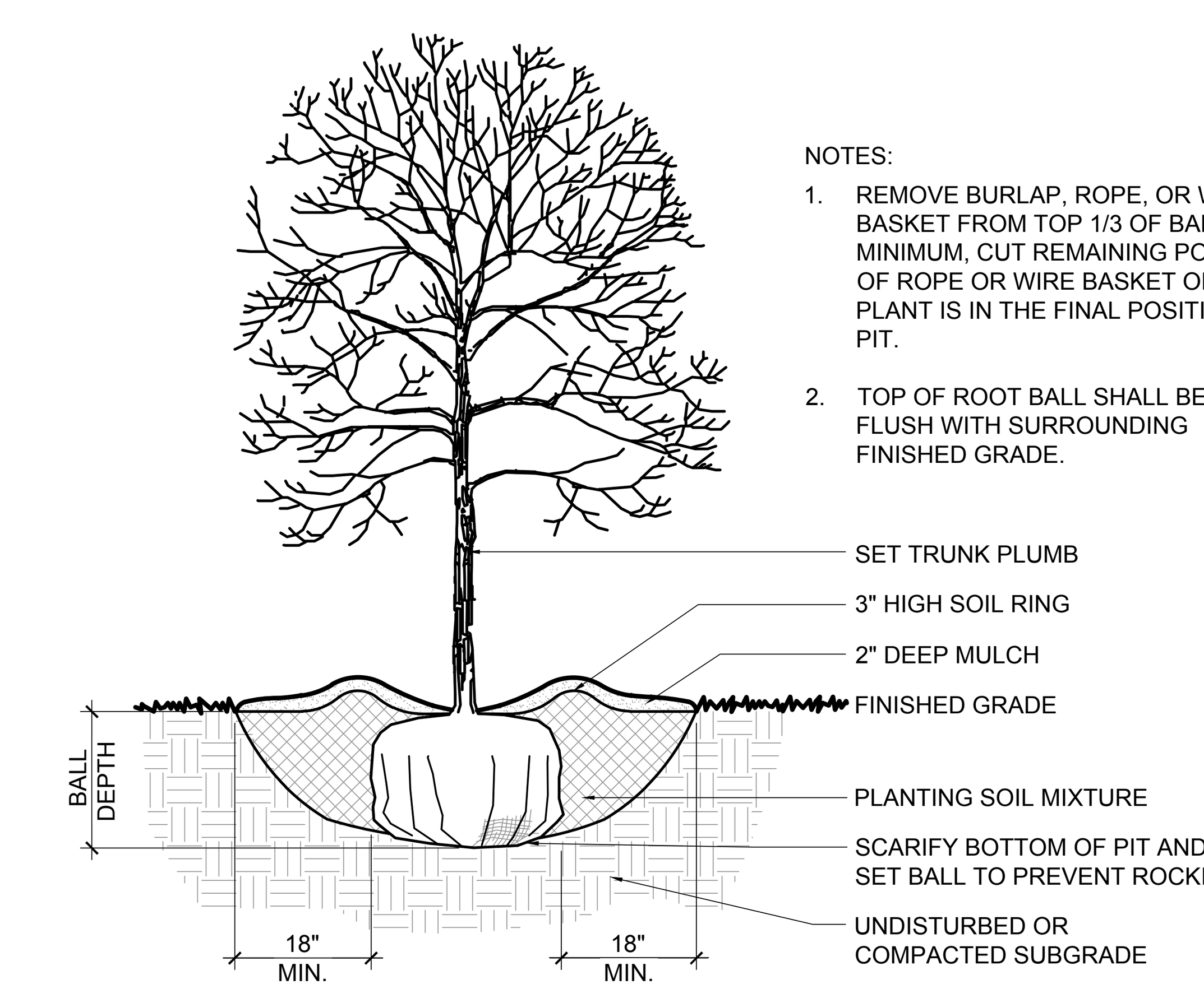


3 L-300 ORNAMENTAL GRASS PLANTING

Scale: 1/2" = 1'-0"

WITH CONTINUOUS PLANT BED

NOTES:
1. REMOVE BURLAP, ROPE, OR WIRE BASKET FROM TOP 1/3 OF BALL MINIMUM, CUT REMAINING PORTIONS OF ROPE OR WIRE BASKET ONCE PLANT IS IN THE FINAL POSITION IN PIT.
2. TOP OF ROOT BALL SHALL BE SET FLUSH WITH SURROUNDING FINISHED GRADE.

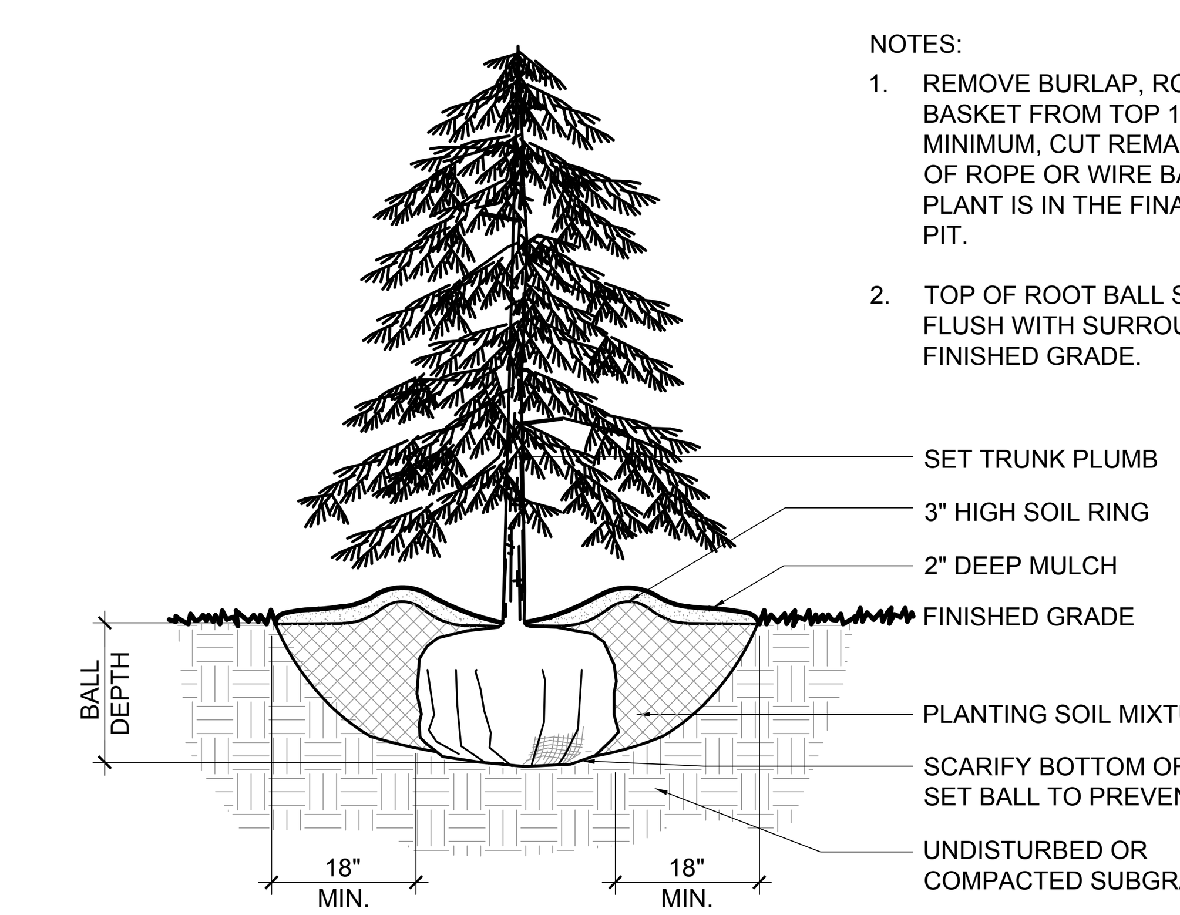


4 L-300 DECIDUOUS TREE PLANTING

Scale: 1/2" = 1'-0"

WITHOUT STAKES

NOTES:
1. REMOVE BURLAP, ROPE, OR WIRE BASKET FROM TOP 1/3 OF BALL MINIMUM, CUT REMAINING PORTIONS OF ROPE OR WIRE BASKET ONCE PLANT IS IN THE FINAL POSITION IN PIT.
2. TOP OF ROOT BALL SHALL BE SET FLUSH WITH SURROUNDING FINISHED GRADE.



5 L-300 EVERGREEN TREE PLANTING

Scale: 1/2" = 1'-0"

WITHOUT STAKES

MDVLA
MATTHEW D VREDENBURGH
LANDSCAPE ARCHITECTURE
4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

north

DRAWING REVISIONS

NO.	DATE	REVISION	BY
#			
#			
#			
#			
#			

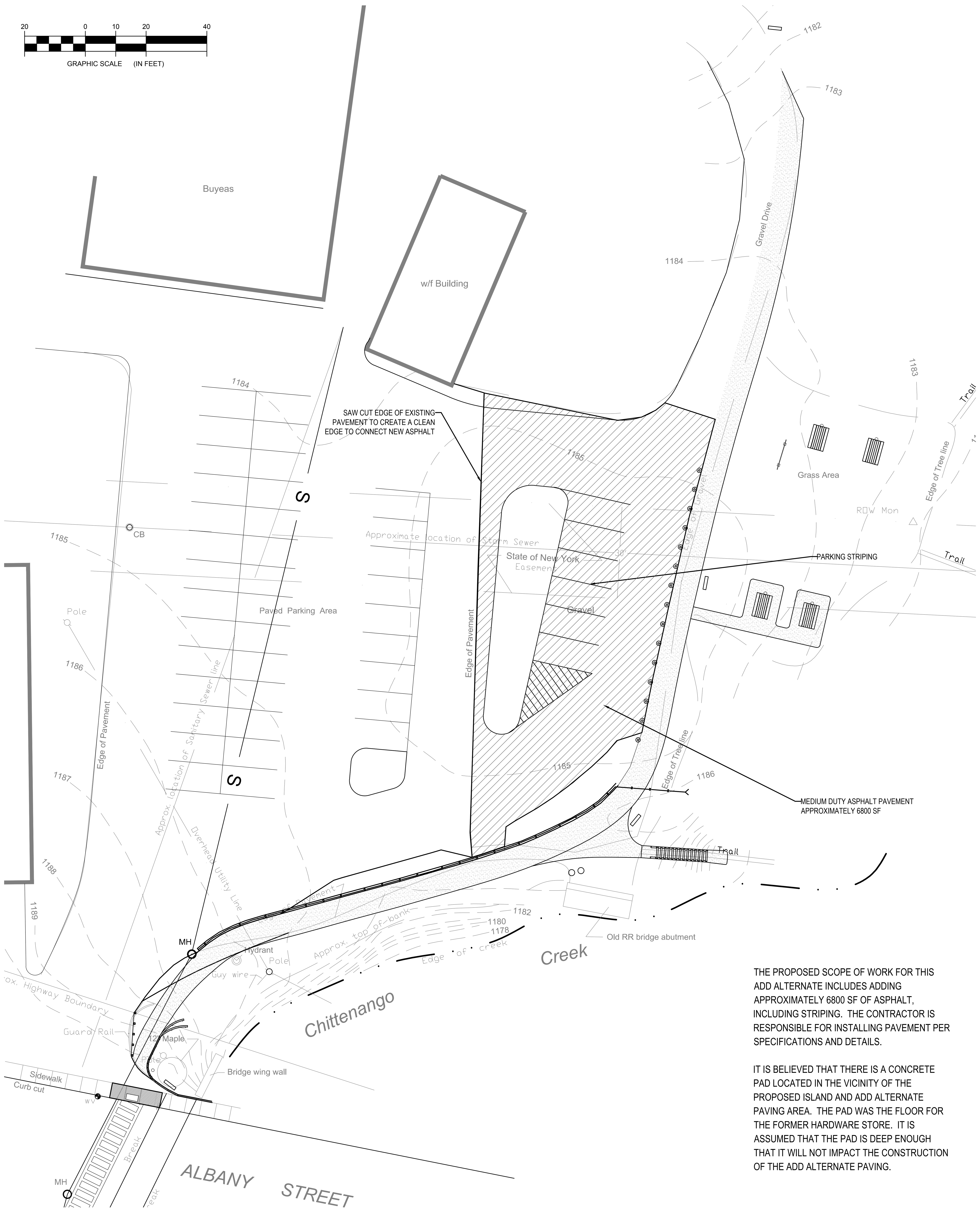
PROJECT TITLE: **GORGE TRAIL GATEWAY**

PROJECT LOCATION: **ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK**

CLIENT: **CAZENOVIA PRESERVATION FOUNDATION**

DRAWING TITLE: **PLANTING PLAN AND DETAILS**

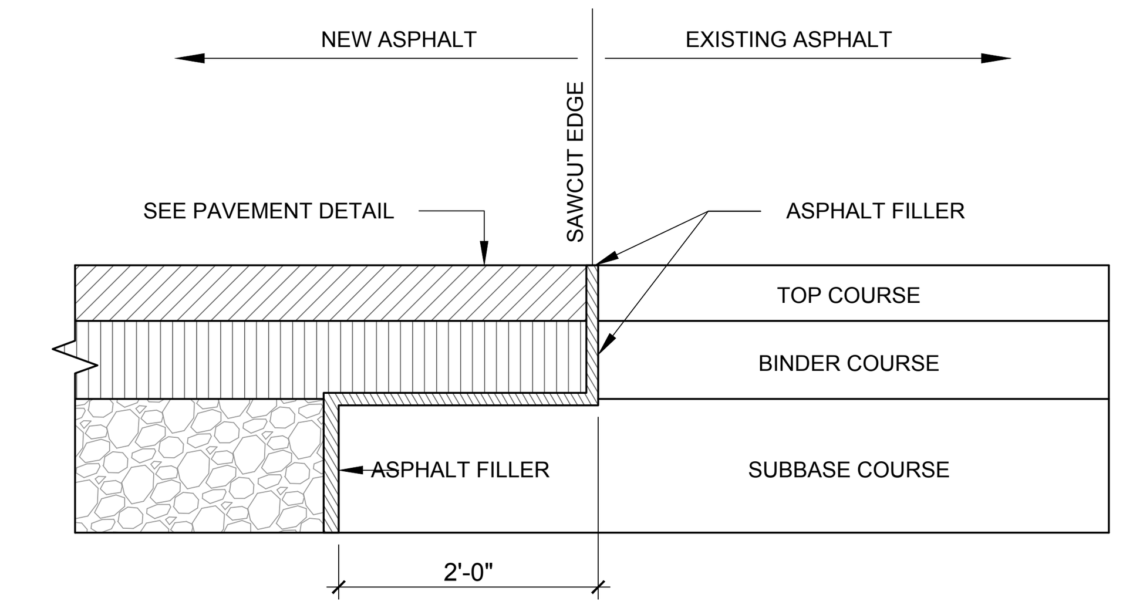
DATE: **APRIL 25, 2024**
SCALE: **1" = 20'**
mdvla Job#: **22008**
DRAWN BY: **MDV**
FILE NAME: **22008 CPF 5.DWG**
DRAWING NUMBER: **L-300**



20 0 10 20 40
GRAPHIC SCALE (IN FEET)
Buyeas
w/f Building
SAW CUT EDGE OF EXISTING PAVEMENT TO CREATE A CLEAN EDGE TO CONNECT NEW ASPHALT
Gravel Drive
Grass Area
Approximate location of Storm Sewer
State of New York Easement
Paved Parking Area
Gravel
Edge of Pavement
Edge of Tree line
PARKING STRIPING
MEDIUM DUTY ASPHALT PAVEMENT APPROXIMATELY 6800 SF
ROW Mon
Trail
CB
Pole
Approx. location of Sanitary Sewer line
Overhead Utility Line
Approx. Highway Boundary
Guard Rail
Sidewalk
Curb cut
MH
Hydrant
Pole
Guy wire
12" Maple
Bridge wing wall
Approx. top of bank
Edge of creek
Chittenango Creek
Old RR bridge abutment
ALBANY STREET
1182
1183
1184
1185
1186
1187
1188
1189

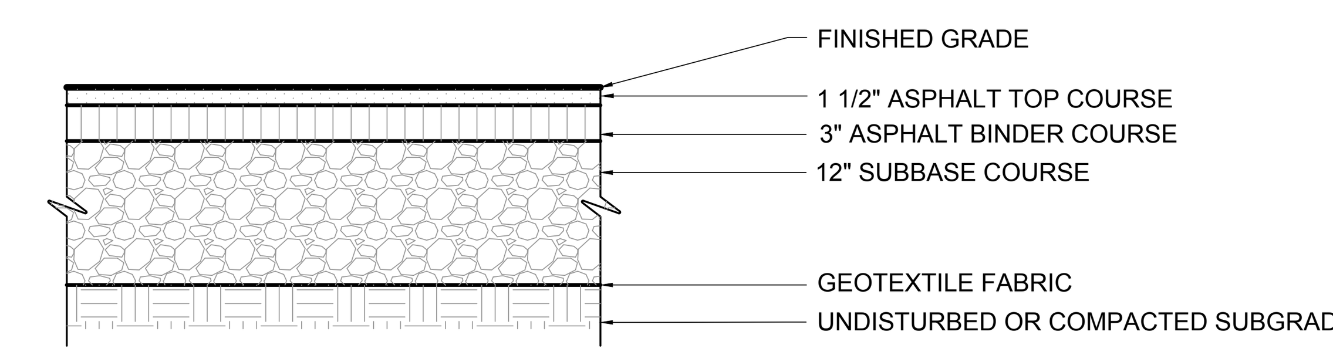
THE PROPOSED SCOPE OF WORK FOR THIS ADD ALTERNATE INCLUDES ADDING APPROXIMATELY 6800 SF OF ASPHALT, INCLUDING STRIPING. THE CONTRACTOR IS RESPONSIBLE FOR INSTALLING PAVEMENT PER SPECIFICATIONS AND DETAILS.

