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Addendum No. 05

Project: New Police Station
City of Lacey
222 College Street SE
Lacey, WA 98503
City Project No. PW 2022-13

KMB Job No.: 22022

Issue Date: November 7, 2023

Bid Date: **November 16, 2023**

To: All Plan Holders

From: Bryan Beley, AIA – KMB architects

The following modifications to the Project Manual, Specifications, and/or Drawings are to be incorporated into bid proposals that may be offered, and the subsequent construction. Bidders shall assess and include the full impact of the revision(s) on any and all related systems and work. Receipt and incorporation of this Addendum in the bid proposal shall be indicated on the Bid Proposal form in the space provided.

General:

Item Description

1. QUESTION & ANSWER

The following questions and answers do not modify the Project Manual, Specifications, and/or Drawings unless another separate Addendum item herein is specifically referenced. Disregard any answer causing further conflicts and notify the Architect immediately. (The official deadline for bidder substitution requests and guaranteed responses for inquiries was October 23, 2023. Any substitution requests after issuance of Addendum No. 03 is not considered. Only critical inquiries requiring clarification or a change in the documents are addressed in this Addendum.)

1) Question: Section 6.02J of Specification 007200 requires the Contractor to pay for overtime incurred for City inspections. Based on the extent of the scope for this project and the specified period of performance, considerable amounts of overtime will be required to maintain schedule. Forecasting the owner's costs associated with these overtime efforts is not straightforward or easily definable for estimating purposes. We request for the owner's project costs associated with administering overtime be waived prior to bid.
   a) The Owner believes that the working days scheduled in the bid proposal, section 5, for this project are reasonable and workable to avoid excessive overtime hours by the Owner's staff, Engineer's staff, or other's inspection or other work. Please note that in Section 6.02 Labor; Working Hours; Wage Rates, Note C – "Except in the case of emergency or unless otherwise approved by the Owner, the normal working hours for the Contract shall be any consecutive 8-hour period between 7:00 a.m. and 6:00 p.m. Monday through Friday, exclusive of a lunch break. If the Contractor desires different than the normal working hours stated above, the request must be submitted in writing prior to the preconstruction conference, subject to the provisions below. The working hours for the Contract shall be established at or prior to the preconstruction conference." Furthermore, if requested by the Contractor, the City is amenable to accepting a four-10 schedule (10 hours per day, 4 times a week) without charging additional overtime. Please make sure this is accounted for in estimates for this Project.

Project Manual:

Item Description

2. SECTION 074213.13 FORMED METAL WALL PANELS

A. Replace entire section with 074213.13 FORMED METAL WALL PANELS section attached to this Addendum, including but not limited to the changes noted:

1) Par 1.1 A.: Add "1. Concealed-fastener metal wall panels." Adjust numbering as necessary.
2) Par 2.2: Add paragraph A. "Concealed-Fastener Metal Wall Panels:…" Adjust numbering as necessary.
3) Par 2.2 B. (Vertical-Rib…): Add 1. "Location: Training Building, Add Alternate No. 1A." Adjust numbering as necessary.

3. SECTION 098431 SOUND-ABSORBING WALL AND CEILING UNITS

A. Par 2.2: Maintain "AP-1" material designation, and Replace article and material with "Acoustical Cementitious Wood Fiber Panel" found in section 098413 FIXED SOUND-ABSORPTIVE PANELS, 2.3A. [Project is eliminating the use of polypropylene as an interior finish material.]

4. SECTION 116723 SHOOTING RANGE EQUIPMENT

A. Replace entire section with 116723 SHOOTING RANGE EQUIPMENT section attached to this Addendum, including but not limited to the changes noted:

1) Par 2.4 A.: Add "Ceiling Baffles:" prior to article.
2) Par 2.4 A. 1.: Revise to read "Modular Ceiling Baffles".
3) Par 2.4 A. 1.: Add "a. Approved substitutions allowable, subject to compliance with requirements."
4) Par 2.4 A.: Revise entire article to make deletions and clarify specifications for Ceiling Baffles per section attached. [Project is eliminating the use of polypropylene as an interior finish material – to be replaced with wood wool composite acoustical panel with mineral wool backer.]
5) Par 2.4 B.: Revise entire article to make deletions and clarify specifications for Wall Baffles per section attached.

5. SECTION 323236 GABION RETAINING WALL

A. Replace entire section with 323236 GABION RETAINING WALL section attached to this Addendum, including but not limited to the changes noted:

1) Par 1.02.A.3.c: Delete article.
2) Par 1.03.A.1: Delete article.
3) Par 1.03.D: Delete article.
4) Par 1.03.E: Revise article.
5) Par 1.03.E.3.b: Delete article.
6) Par 1.03.E.3.e.2: Delete article.
7) Par 1.03.E.4.a.8 and 1.03.E.4.a.9: Delete articles.
8) Par 1.03