IT IS BELIEVED THAT THERE IS A CONCRETE PAD LOCATED IN THE VICINITY OF THE PROPOSED ISLAND AND ADD ALTERNATE PAVING AREA. THE PAD WAS THE FLOOR FOR THE FORMER HARDWARE STORE. IT IS ASSUMED THAT THE PAD IS DEEP ENOUGH THAT IT WILL NOT IMPACT THE CONSTRUCTION OF THE ADD ALTERNATE PAVING.



1 L-400 ASPHALT PAVEMENT MATCHING

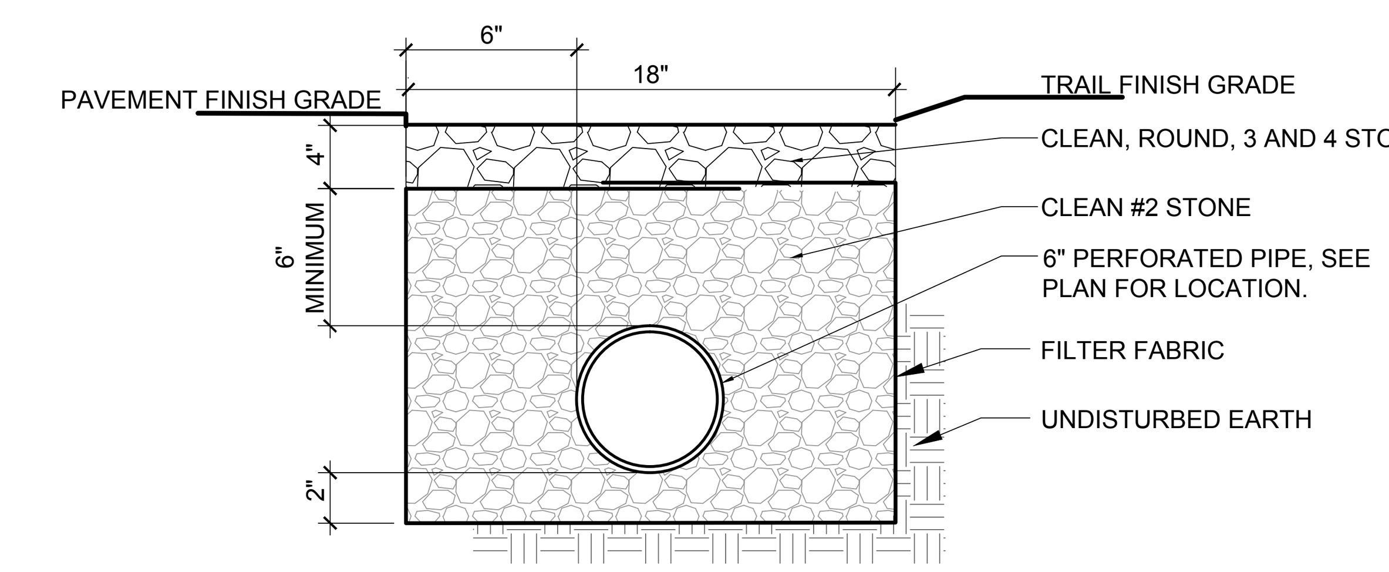
Scale: 3/4" = 1'-0"



2 L-400 MEDIUM DUTY ASPHALT PAVEMENT

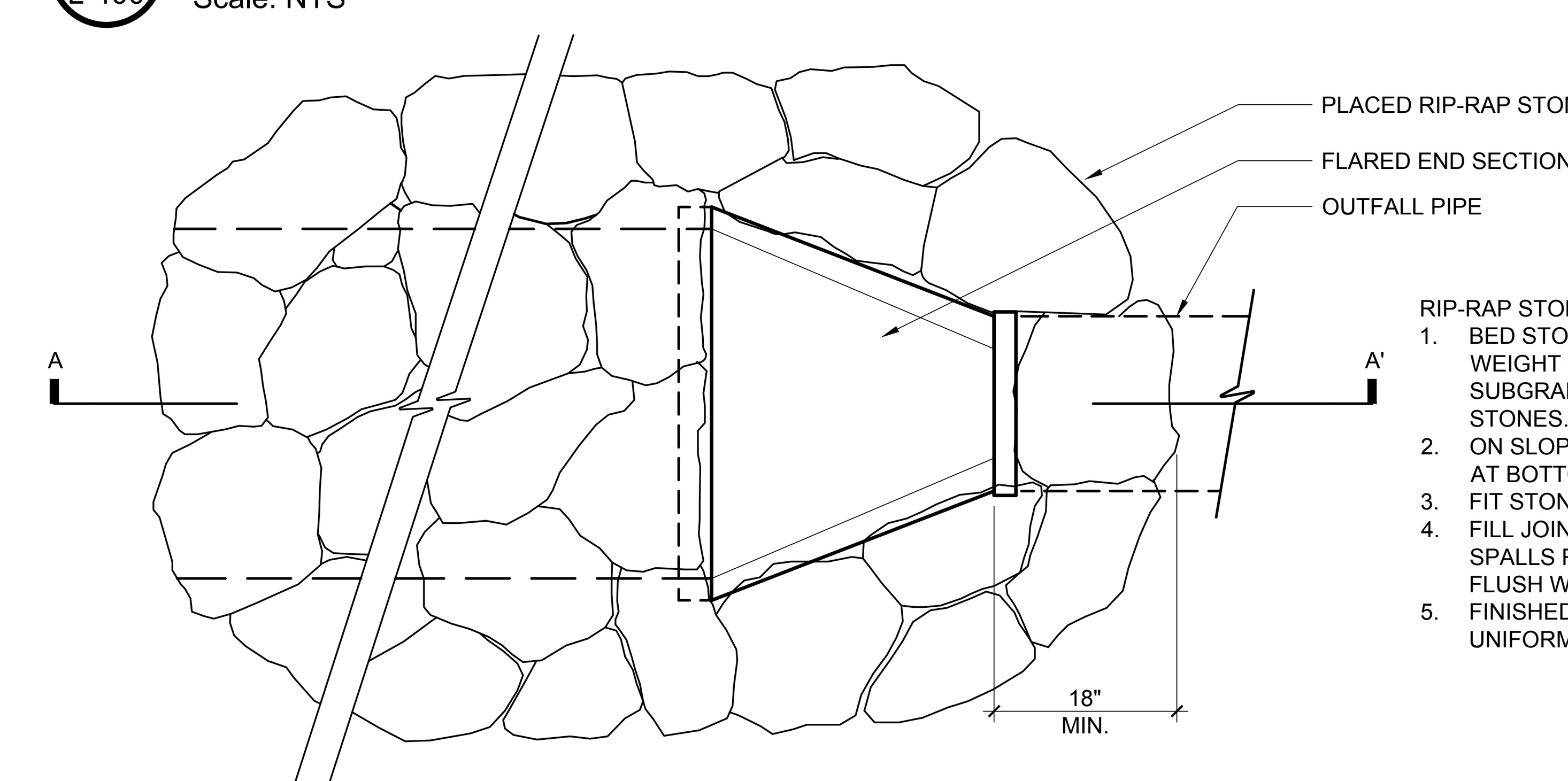
Scale: 3/4" = 1'-0"

PARKING LOT USE



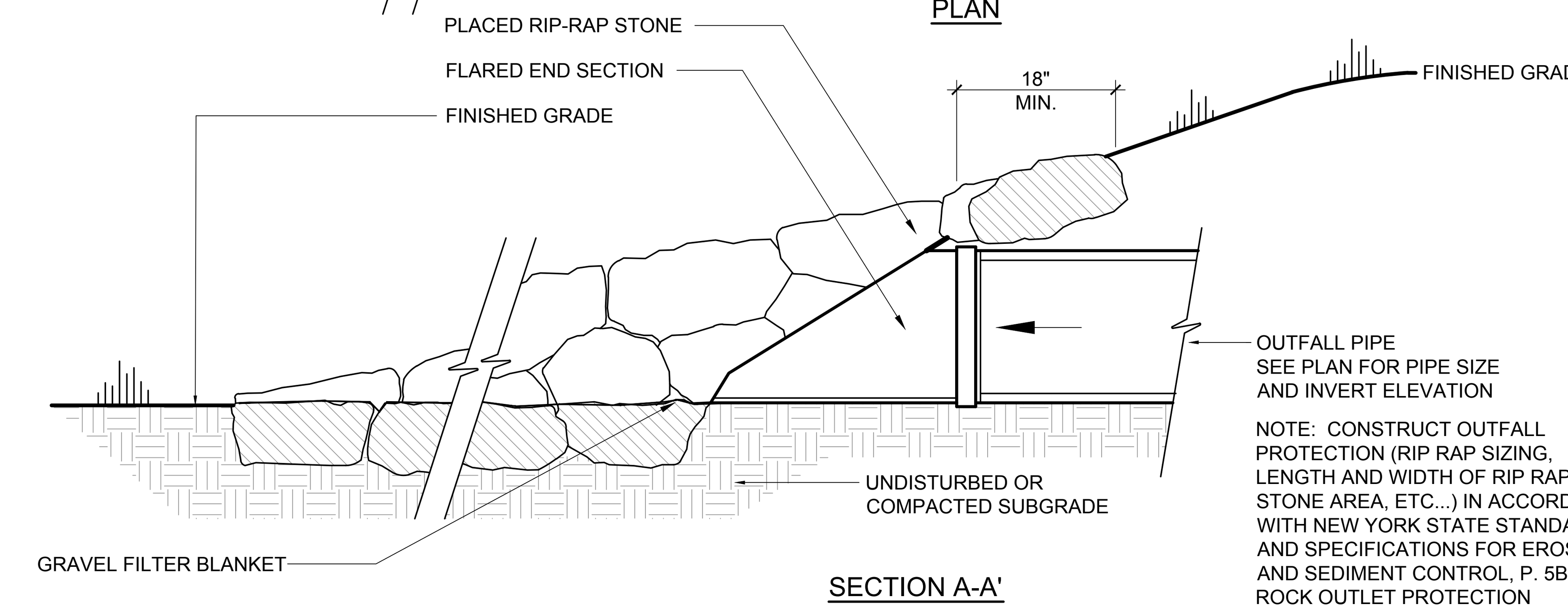
3 L-400 UNDERDRAIN

Scale: NTS



RIP-RAP STONE NOTES

1. BED STONE AGAINST SUBGRADE WITH WEIGHT OF STONE CARRIED BY SUBGRADE, NOT BY ADJACENT STONES.
2. ON SLOPES, PLACE LARGEST STONES AT BOTTOM OF SLOPE.
3. FIT STONES TIGHTLY TOGETHER.
4. FILL JOINS BETWEEN STONES WITH SPALLS RAMMED SECURELY IN PLACE, FLUSH WITH GRADE.
5. FINISHED SURFACE TO BE TIGHT, UNIFORM AND REASONABLY SMOOTH.



NOTE: CONSTRUCT OUTFALL PROTECTION (RIP RAP SIZING, LENGTH AND WIDTH OF RIP RAP STONE AREA, ETC...) IN ACCORDANCE WITH NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL, P. 5B-21 ROCK OUTLET PROTECTION

4 L-400 OUTFALL PIPE WITH FLARED END SECTION & RIP-RAP STONE (PLACED)

Scale: 3/4" = 1'-0"

MDVLA

MATTHEW D VREDENBURGH LANDSCAPE ARCHITECTURE

4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

north

DRAWING REVISIONS

NO.	DATE	REVISION	BY

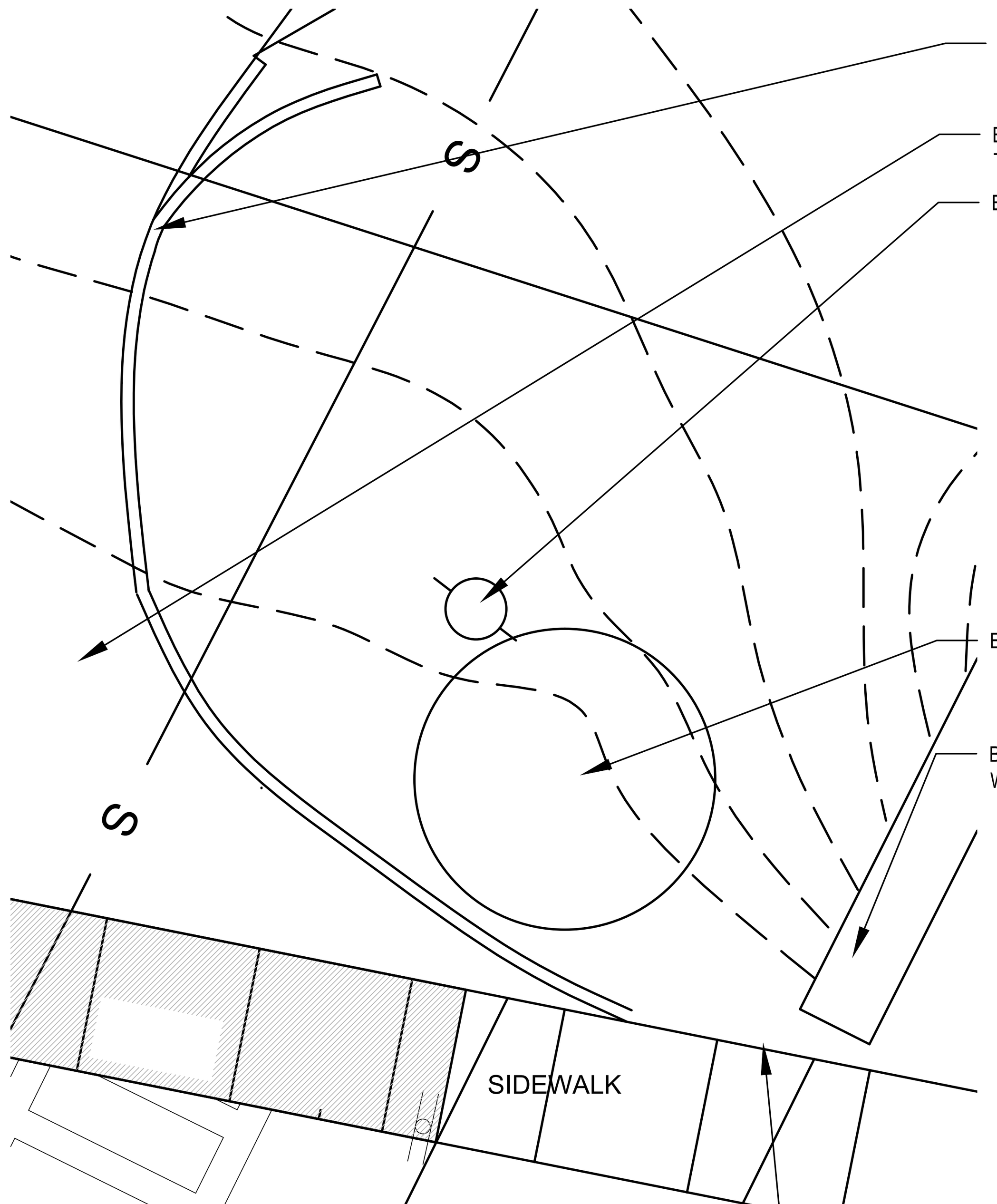
PROJECT TITLE: GORGE TRAIL GATEWAY

PROJECT LOCATION: ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK

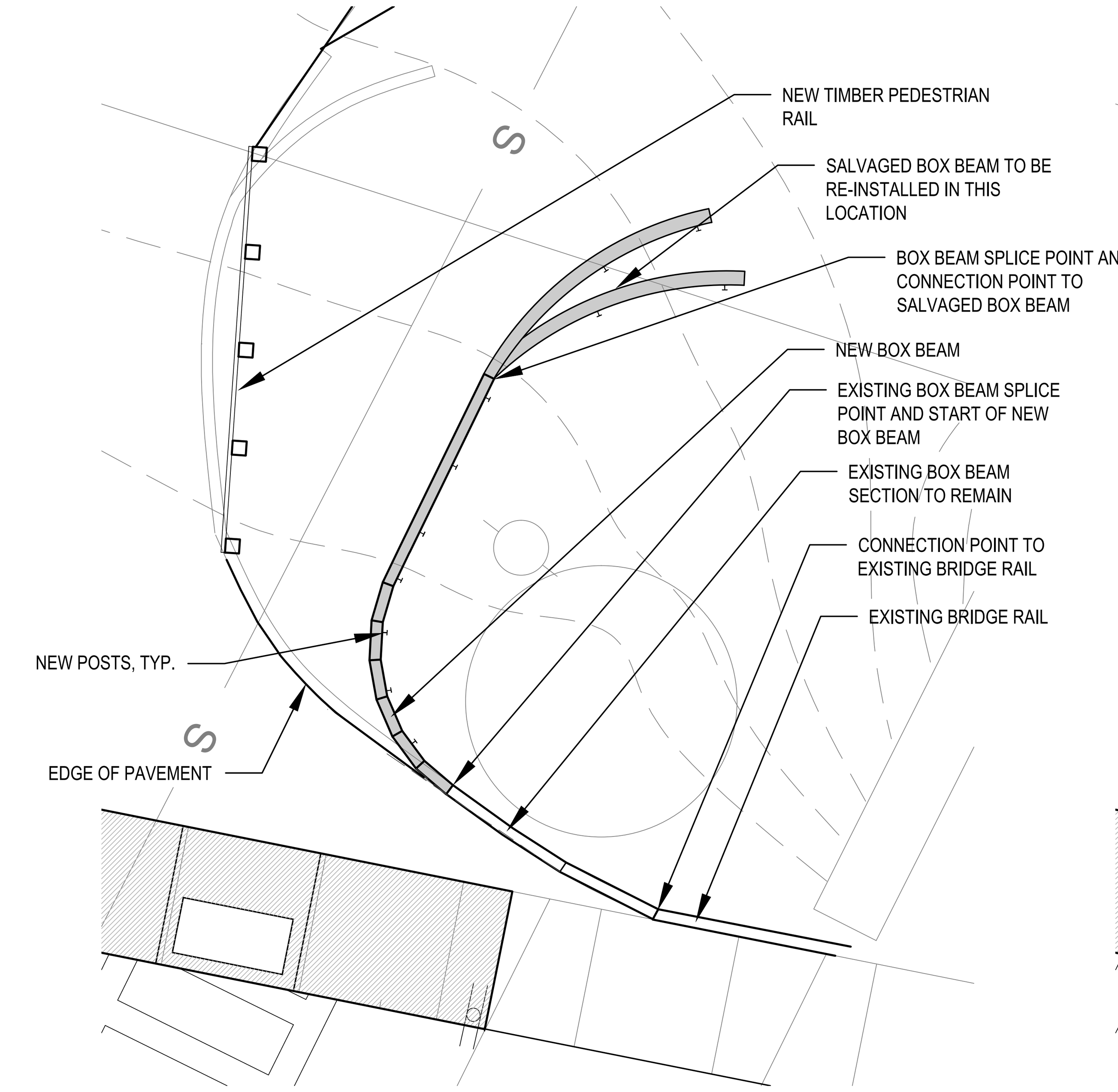
CLIENT: CAZENOVIA PRESERVATION FOUNDATION

DRAWING TITLE: ADD ALTERNATE 1 AND SITE DETAILS

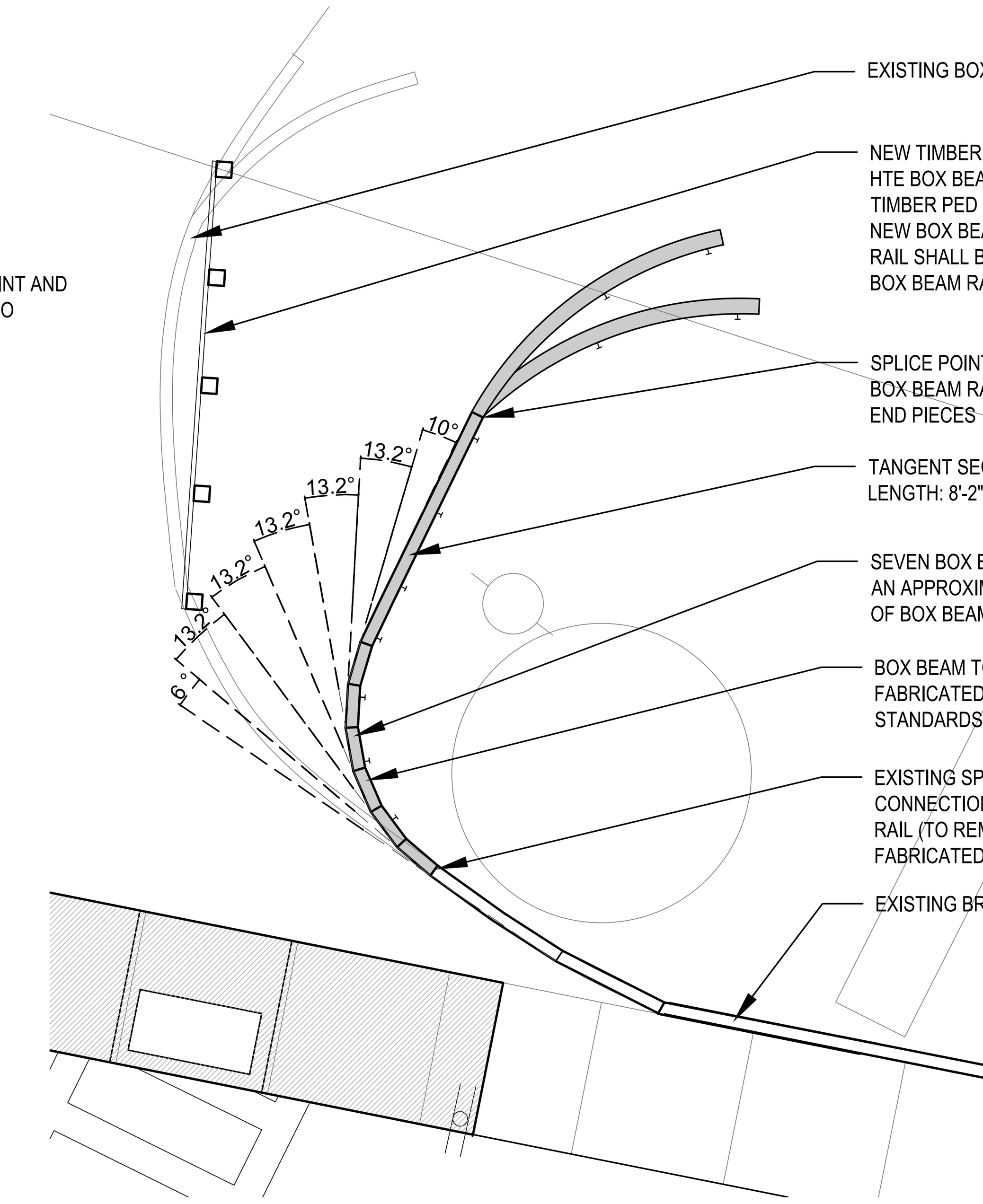
DATE: APRIL 25, 2024
SCALE: 1" = 20'
mdvla Job#: 22008
DRAWN BY: MDV
FILE NAME: 22008 CPF 5.DWG
DRAWING NUMBER: L-400



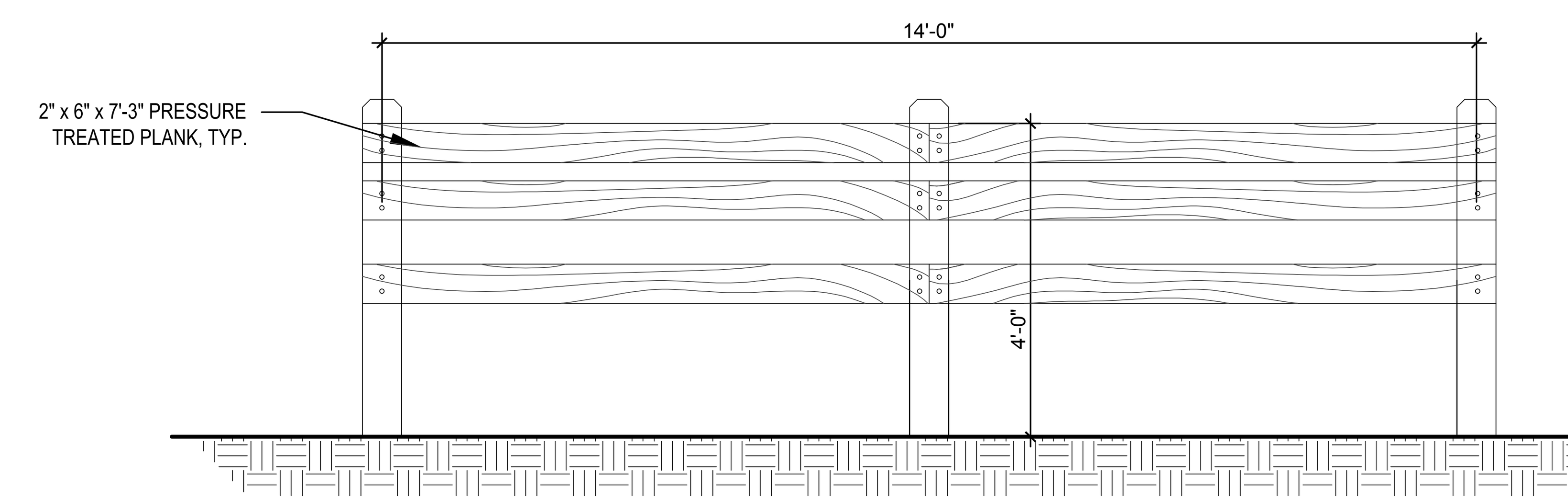
1 L-205 EXISTING CONDITIONS
SCALE: 1"=5'



2 L-205 GUIDE RAIL SITE PLAN
SCALE: 1"=5'

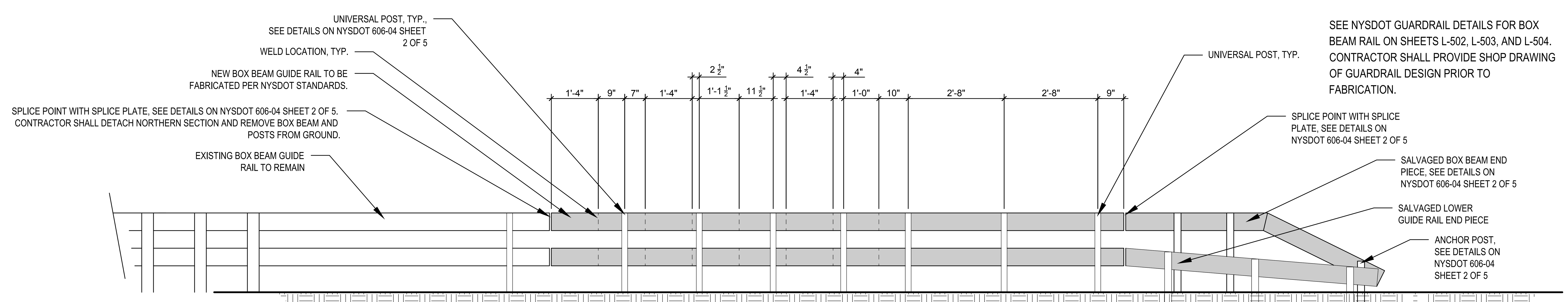


3 L-205 GUIDE RAIL LAYOUT
SCALE: 1"=5'



SEE WOOD FENCE DETAILS (THREE RAIL) ON SHEET L-502

4 L-205 TIMBER PEDESTRIAN RAIL ELEVATION
Scale: 1/2" = 1'-0"



SEE NYSDOT GUARDRAIL DETAILS FOR BOX BEAM RAIL ON SHEETS L-502, L-503, AND L-504. CONTRACTOR SHALL PROVIDE SHOP DRAWING OF GUARDRAIL DESIGN PRIOR TO FABRICATION.

5 L-205 NEW GUARD RAIL ELEVATION
Scale: 1/2" = 1'-0"

MDVLA
MATTHEW D VREDENBURGH LANDSCAPE ARCHITECTURE
4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

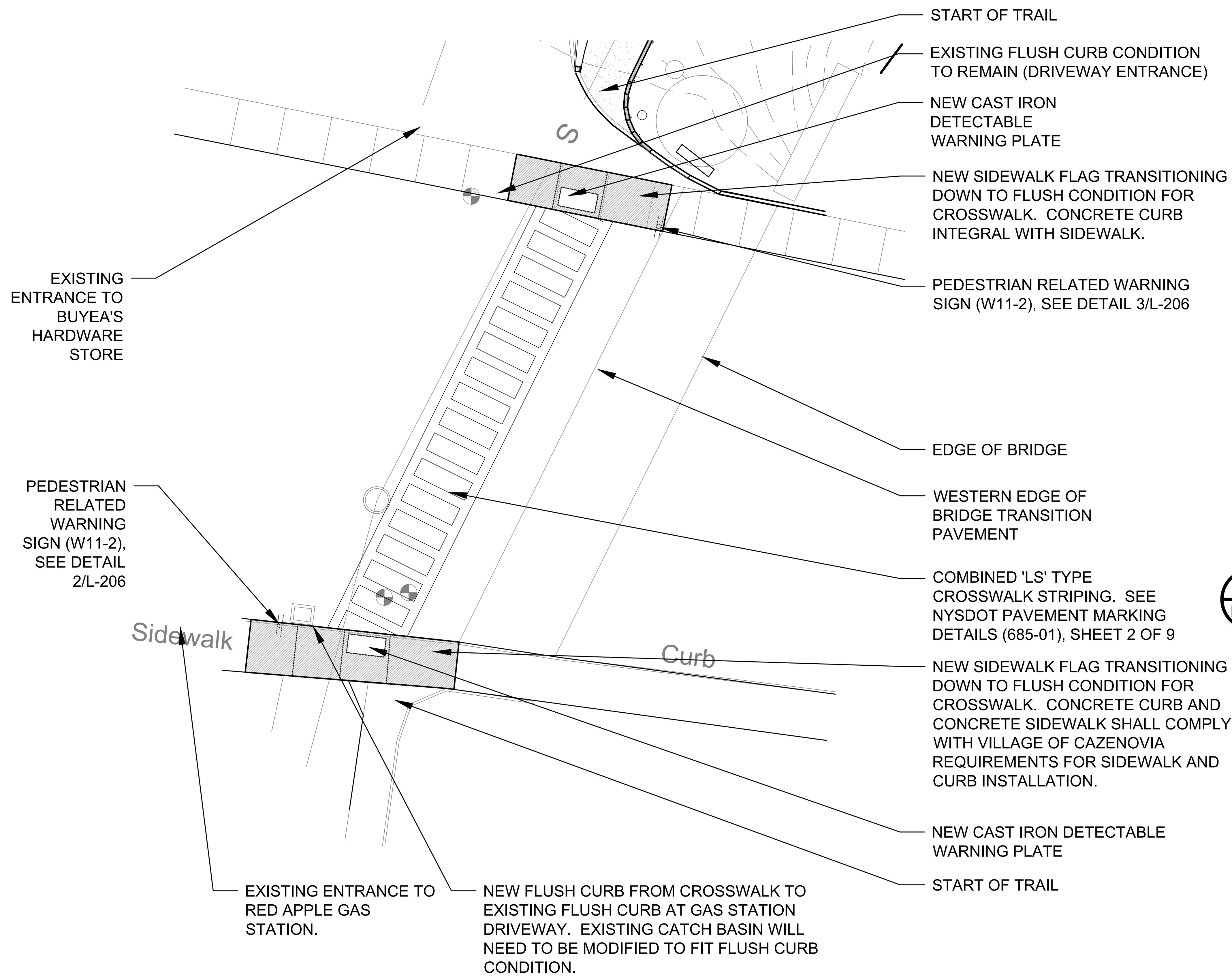
north

DRAWING REVISIONS

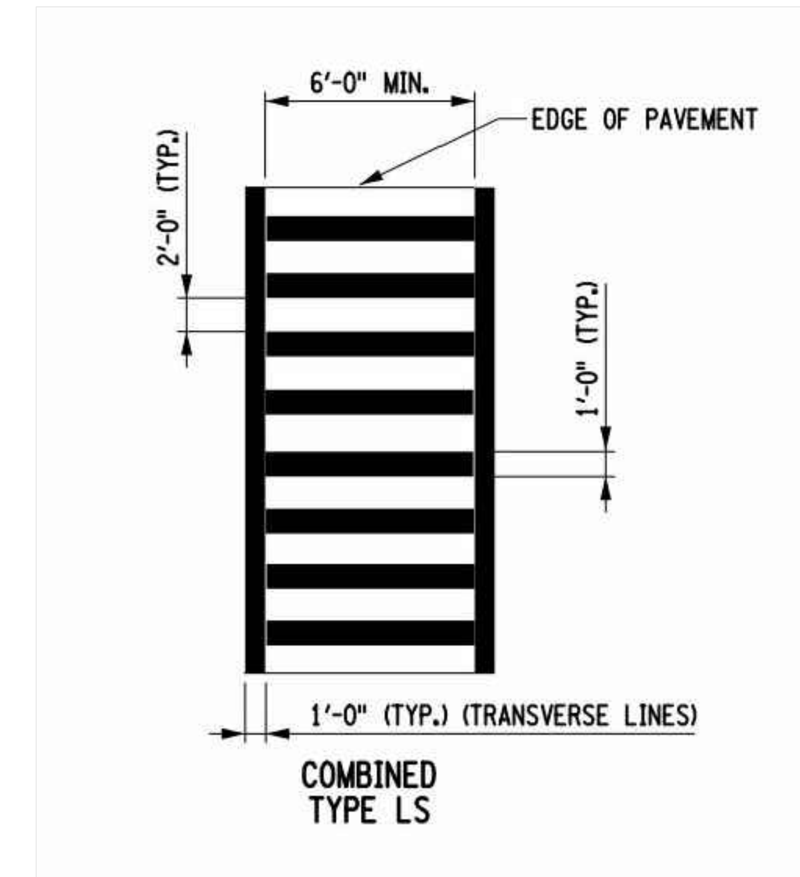
NO.	DATE	REVISION	BY

PROJECT TITLE: GORGE TRAIL GATEWAY
PROJECT LOCATION: ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK
CLIENT: CAZENOVIA PRESERVATION FOUNDATION
DRAWING TITLE: GUARDRAIL SITE PLAN AND ELEVATIONS

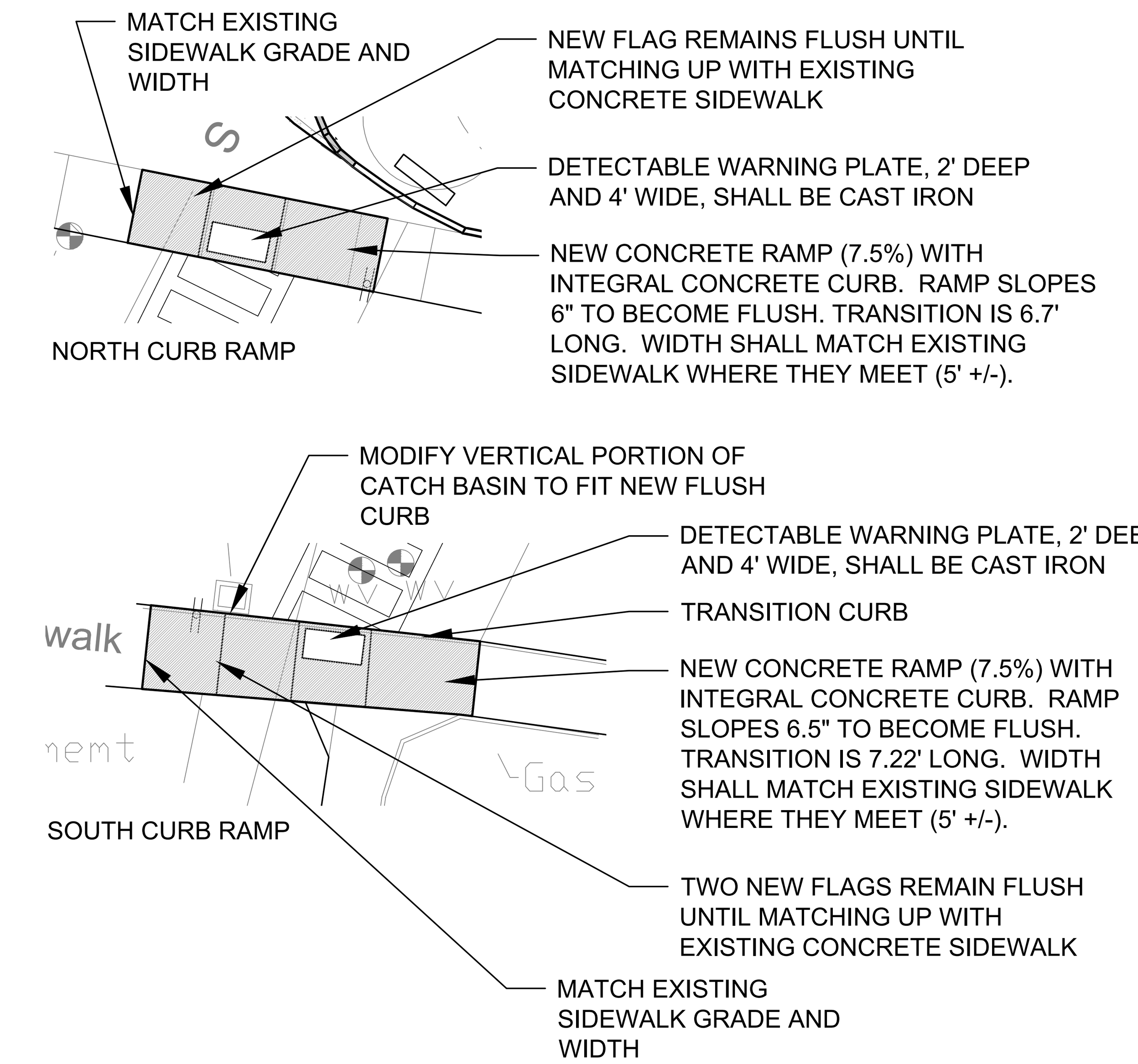
DATE: APRIL 15, 2024
SCALE: AS SHOWN
mdvla Job#: 22008
DRAWN BY: MDV
FILE NAME: 22008 CPF 1.DWG
DRAWING NUMBER: L-500

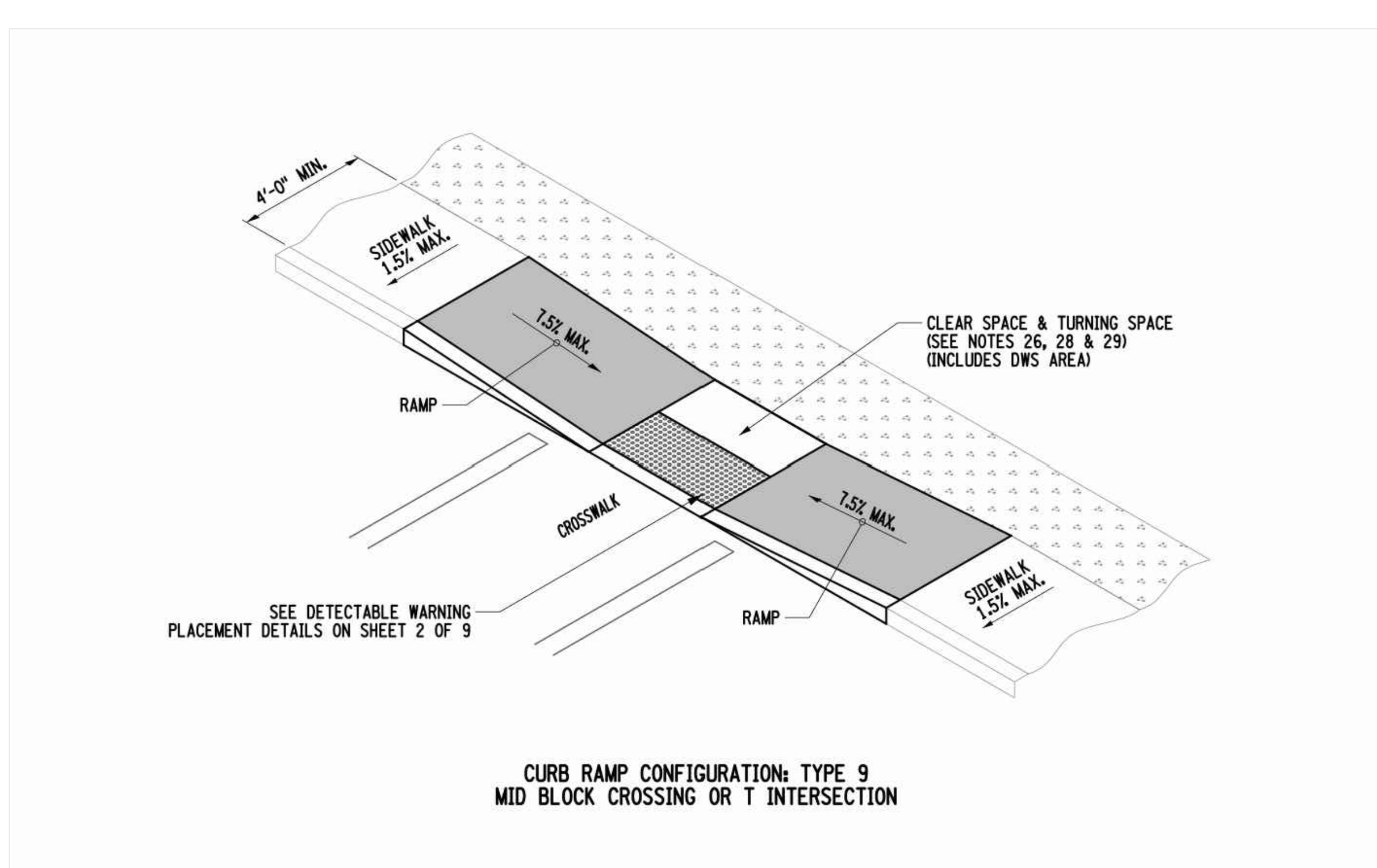


1 L-206 CROSSWALK SITE PLAN
Scale: 1" = 10'

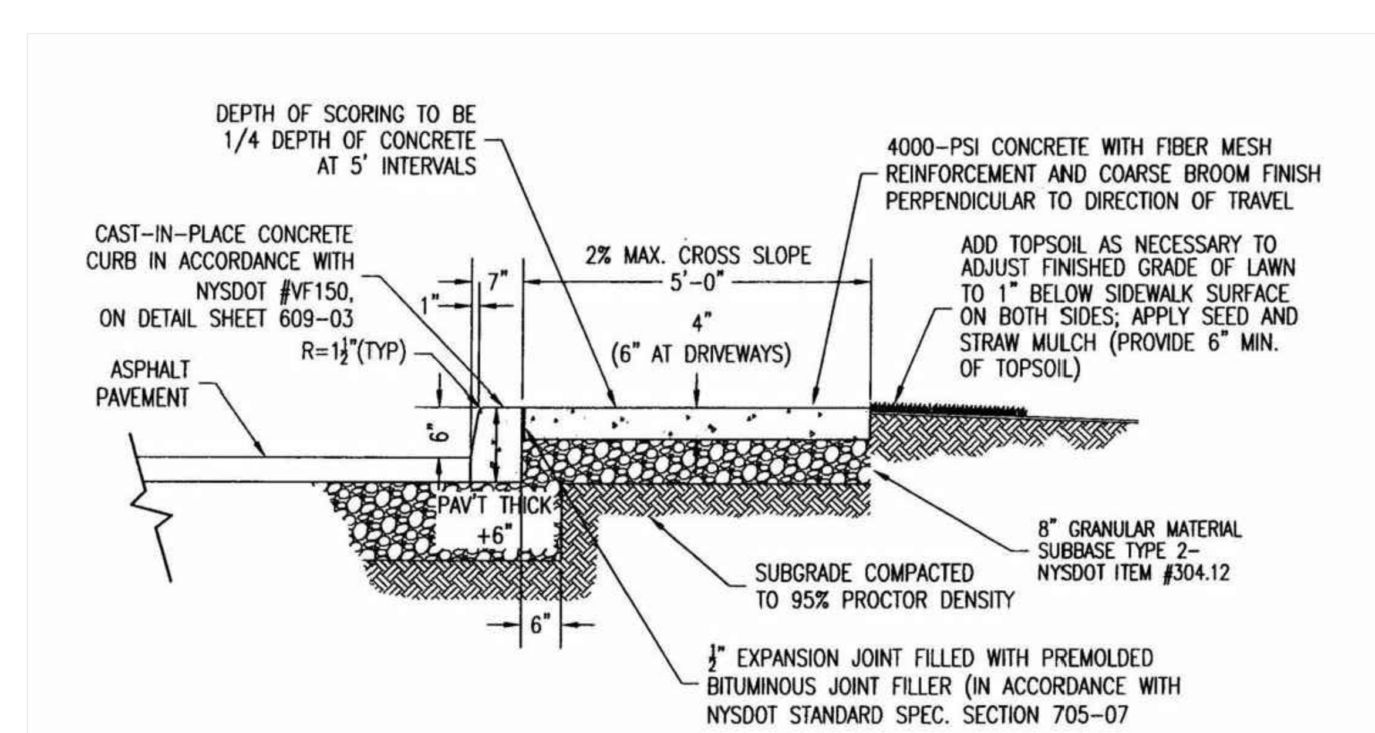


2 L-206 CROSSWALK STRIPING
Scale: NTS



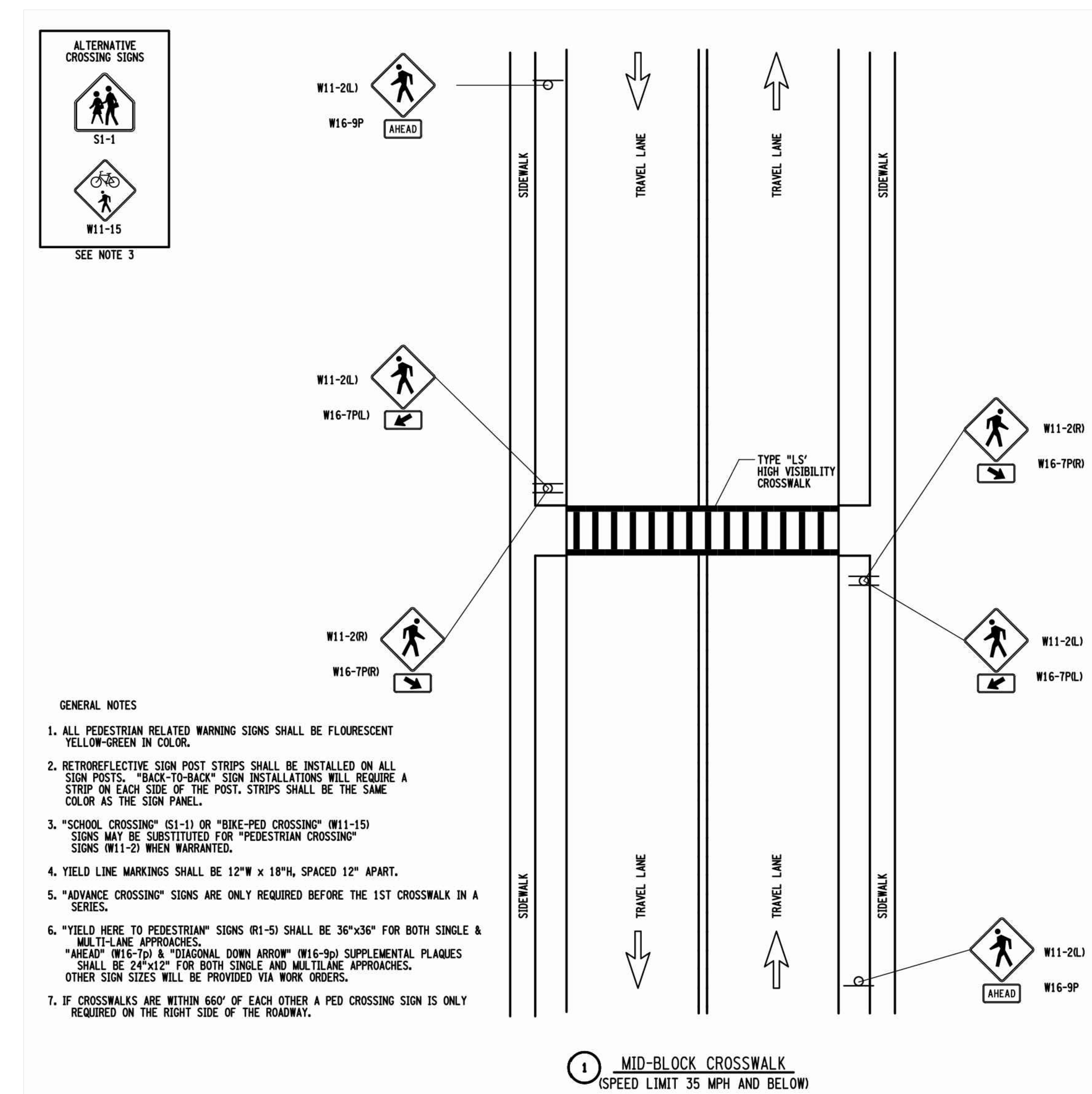


3 L-206 CURB RAMPS
Scale: 1" = 10'



NOTE: CURB JOINTS TO ALIGN WITH SIDEWALK JOINTS

4 L-206 VILLAGE OF CAZENOVIA CURB AND SIDEWALK
Scale: NTS



GENERAL NOTES

1. ALL PEDESTRIAN RELATED WARNING SIGNS SHALL BE FLOURESCENT YELLOW-GREEN IN COLOR.
2. RETROREFLECTIVE SIGN POST STRIPS SHALL BE INSTALLED ON ALL SIGN POSTS. "BACK-TO-BACK" SIGN INSTALLATIONS WILL REQUIRE A STRIP ON EACH SIDE OF THE POST. STRIPS SHALL BE THE SAME COLOR AS THE SIGN PANEL.
3. "SCHOOL CROSSING" (S1-1) OR "BIKE-PED CROSSING" (W11-15) SIGNS MAY BE SUBSTITUTED FOR "PEDESTRIAN CROSSING" SIGNS (W11-2) WHEN WARRANTED.
4. YIELD LINE MARKINGS SHALL BE 12"W x 18"H, SPACED 12" APART.
5. "ADVANCE CROSSING" SIGNS ARE ONLY REQUIRED BEFORE THE 1ST CROSSWALK IN A SERIES.
6. "YIELD HERE TO PEDESTRIAN" SIGNS (R1-5) SHALL BE 36"x36" FOR BOTH SINGLE & MULTI-LANE APPROACHES.
   "AHEAD" (W16-7p) & "DIAGONAL DOWN ARROW" (W16-9p) SUPPLEMENTAL PLAQUES SHALL BE 24"x12" FOR BOTH SINGLE AND MULTILANE APPROACHES.
   OTHER SIGN SIZES WILL BE PROVIDED VIA WORK ORDERS.
7. IF CROSSWALKS ARE WITHIN 660' OF EACH OTHER A PED CROSSING SIGN IS ONLY REQUIRED ON THE RIGHT SIDE OF THE ROADWAY.

NOTE: LOCATION OF AND NEED FOR ADVANCE CROSSWALK SIGNS ARE TO BE DETERMINED BY NYSDOT.

5 L-206 MID-BLOCK CROSSWALK SIGNAGE
Scale: NTS

MDVLA
MATTHEW D VREDENBURGH
LANDSCAPE ARCHITECTURE
4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

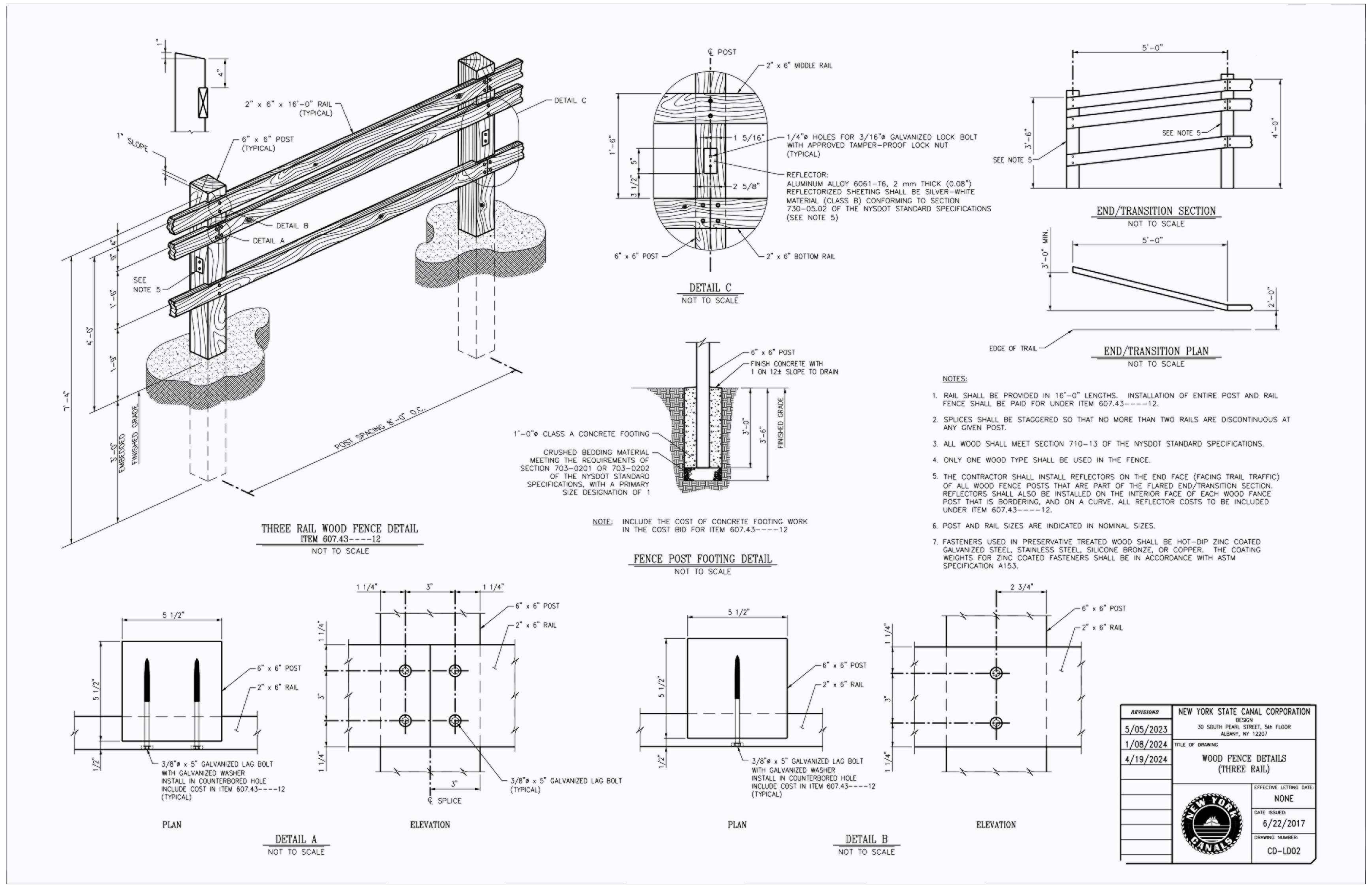
north

DRAWING REVISIONS

NO.	DATE	REVISION	BY

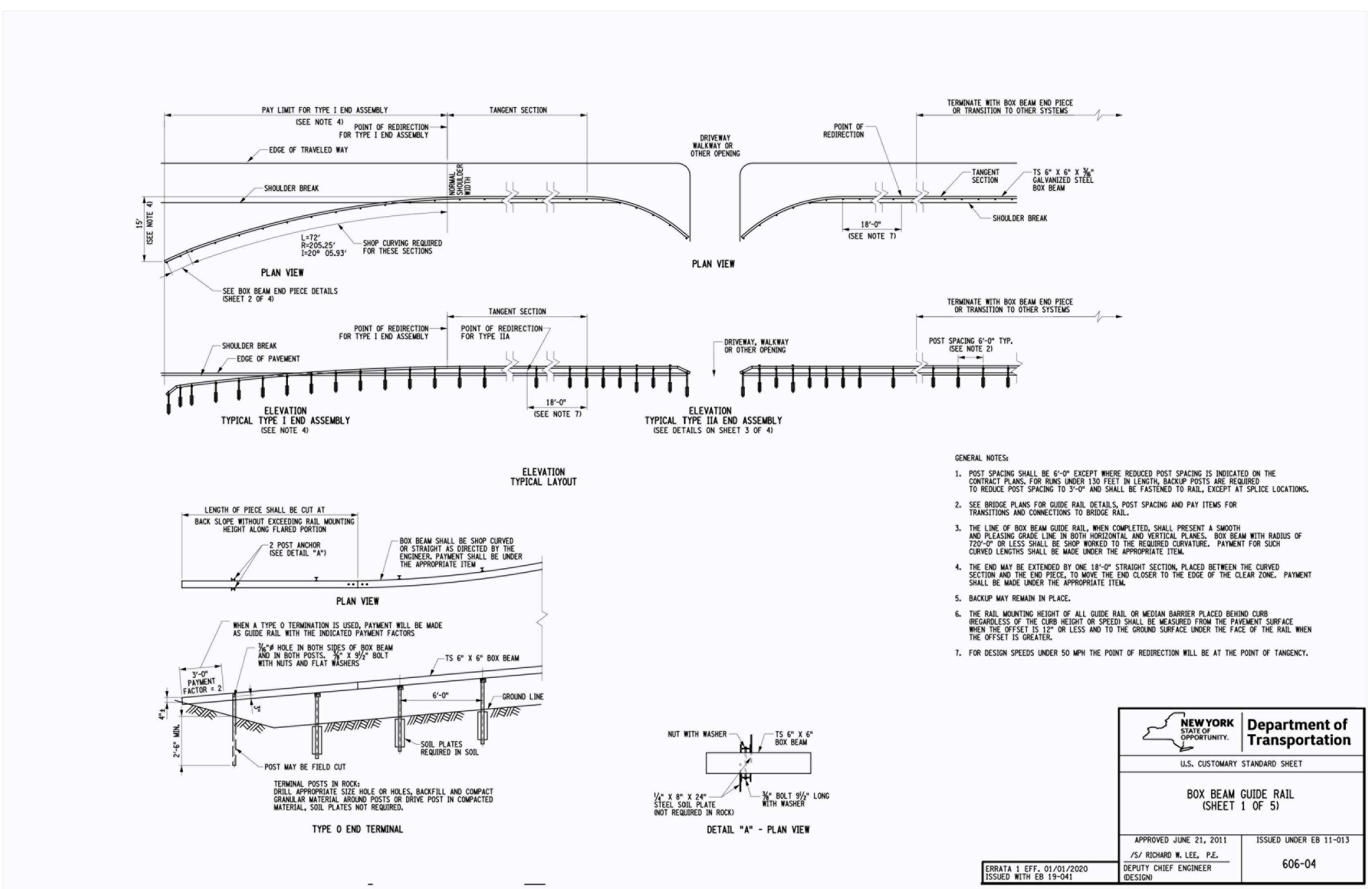
PROJECT TITLE: GORGE TRAIL GATEWAY
PROJECT LOCATION: ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK
CLIENT: CAZENOVIA PRESERVATION FOUNDATION
DRAWING TITLE: MID BLOCK CROSSWALK PLAN

DATE: APRIL 25, 2024
SCALE: AS SHOWN
mdvla Job#: 22008
DRAWN BY: MDV
FILE NAME: 22008 CPF 1.DWG
DRAWING NUMBER: L-501



NOTES:

1. RAIL SHALL BE PROVIDED IN 16'–0" LENGTHS. INSTALLATION OF ENTIRE POST AND RAIL FENCE SHALL BE PAID FOR UNDER ITEM 607.43----12.
2. SPLICES SHALL BE STAGGERED SO THAT NO MORE THAN TWO RAILS ARE DISCONTINUOUS AT ANY GIVEN POST.
3. ALL WOOD SHALL MEET SECTION 710–13 OF THE NYSDOT STANDARD SPECIFICATIONS.
4. ONLY ONE WOOD TYPE SHALL BE USED IN THE FENCE.
5. THE CONTRACTOR SHALL INSTALL REFLECTORS ON THE END FACE (FACING TRAIL TRAFFIC) OF ALL WOOD FENCE POSTS THAT ARE PART OF THE FLARED END/TRANSITION SECTION. REFLECTORS SHALL ALSO BE INSTALLED ON THE INTERIOR FACE OF EACH WOOD FANCE POST THAT IS BORDERING, AND ON A CURVE. ALL REFLECTOR COSTS TO BE INCLUDED UNDER ITEM 607.43----12.
6. POST AND RAIL SIZES ARE INDICATED IN NOMINAL SIZES.
7. FASTENERS USED IN PRESERVATIVE TREATED WOOD SHALL BE HOT–DIP ZINC COATED GALVANIZED STEEL, STAINLESS STEEL, SILICONE BRONZE, OR COPPER. THE COATING WEIGHTS FOR ZINC COATED FASTENERS SHALL BE IN ACCORDANCE WITH ASTM SPECIFICATION A153.



GENERAL NOTES:

1. POST SPACING SHALL BE 6'-0" EXCEPT WHERE REDUCED POST SPACING IS INDICATED ON THE CONTRACT PLANS. FOR RUNS UNDER 130 FEET IN LENGTH, BACKUP POSTS ARE REQUIRED TO REDUCE POST SPACING TO 3'-0" AND SHALL BE FASTENED TO RAIL, EXCEPT AT SPLICE LOCATIONS.
2. SEE BRIDGE PLANS FOR GUIDE RAIL DETAILS, POST SPACING AND PAY ITEMS FOR TRANSITIONS AND CONNECTIONS TO BRIDGE RAIL.
3. THE LINE OF BOX BEAM GUIDE RAIL, WHEN COMPLETED, SHALL PRESENT A SMOOTH AND PLEASING GRADE LINE IN BOTH HORIZONTAL AND VERTICAL PLANES. BOX BEAM WITH RADIUS OF 720'-0" OR LESS SHALL BE SHOP WORKED TO THE REQUIRED CURVATURE. PAYMENT FOR SUCH CURVED LENGTHS SHALL BE MADE UNDER THE APPROPRIATE ITEM.
4. THE END MAY BE EXTENDED BY ONE 18'-0" STRAIGHT SECTION, PLACED BETWEEN THE CURVED SECTION AND THE END PIECE, TO MOVE THE END CLOSER TO THE EDGE OF THE CLEAR ZONE. PAYMENT SHALL BE MADE UNDER THE APPROPRIATE ITEM.
5. BACKUP MAY REMAIN IN PLACE.
6. THE RAIL MOUNTING HEIGHT OF ALL GUIDE RAIL OR MEDIAN BARRIER PLACED BEHIND CURB (REGARDLESS OF THE CURB HEIGHT OR SPEED) SHALL BE MEASURED FROM THE PAVEMENT SURFACE WHEN THE OFFSET IS 12" OR LESS AND TO THE GROUND SURFACE UNDER THE FACE OF THE RAIL WHEN THE OFFSET IS GREATER.
7. FOR DESIGN SPEEDS UNDER 50 MPH THE POINT OF REDIRECTION WILL BE AT THE POINT OF TANGENCY.

MDVLA
MATTHEW D VREDENBURGH
LANDSCAPE ARCHITECTURE
4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

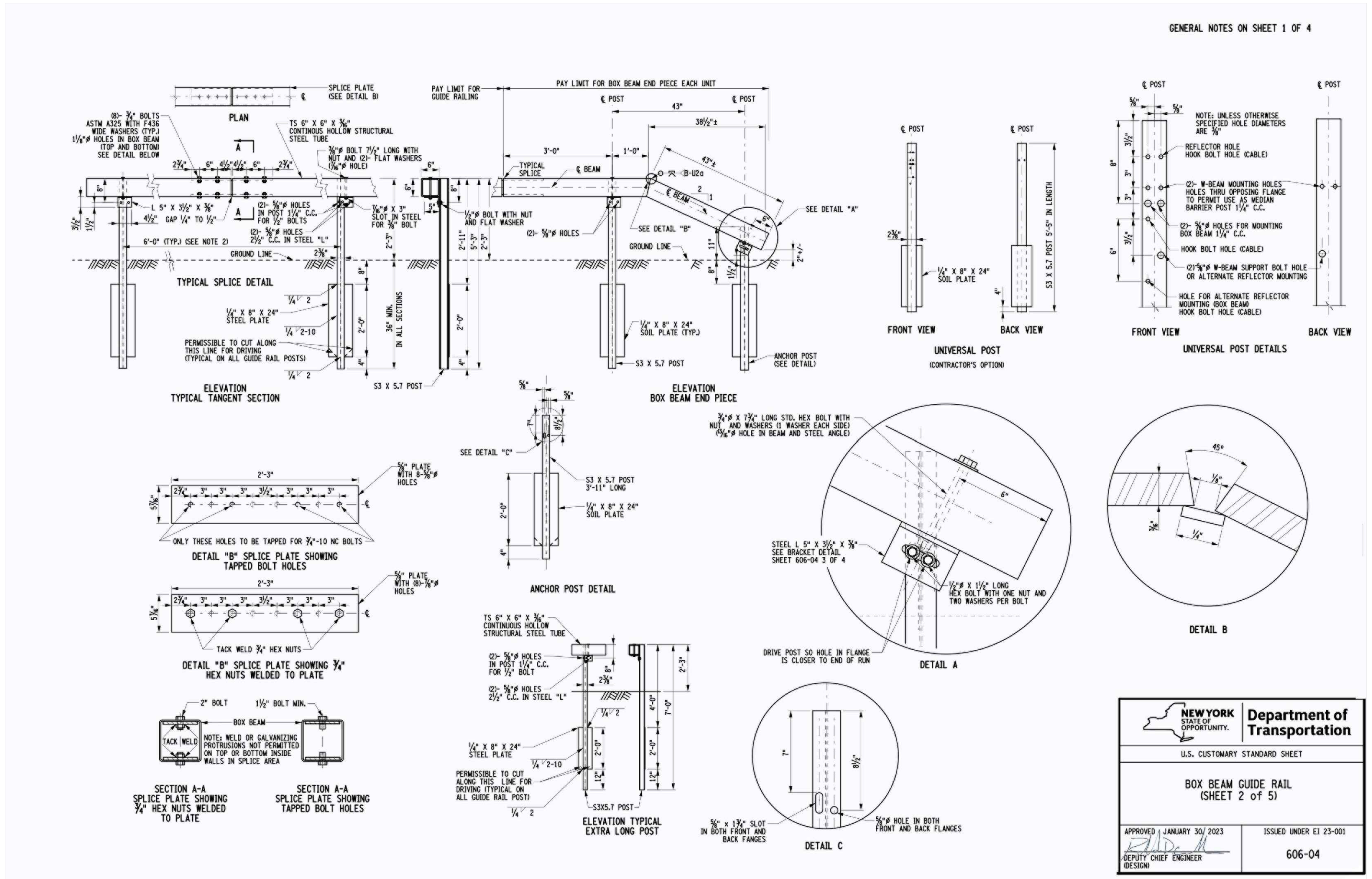
north

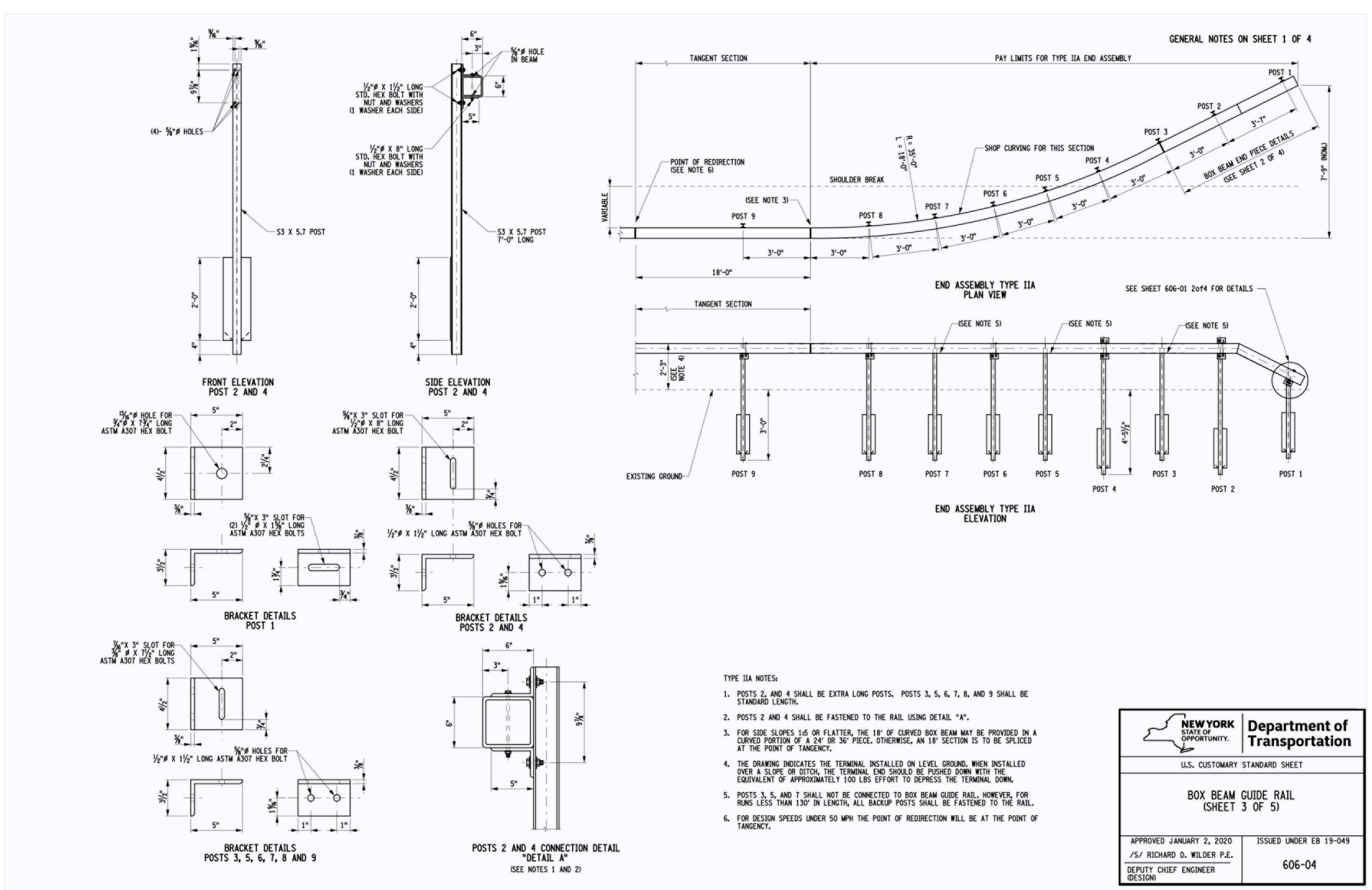
DRAWING REVISIONS

NO.	DATE	REVISION	BY

PROJECT TITLE: GORGE TRAIL GATEWAY
PROJECT LOCATION: ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK
CLIENT: CAZENOVIA PRESERVATION FOUNDATION
DRAWING TITLE: NYS DOT DETAILS

DATE: APRIL 15, 2024
SCALE: AS SHOWN
mdvla Job#: 22008
DRAWN BY: MDV
FILE NAME: 22008 CPF 1.DWG
DRAWING NUMBER: L-502


GENERAL NOTES ON SHEET 1 OF 4
PLAN
TYPICAL SPLICE DETAIL
ELEVATION
TYPICAL TANGENT SECTION
ELEVATION
BOX BEAM END PIECE
FRONT VIEW
BACK VIEW
UNIVERSAL POST
(CONTRACTOR'S OPTION)
FRONT VIEW
BACK VIEW
UNIVERSAL POST DETAILS
DETAIL "B" SPLICE PLATE SHOWING TAPPED BOLT HOLES
DETAIL "B" SPLICE PLATE SHOWING ¾" HEX NUTS WELDED TO PLATE
SECTION A-A SPLICE PLATE SHOWING ¾" HEX NUTS WELDED TO PLATE
SECTION A-A SPLICE PLATE SHOWING TAPPED BOLT HOLES
ANCHOR POST DETAIL
ELEVATION TYPICAL EXTRA LONG POST
DETAIL A
DETAIL B
DETAIL C
NEW YORK STATE OF OPPORTUNITY. Department of Transportation
U.S. CUSTOMARY STANDARD SHEET
BOX BEAM GUIDE RAIL
(SHEET 2 of 5)
APPROVED JANUARY 30, 2023
DEPUTY CHIEF ENGINEER (DESIGN)
ISSUED UNDER EI 23-001
606-04


GENERAL NOTES ON SHEET 1 OF 4
FRONT ELEVATION
POST 2 AND 4
SIDE ELEVATION
POST 2 AND 4
END ASSEMBLY TYPE IIA
PLAN VIEW
END ASSEMBLY TYPE IIA
ELEVATION
BRACKET DETAILS
POST 1
BRACKET DETAILS
POSTS 2 AND 4
BRACKET DETAILS
POSTS 3, 5, 6, 7, 8 AND 9
POSTS 2 AND 4 CONNECTION DETAIL
"DETAIL A"
(SEE NOTES 1 AND 2)
TYPE IIA NOTES:
1. POSTS 2, AND 4 SHALL BE EXTRA LONG POSTS. POSTS 3, 5, 6, 7, 8, AND 9 SHALL BE STANDARD LENGTH.
2. POSTS 2 AND 4 SHALL BE FASTENED TO THE RAIL USING DETAIL "A".
3. FOR SIDE SLOPES 1:5 OR FLATTER, THE 18' OF CURVED BOX BEAM MAY BE PROVIDED IN A CURVED PORTION OF A 24' OR 36' PIECE. OTHERWISE, AN 18' SECTION IS TO BE SPLICED AT THE POINT OF TANGENCY.
4. THE DRAWING INDICATES THE TERMINAL INSTALLED ON LEVEL GROUND. WHEN INSTALLED OVER A SLOPE OR DITCH, THE TERMINAL END SHOULD BE PUSHED DOWN WITH THE EQUIVALENT OF APPROXIMATELY 100 LBS EFFORT TO DEPRESS THE TERMINAL DOWN.
5. POSTS 3, 5, AND 7 SHALL NOT BE CONNECTED TO BOX BEAM GUIDE RAIL. HOWEVER, FOR RUNS LESS THAN 130' IN LENGTH, ALL BACKUP POSTS SHALL BE FASTENED TO THE RAIL.
6. FOR DESIGN SPEEDS UNDER 50 MPH THE POINT OF REDIRECTION WILL BE AT THE POINT OF TANGENCY.
NEW YORK STATE OF OPPORTUNITY. Department of Transportation
U.S. CUSTOMARY STANDARD SHEET
BOX BEAM GUIDE RAIL
(SHEET 3 OF 5)
APPROVED JANUARY 2, 2020
/S/ RICHARD D. WILDER P.E.
DEPUTY CHIEF ENGINEER (DESIGN)
ISSUED UNDER EB 19-049
606-04

MDVLA

MATTHEW D VREDENBURGH
LANDSCAPE ARCHITECTURE

4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

north

DRAWING REVISIONS

NO.	DATE	REVISION	BY
#			
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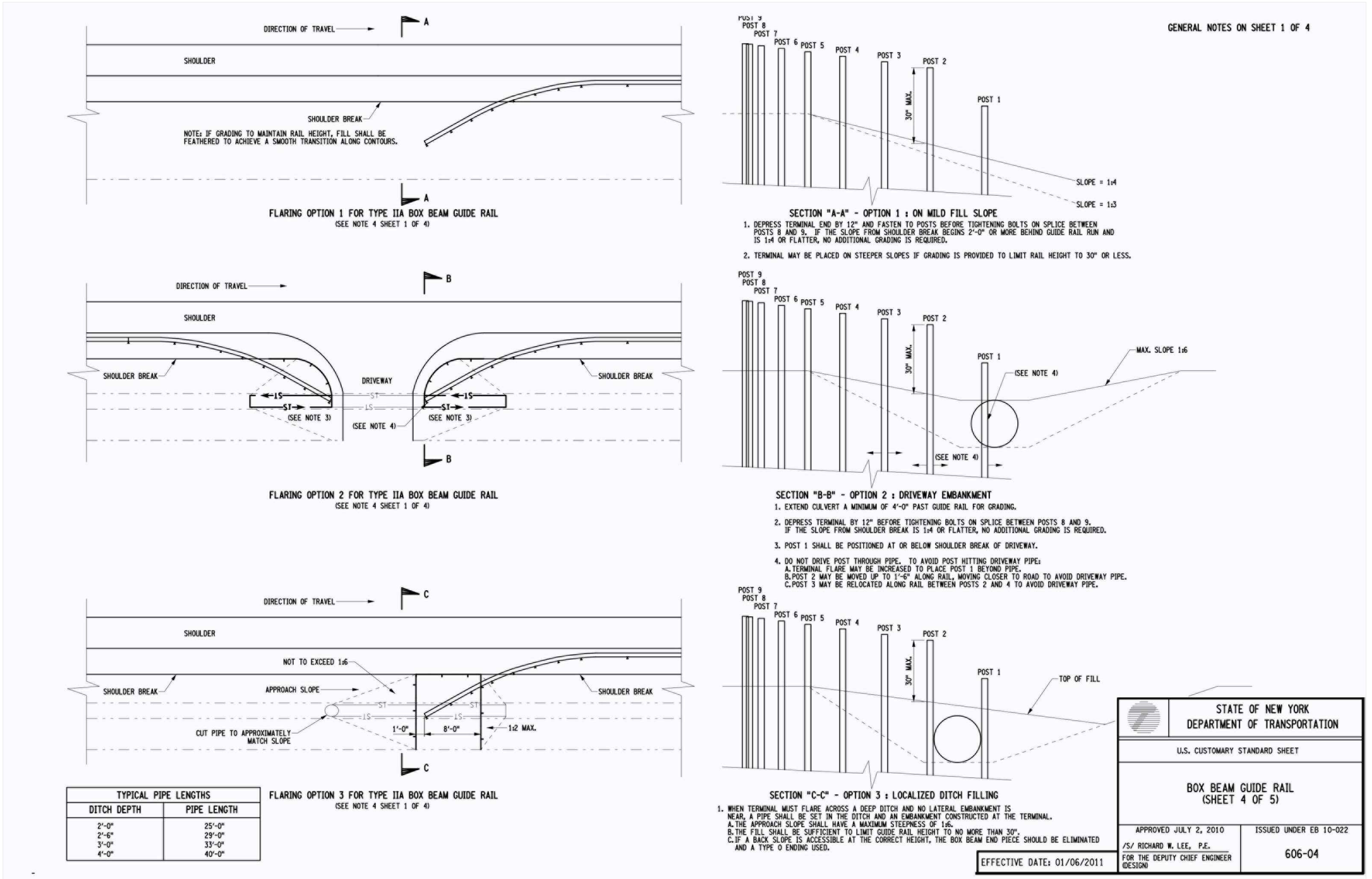
PROJECT TITLE: **GORGE TRAIL GATEWAY**

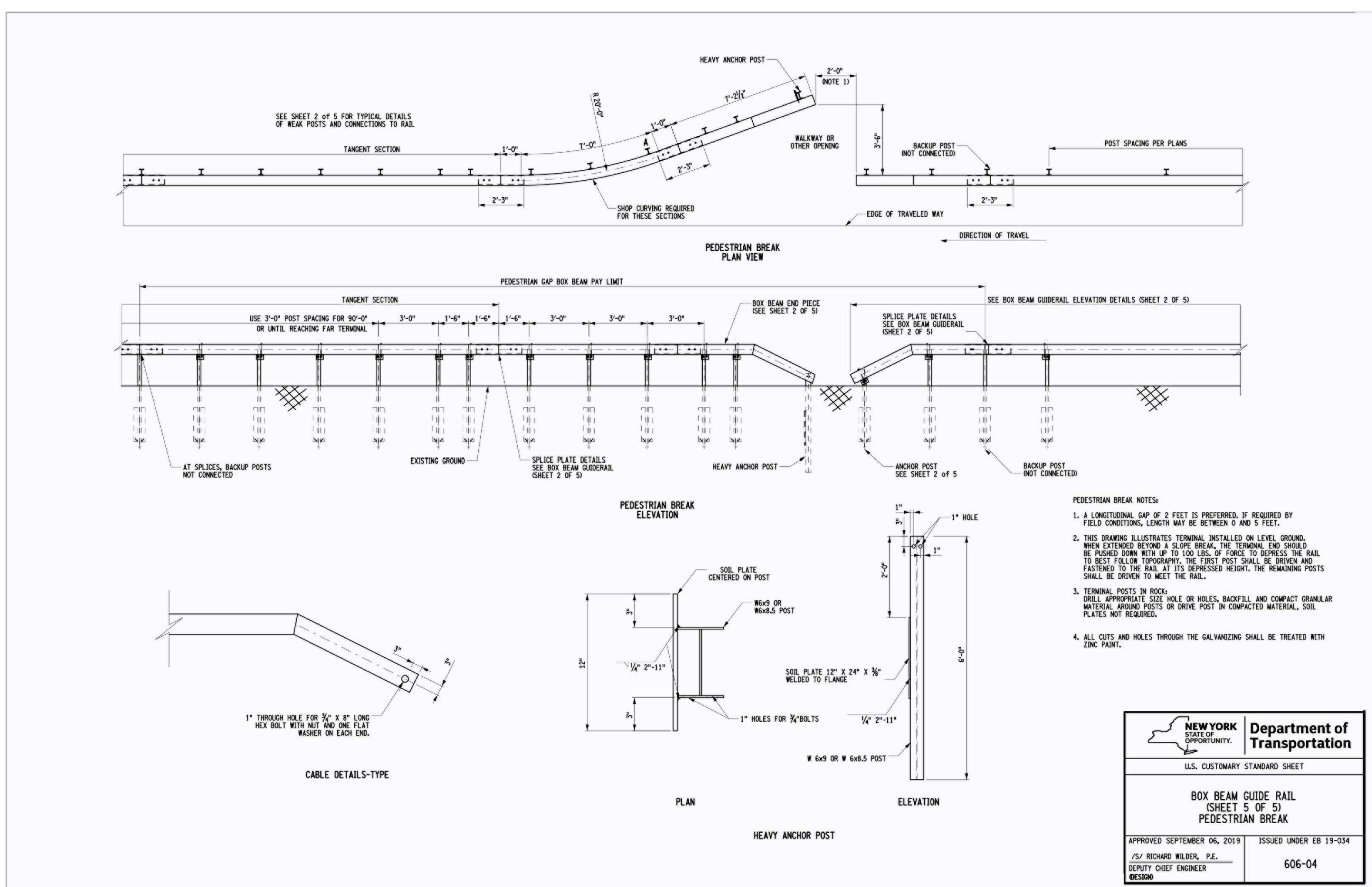
PROJECT LOCATION: ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK

CLIENT: CAZENOVIA PRESERVATION FOUNDATION

DRAWING TITLE: NYS DOT DETAILS

DATE: APRIL 15, 2024
SCALE: AS SHOWN
mdvla Job#: 22008
DRAWN BY: MDV
FILE NAME: 22008 CPF 1.DWG
DRAWING NUMBER:
L-503


GENERAL NOTES ON SHEET 1 OF 4
DIRECTION OF TRAVEL
SHOULDER
SHOULDER BREAK
NOTE: IF GRADING TO MAINTAIN RAIL HEIGHT, FILL SHALL BE FEATHERED TO ACHIEVE A SMOOTH TRANSITION ALONG CONTOURS.
FLARING OPTION 1 FOR TYPE IIA BOX BEAM GUIDE RAIL
(SEE NOTE 4 SHEET 1 OF 4)
DRIVEWAY
(SEE NOTE 3)
(SEE NOTE 4)
FLARING OPTION 2 FOR TYPE IIA BOX BEAM GUIDE RAIL
(SEE NOTE 4 SHEET 1 OF 4)
NOT TO EXCEED 1:6
APPROACH SLOPE
CUT PIPE TO APPROXIMATELY MATCH SLOPE
1:2 MAX.
FLARING OPTION 3 FOR TYPE IIA BOX BEAM GUIDE RAIL
(SEE NOTE 4 SHEET 1 OF 4)
TYPICAL PIPE LENGTHS
DITCH DEPTH | PIPE LENGTH
2'-0" | 25'-0"
2'-6" | 29'-0"
3'-0" | 33'-0"
4'-0" | 40'-0"
POST 9
POST 8
POST 7
POST 6
POST 5
POST 4
POST 3
POST 2
POST 1
30" MAX.
SLOPE = 1:4
SLOPE = 1:3
SECTION "A-A" - OPTION 1 : ON MILD FILL SLOPE
1. DEPRESS TERMINAL END BY 12" AND FASTEN TO POSTS BEFORE TIGHTENING BOLTS ON SPLICE BETWEEN POSTS 8 AND 9. IF THE SLOPE FROM SHOULDER BREAK BEGINS 2'-0" OR MORE BEHIND GUIDE RAIL RUN AND IS 1:4 OR FLATTER, NO ADDITIONAL GRADING IS REQUIRED.
2. TERMINAL MAY BE PLACED ON STEEPER SLOPES IF GRADING IS PROVIDED TO LIMIT RAIL HEIGHT TO 30" OR LESS.
MAX. SLOPE 1:6
SECTION "B-B" - OPTION 2 : DRIVEWAY EMBANKMENT
1. EXTEND CULVERT A MINIMUM OF 4'-0" PAST GUIDE RAIL FOR GRADING.
2. DEPRESS TERMINAL BY 12" BEFORE TIGHTENING BOLTS ON SPLICE BETWEEN POSTS 8 AND 9. IF THE SLOPE FROM SHOULDER BREAK IS 1:4 OR FLATTER, NO ADDITIONAL GRADING IS REQUIRED.
3. POST 1 SHALL BE POSITIONED AT OR BELOW SHOULDER BREAK OF DRIVEWAY.
4. DO NOT DRIVE POST THROUGH PIPE. TO AVOID POST HITTING DRIVEWAY PIPE:
A. TERMINAL FLARE MAY BE INCREASED TO PLACE POST 1 BEYOND PIPE.
B. POST 2 MAY BE MOVED UP TO 1'-6" ALONG RAIL, MOVING CLOSER TO ROAD TO AVOID DRIVEWAY PIPE.
C. POST 3 MAY BE RELOCATED ALONG RAIL BETWEEN POSTS 2 AND 4 TO AVOID DRIVEWAY PIPE.
TOP OF FILL
SECTION "C-C" - OPTION 3 : LOCALIZED DITCH FILLING
1. WHEN TERMINAL MUST FLARE ACROSS A DEEP DITCH AND NO LATERAL EMBANKMENT IS NEAR, A PIPE SHALL BE SET IN THE DITCH AND AN EMBANKMENT CONSTRUCTED AT THE TERMINAL.
A. THE APPROACH SLOPE SHALL HAVE A MAXIMUM STEEPNESS OF 1:6.
B. THE FILL SHALL BE SUFFICIENT TO LIMIT GUIDE RAIL HEIGHT TO NO MORE THAN 30".
C. IF A BACK SLOPE IS ACCESSIBLE AT THE CORRECT HEIGHT, THE BOX BEAM END PIECE SHOULD BE ELIMINATED AND A TYPE O ENDING USED.
STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION
U.S. CUSTOMARY STANDARD SHEET
BOX BEAM GUIDE RAIL
(SHEET 4 OF 5)
APPROVED JULY 2, 2010
ISSUED UNDER EB 10-022
/S/ RICHARD W. LEE, P.E.
FOR THE DEPUTY CHIEF ENGINEER (DESIGN)
606-04
EFFECTIVE DATE: 01/06/2011


HEAVY ANCHOR POST
SEE SHEET 2 of 5 FOR TYPICAL DETAILS OF WEAK POSTS AND CONNECTIONS TO RAIL
TANGENT SECTION
SHOP CURVING REQUIRED FOR THESE SECTIONS
WALKWAY OR OTHER OPENING
BACKUP POST (NOT CONNECTED)
POST SPACING PER PLANS
EDGE OF TRAVELED WAY
DIRECTION OF TRAVEL
PEDESTRIAN BREAK
PLAN VIEW
PEDESTRIAN GAP BOX BEAM PAY LIMIT
USE 3'-0" POST SPACING FOR 90'-0" OR UNTIL REACHING FAR TERMINAL
BOX BEAM END PIECE (SEE SHEET 2 OF 5)
SPLICE PLATE DETAILS SEE BOX BEAM GUIDERAIL (SHEET 2 OF 5)
SEE BOX BEAM GUIDERAIL ELEVATION DETAILS (SHEET 2 OF 5)
AT SPLICES, BACKUP POSTS NOT CONNECTED
EXISTING GROUND
ANCHOR POST SEE SHEET 2 of 5
BACKUP POST (NOT CONNECTED)
PEDESTRIAN BREAK
ELEVATION
PEDESTRIAN BREAK NOTES:
1. A LONGITUDINAL GAP OF 2 FEET IS PREFERRED. IF REQUIRED BY FIELD CONDITIONS, LENGTH MAY BE BETWEEN 0 AND 5 FEET.
2. THIS DRAWING ILLUSTRATES TERMINAL INSTALLED ON LEVEL GROUND. WHEN EXTENDED BEYOND A SLOPE BREAK, THE TERMINAL END SHOULD BE PUSHED DOWN WITH UP TO 100 LBS. OF FORCE TO DEPRESS THE RAIL TO BEST FOLLOW TOPOGRAPHY. THE FIRST POST SHALL BE DRIVEN AND FASTENED TO THE RAIL AT ITS DEPRESSED HEIGHT. THE REMAINING POSTS SHALL BE DRIVEN TO MEET THE RAIL.
3. TERMINAL POSTS IN ROCK:
DRILL APPROPRIATE SIZE HOLE OR HOLES, BACKFILL AND COMPACT GRANULAR MATERIAL AROUND POSTS OR DRIVE POST IN COMPACTED MATERIAL, SOIL PLATES NOT REQUIRED.
4. ALL CUTS AND HOLES THROUGH THE GALVANIZING SHALL BE TREATED WITH ZINC PAINT.
CABLE DETAILS-TYPE
SOIL PLATE CENTERED ON POST
SOIL PLATE 12" X 24" X 3/8" WELDED TO FLANGE
W6x9 OR W6x8.5 POST
PLAN
ELEVATION
HEAVY ANCHOR POST
NEW YORK STATE OF OPPORTUNITY.
Department of Transportation
U.S. CUSTOMARY STANDARD SHEET
BOX BEAM GUIDE RAIL
(SHEET 5 OF 5)
PEDESTRIAN BREAK
APPROVED SEPTEMBER 06, 2019
ISSUED UNDER EB 19-034
/S/ RICHARD WILDER, P.E.
DEPUTY CHIEF ENGINEER (DESIGN)
606-04

MDVLA

MATTHEW D VREDENBURGH
LANDSCAPE ARCHITECTURE

4902 EDGEWORTH DRIVE
MANLIUS, NY 13104
PHONE: 315.481.6271
EMAIL: MATT@MDVLA.COM
WEBSITE: WWW.MDVLA.COM

north

DRAWING REVISIONS

NO.	DATE	REVISION	BY
#			
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#			

PROJECT TITLE: GORGE TRAIL GATEWAY

PROJECT LOCATION: ALBANY STREET, VILLAGE OF CAZENOVIA, MADISON COUNTY, NEW YORK

CLIENT: CAZENOVIA PRESERVATION FOUNDATION

DRAWING TITLE: NYS DOT DETAILS

DATE: APRIL 25, 2024

SCALE: AS SHOWN

mdvla Job#: 22008

DRAWN BY: MDV

FILE NAME: 22008 CPF 1.DWG

DRAWING NUMBER: L-504

MDVLA

project description

CPF Gorge Trail Streambank Stabilization Project
Route 20 East
Village of Cazenovia
(along the stream bank southeast of Buyea's Hardware Store)

This portion of the project includes the stabilization of the stream bank in a specific area used for fishing and the placement of a large boulder to help divert stream flow from undermining the stream bank.

1. Streambank Stabilization:

   After discussion with the US Fish and Wildlife and NYSDEC representatives, it was determined that the proposed approach, described below, would meet the project requirements.

   The proposed approach, to create a stable standing area along the muddy bank with exposed tree roots, involves submerging a footer log parallel to the shoreline, fabricating and installing a lunker (on top of the footer log), placing several large flat stones on the lunker to provide a stable standing area for fishermen, and then backfilling with round stones behind the large stones to cover over the gap left between the large stones and the sloped stream bank.

   The project area is located between two large willows trees that are anchored to the stream bank. The gap between the willows is approximately 15'. The willow trees are not to be damaged during construction, as they play a vital role in helping stabilize the stream bank.

   The work will have to be performed after July 15 and before October 1.

   The Contractor will be responsible for acquiring the wood for the lunker, as well as the stones. The stones will need to be approved by CPF or CPF's representative prior to transport to the site. The Contractor shall provide a shop drawing of the lunker for approval by CPF prior to fabrication and installation.

   Access to the site will come from the north, in a location designated by CPF. Some small buckthorn and ash may need to be removed to allow heavy equipment to access the project location. No other access location will be permitted.

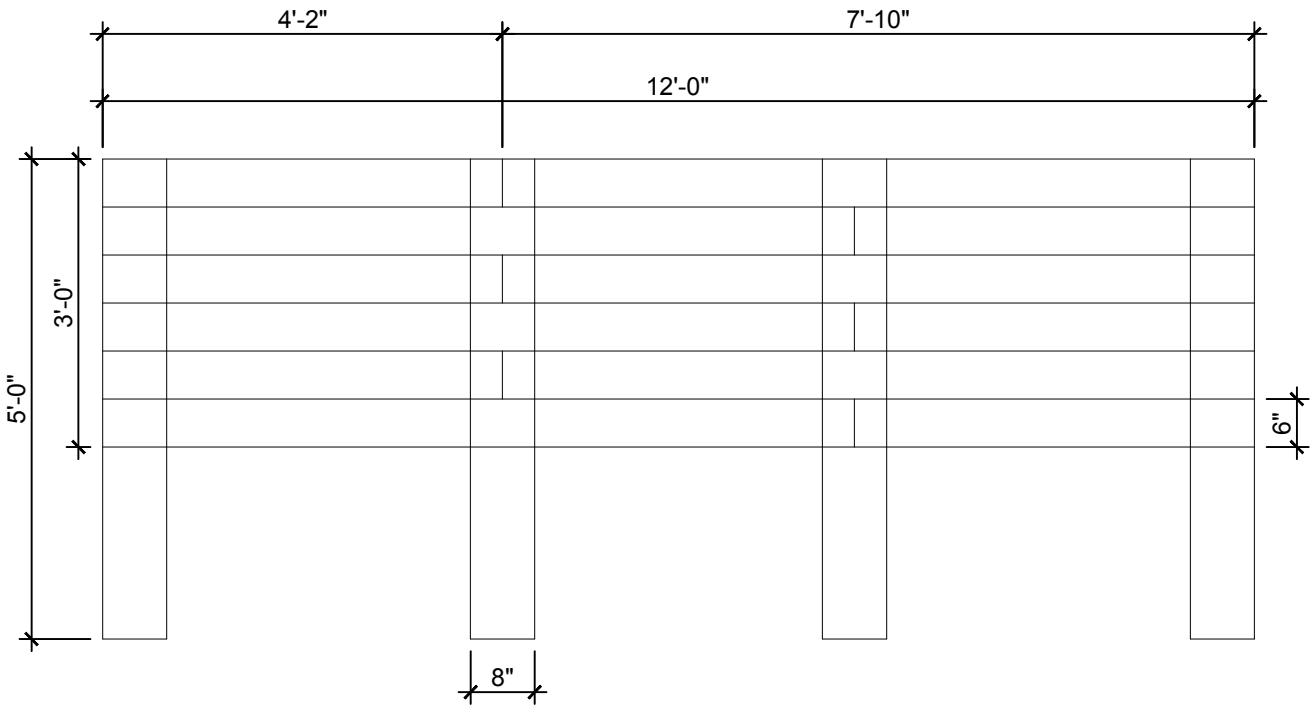
   The expected end result will be a stable standing area that fisherman can fish this section of stream from, and that it will be constructed in such a manner that it can withstand fluctuating water elevations and storm events.

2. Large Boulder

   A large boulder will be placed in a very specific location approximately 20' upstream from the lunker installation. This large boulder will help divert flow away from the stream bank and will also provide another excellent location from which to fish the stream.

   The boulder, like all materials used on this project, should be evaluated prior to delivery to the site and identified as suitable for this project.

   It is imperative that the Contractor visit the site with CPF and/or CPF's representative, prior to providing a bid, in order to best understand the site, its' constraints, and the full scope of work.



NOTE: CONSTRUCT LUNKER AS PER ATTACHED NRCS RECOMMENDATIONS USING THE ABOVE DIMENSIONS. CONTRACTOR SHALL PROVIDE SHOP DRAWING AND RECEIVE APPROVAL FROM CLIENT PRIOR TO FABRICATION AND INSTALLATION OF LUNKER.

LUNKER SHALL BE SET UPON A SUBMERGED LOG, ANCHORED INTO THE BANK UNDER THE WILLOW ROOTS, AND WEIGHED DOWN BY LARGE, FLAT-TOPPED LIMESTONE BOULDERS.

EXACT LOCATION OF THE PROPOSED LUNKER INSTALLATION WILL BE PROVIDED AT PRE-BID MEETING AND UPON REQUEST.

IN ADDITION TO THE LUNKER INSTALLATION, THE CONTRACTOR WILL ALSO BE ASKED TO PLACE A LARGE FLAT-TOPPED BOULDER (APPROXIMATELY 5' WIDE x 3' DEEP x 3' HIGH) IN A SPECIFIC LOCATION IN THE CREEK TO HELP DIVERT CURRENT AND TO PROVIDE AN ADDITIONAL FISHING LOCATION. THIS SPECIFIC LOCATION WILL BE PROVIDED AT THE PRE-BID MEETING AND UPON REQUEST.

PROJECT TITLE: **GORGE TRAIL GATEWAY**		mdvla JOB NUMBER: **22008**	
DRAWING TITLE: **LUNKER PLAN**		DRAWING NUMBER: **L-600**	
DRAWN BY: **MDV**	CHECKED BY: **MDV**	SCALE: **1"=10'**	DATE: **04/25/2024**

MDVLA

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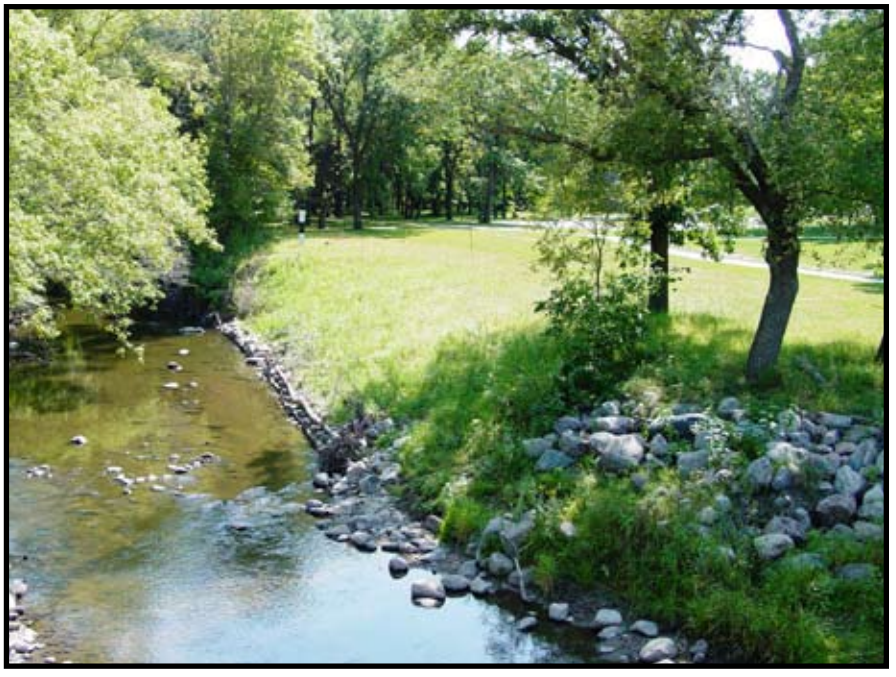
Technical Supplement 14O

Stream Habitat Enhancement Using LUNKERS



(210–VI–NEH, August 2007)

Issued August 2007

Cover photo: LUNKERS provide streambank stability and edge-cover aquatic habitat.

Advisory Note

Techniques and approaches contained in this handbook are not all-inclusive, nor universally applicable. Designing stream restorations requires appropriate training and experience, especially to identify conditions where various approaches, tools, and techniques are most applicable, as well as their limitations for design. Note also that product names are included only to show type and availability and do not constitute endorsement for their specific use.

Technical Supplement 14O

Stream Habitat Enhancement Using LUNKERS

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Technical Supplement 14O

Stream Habitat Enhancement Using LUNKERS

Purpose

Little Underwater Neighborhood Keepers Encompassing Rheotactic Salmonids (LUNKERS) are a technique to provide both streambank stability and edge cover aquatic habitat. While their use has primarily focused on providing trout habitat, they are applicable to other species, as well. This technical supplement provides guidance for the analysis, design, and installation of these structures. Particular focus is on the placement, anchoring, and finish-grading of LUNKERS structures. A step-by-step design procedure is provided.

Introduction

LUNKERS were introduced in 1982 by the Wisconsin Department of Natural Resources fisheries personnel as an alternative methodology to habitat improvement techniques then in use in trout streams. They are constructed structures that provide fish habitat in the form of edge cover. These structures resemble stout construction pallets (fig. TS14O–1). While they are often made out of wood, stone has also been used successfully. They are used in sets and are often incorporated into other bank stabilization measures. In figure TS14O–1(b), the LUNKERS are under the stone. The arrow points to one that can be seen in the picture. While their actual name is LUNKERS, the individual units are often referred to simply as a LUNKER. While their use is often associated with cold-water fisheries, they have been applied to many sites throughout the United States.

Geomorphic design considerations

For LUNKERS to function properly and provide the intended benefits, consideration must be given to their location and placement. With some exceptions, most of the criteria in use have been developed as rules of thumb by experience. The criteria that determine whether LUNKERS are an appropriate project element include:

Stream gradient and flow—LUNKERS depend on flow entering the upstream end of the structure, then sweeping beneath and through them to maintain the underbank void created by the spacer blocks. LUNKERS should not be used if the current is not fast enough or the LUNKERS cannot be constructed to produce adequate current velocities that both

Figure TS14O–1 (a) LUNKERS being installed as part of a bank stabilization project; (b) Completed LUNKERS project; LUNKERS are under the stone (*Photo courtesy of Mike Martyn, USACE*)

(a)

(b)

discourage new sediment deposition and also mobilize previously accumulated sediments. It may be necessary to place in channel boulders or use flow deflectors to force flows through the structure. These should be positioned during construction.

Channel substrate and surrounding land elevation—Traditional LUNKERS placement involves setting of the structure on a firm base to ensure stability. In low-gradient streams where post settlement alluvium is often several feet deep, LUNKERS may be installed into an excavated portion of the streambed and into the bank. However, in many stream systems, it will be necessary to install a stone base that is keyed into the bed at a depth that takes into consideration any anticipated scour. More information on stone sizing and scour calculations is provided in NEH654 TS14C and 14B, respectively. Figure TS14O–2 shows LUNKERS being installed over a rock base. The construction area had been dewatered when this photograph was taken.

Sinuosity—LUNKERS function optimally when placed on the actively eroding bank or outside bend. The lower two-thirds of a bend are preferable. This ensures that the water flow and force will always be directed into and through the structure. They generally should not be placed in straight reaches to provide overhead cover unless measures, such as low deflectors, can be used to direct water flow into the structure.

Depth—The primary building component of LUNKERS is rough lumber. The permanence of the structure is maintained by complete immersion beneath the water surface. Periodic wetting and drying will encourage premature decay and eventual failure. Installation must result in the top planks being completely submerged below the known low water stage. The minimum depth necessary is generally 1.5 feet. Grade control structures have been successfully used to maintain the necessary depth. Additional guidance for the design of grade control structures is provided in NEH654 TS14G.

Figure TS14O–2 LUNKERS installed over a stone base

Design and construction

Materials and equipment

Materials and equipment used to successfully construct and install LUNKERS vary, but some general guidelines are as follows:

LUNKERS material—The usual building component is rough-sawn and untreated wood. Oak is preferable due to its density, which contributes to the structure's ability to be handled by heavy equipment, withstand considerable weight placed on it, and resistance to rot. Newly cut (green) oak is often specified for ease of construction, since dried wood is difficult to drive nails into and may require screws.

Stone—Typically, stone is used to provide a firm base for the LUNKERS. The design and placement of stone is described in NEH654 TS14K. Since the LUNKERS typically are constructed out of wood and will float if not secured, large anchor stone is also used to hold them in place. This is typically cut stone to achieve a firm contact. This is especially important if the LUNKERS units are to be placed without dewatering the site. In addition, soil anchors can be used to provide further anchoring.

Additional bank protection—LUNKERS are rarely used by themselves. They are often part of larger bank stabilization or riparian restoration projects. These wider projects may range from grass seed and erosion fabric to more complex plantings and soil bioengineering practices. Therefore, it may be important to include these practices to achieve the ecological restoration goals for the project.

Equipment—Typical hand tools used in most LUNKERS installations include shovels, pry bars, picks, and chain saws. However, the size of the materials, as well as the grading and excavation that are typically required, necessitates the use of heavy construction equipment, as well. Typically, an excavator or a backhoe is used. Buckets are commonly modified to facilitate the placement of the LUNKERS (fig. TS14O–3). Note the forks incorporated into the bucket that keeps the LUNKERS level and the anchor stones in place.

Figure TS14O–3 LUNKERS being installed "in the wet"

Construction of LUNKERS units

The following is a step-by-step procedure for constructing a LUNKERS unit. The procedures used to construct these structures are often modified based on the available material. Figure TS14O–4 shows views of a typical completed LUNKERS structure.

Figure TS14O–5 provides conceptual plans for the construction of LUNKERS.

Step 1 Build a spacer (Note: three equal-sized spacers are needed for each LUNKERS) (fig. TS14O–5a).

Measure and cut two 6-inch lengths from the 6- by 8-inch beam to form two rectangular blocks.

Measure and cut the *bottom piece* from one of the 2- by 8-inch planks. This piece will be approximately 24 to 30 inches in length; however, the exact length of each piece depends on the recommended size of the LUNKERS.

Measure and cut the *top piece* from one of the 2- by 8-inch planks. This piece must be 50 percent longer than the bottom piece. (Example: if a 24-inch bottom piece is cut, then this piece must be 36 inches.)

Place the *bottom piece* so that one end fits flush with each of the 8-inch side of each of the rectangular blocks. Secure with two or three nails on each end. The spacer will now look like a low bench or table.

Flip the table over, and place the top piece cut above, flush to what will be the *streamside* of the LUNKERS. There will be an overhang, past the second block. (This will be the *bankside* of the LUNKERS) Secure to each block with two or three nails.

Repeat the above steps to result in three equal-sized spacers.

Step 2 Form the bottom of the LUNKERS (fig. TS14O–5b).

Bridge the three spacers across the *bottom pieces*, using a 2- by 8-inch plank. Be certain the length of the plank is flush with the *streamside* of the spacer and that the spacers are evenly placed. Secure the plank with nails above the rectangular blocks, taking care not to hit previously driven nails.

Bridge the three spacers across the bottom at the second set of blocks, using another 2- by 8-inch plank. Be certain the plank is flush with the *bankside* of the spacer. Secure each plank with nails above the rectangular blocks. The bottom of the LUNKERS is now complete.

Step 3 Assemble the LUNKERS (fig. TS14O–5c).

Form the top of the LUNKERS, flip the LUNKERS bottom over. Bridge the three spacers above the blocks with two 2- by 8-inch planks as done in step one, ignoring the overhang. Secure with nails.

Use a third 2- by 8-inch plank, placed evenly between the two top planks, and secure with two or three nails to each spacer. Depending on the size of the LUNKERS, there may or may not be spaces between the three top planks. The top of the LUNKERS is now complete.

Step 4 Prepare the LUNKERS for placement (fig. TS14O–5d).

Finish the LUNKERS according to the project's needs. In some cases, it is necessary to install two to four standard length rods to help anchor the LUNKERS into the streambed. Start by drilling two 9/16–inch holes in the top plank of the outer two spacers on the *streamside*. These holes should be placed on the inside of the streamside plank, as close to the *streamside* rectangular blocks as possible, without drilling into the blocks themselves.

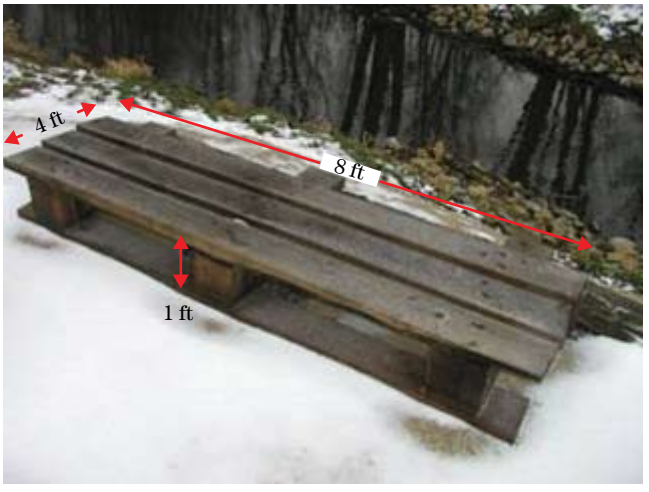
If needed, drill two 9/16-inch holes in the top plank of the outer two spacers on the *bankside*. These holes should be placed on the inside of the *bankside* plank, as close to the *bankside* rectangular blocks as possible.

If needed, drill holes to attach soil anchors.

Install the cover board on the bankside of the LUNKERS, covering the openings under the overhang. Nail in place.

Figure TS14O–4 Completed LUNKERS structure

(a) Front view



(b) Side view

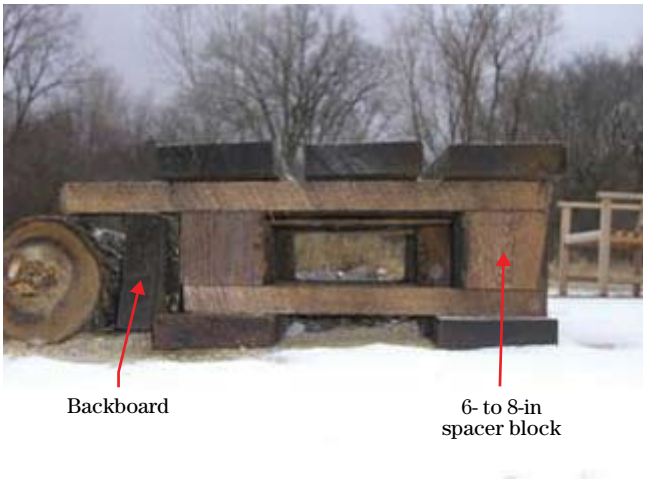
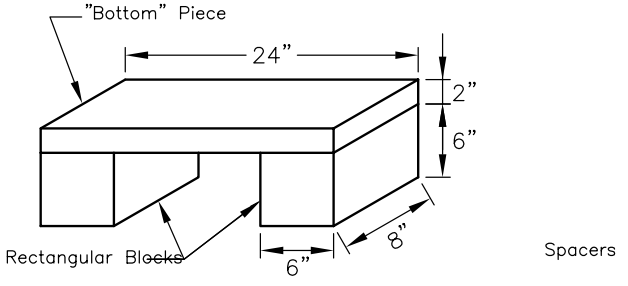
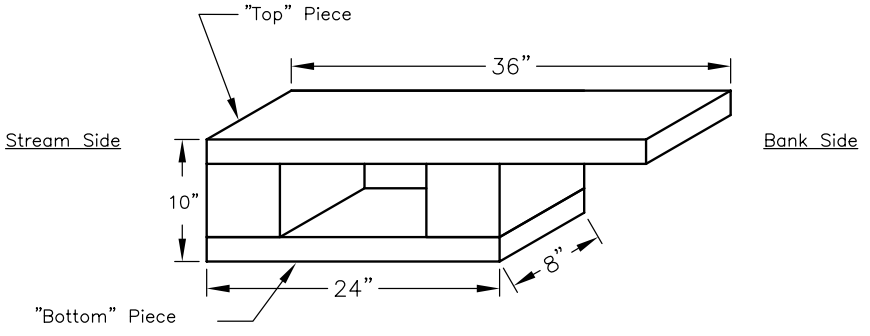


Figure TS14O–5 LUNKERS construction concept plan

(a) Step 1





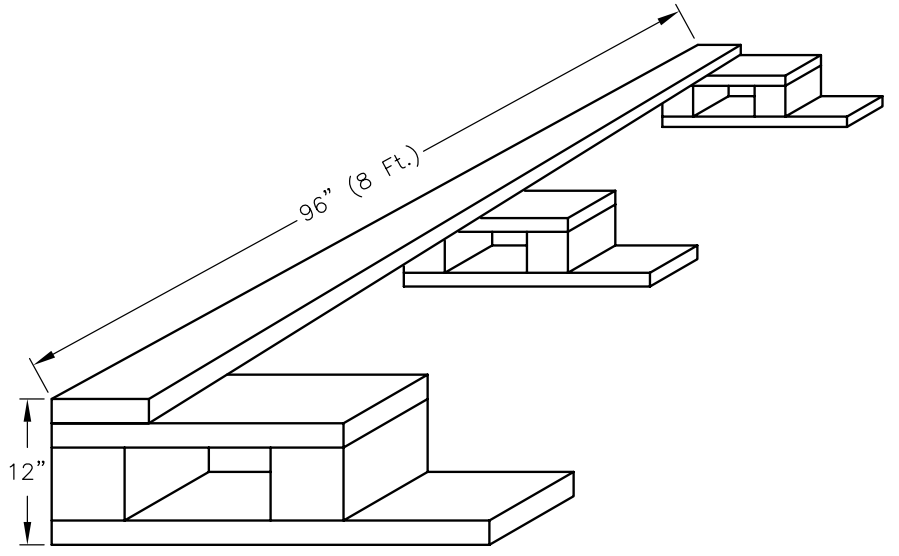
Step 1: Bulid SPACERS

Build 3 equal spacers as shown using oak or other wood that is strong and rot resistent. Use 20d nails min.

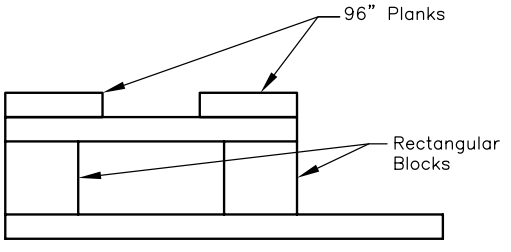
NRCS Natural Resources Conservation Service United States Department of Agriculture	LUNKER ASSEMBLY	J. Fripp Date Designed C. Haag, K. Worster 08/05 Drawn K. Miller, J. Renteria 08/05 Checked Approved	File Name Lunker–1.dwg Drawing Name Lunker Assembly 09/15/05 Sheet of

Figure TS14O–5 LUNKERS construction concept plan—Continued

(b) Step 2



Perspective Side View (One Plank in Place)



Simple Side View

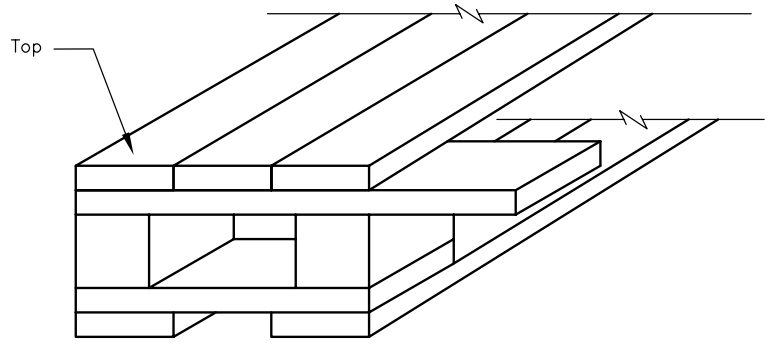
Step 2: FORM THE LUNKER BOTTOM

Bridge the spacers with two 8 ft. planks.
The spacers should be evenly spaced.
Secure each plank with 20d nails.

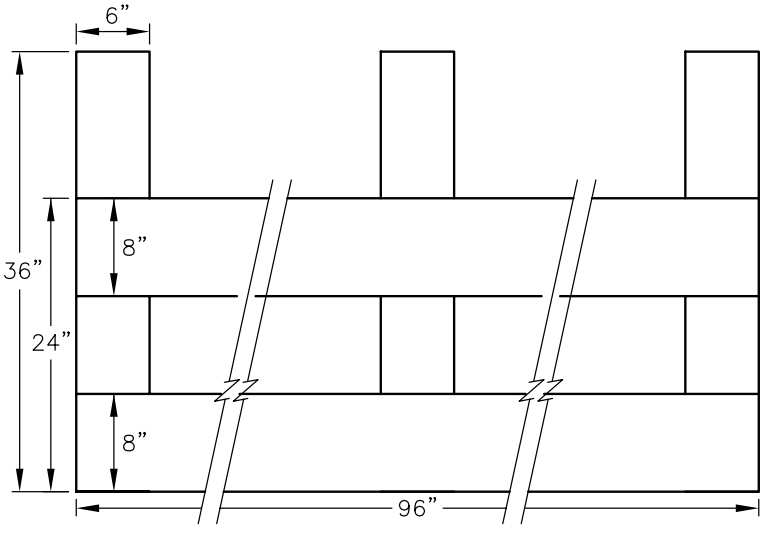
NRCS Natural Resources Conservation Service United States Department of Agriculture	LUNKER ASSEMBLY	Designed J. Fripp C. Haag, K. Worster Date 08/05 Drawn K. Miller, J. Renteria 08/05 Checked Approved	File Name Lunker–1.dwg Drawing Name Lunker Assembly Step 2 09/15/05 Sheet of

Figure TS14O–5 Step 3: LUNKERS construction concept plan—Continued

(c) Step 3



Perspective Side View (Three Planks in Place)



Top View (Two Planks in Place)

Step 3: FORM THE LUNKER TOP

Bridge the spacers with three 8 ft. planks.
Secure each plank with 20d nails.

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

LUNKER ASSEMBLY

Designed J. Fripp C. Haag, K. Worster Date 08/05
Drawn K. Miller, J. Renteria 08/05
Checked
Approved

File Name Lunker–1.dwg
Drawing Name Lunker Assembly Step 3
09/15/05
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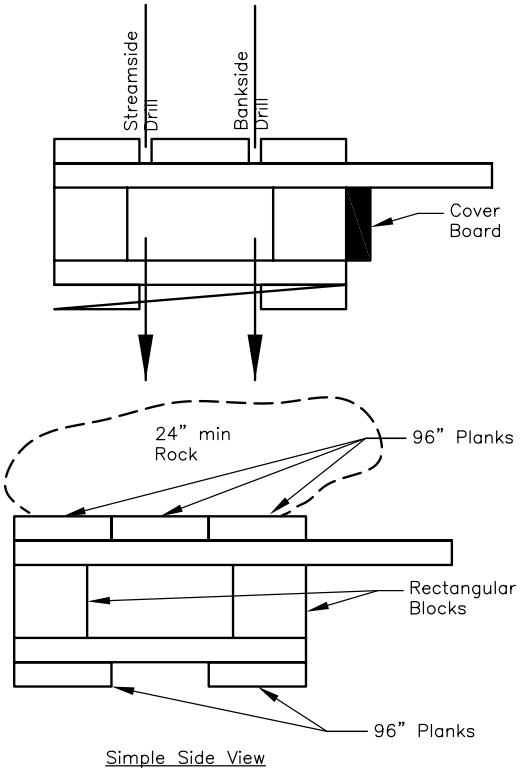
Figure TS14O–5 Step 4: LUNKERS construction concept plan—Continued

(d) Step 4



Step 4: PREPARE LUNKERS FOR PLACEMENT

Install cover board on bank side of Lunker.
The placement of the Lunker is dependent on the base material.
Three techniques are generally used.

1. Place soil anchors attach and soil anchors to Lunker.
   or
2. Place large rock on top of Lunker structure.
   Place Lunker with rock to weight it down.
   or
3 Drill 9/16" holes through Lunkers.
   During installation insert rebar through holes to temporarily stabilize the structure as rock and soil is placed on top.

NRCS Natural Resources Conservation Service United States Department of Agriculture	LUNKER ASSEMBLY	Designed J. Fripp C. Haag, K. Worster Date 08/05 Drawn K. Miller, J. Renteria 08/05 Checked Approved	File Name Lunker–1.dwg Drawing Name Lunker Assembly Step 4 09/15/05 Sheet of

Placement of LUNKERS units

The placement of LUNKERS structures follows the preparation of the bank by removal of all undesirable trees and debris. A trench that will receive the structures must be excavated into the bed and bank. It may be necessary to place a graded stone riprap base for the LUNKERS. The design of this stone should consider anticipated scour in the bend. Additional information on the use of stone is provided in NEH654 TS14K. The resulting excavated area and base should be below the low-water level so that the structure is covered under normal low flows.

It is best for the structures to be placed so that the current will flow through them. Before excavation, designers may track the current by using a floating twig or wooden block, as it follows the targeted bank; then flag the upstream end as a guide for excavation. Boulders may be used to force flows through the LUNKERS. During construction, flexibility in placement of these boulders is essential. LUNKERS are typically used in a sequence. Three to four units is a common set. If too few are used, there may not be sufficient flows to flush sediment through the structure. If too many are linked together, the current that runs through the last (downstream) structure may lack sufficient energy to scour, so that the last structure in effect becomes a sediment trap.

Once the receiving area is prepared, the excavator lifts and delivers the LUNKERS to the trench, where it is hand placed to rest in its final orientation. The 4-foot perpendicular stringers will abut the old bank and serve as anchor points. Metal rods can be driven into the stream bottom to pin the LUNKERS to the streambed. Large stone is placed to anchor the structure. Depending on the forces expected from the stream, it may be necessary to include soil anchors to provide additional stability. More information on the design and application of soil anchors is provided in NEH654 TS14E.

A well-distributed gradation of rock riprap is then placed in the existing space from the back edge of the face rock to the preexisting old bank edge. Minimum rock fill thickness is 18 inches. This ensures that the structure will not be isolated by water backcutting during flood events. The backboard of the LUNKERS prohibits the unintentional filling of the open space by rock or sediment. Soil bioengineering practices may be installed above the structures. More information on soil bioengineering practices is provided in NEH654 TS14I.

It is optimal to place the LUNKERS without dewatering the site, or in the wet, as this allows the designer to perform small adjustments on the flow deflectors. Placement during baseflows also assures that the structure will remain underwater and not be subject to damaging wetting and drying cycles.

Conclusion

Overall, LUNKERS have been a reliable feature of many stream habitat restoration and enhancement projects for more than 20 years. Since 2000, Targeted Management Runoff (TRM) projects on the West Branch of the Sugar River in southwestern Wisconsin have resulted in the placement of 1,020 LUNKERS. No specific, comprehensive evaluation of the permanence and functional success of the LUNKERS have been conducted, but anecdotal observations taken during fisheries surveys have noted that the structures are stable and show no significant backcutting, lateral erosion, or loss of backfill in the bank.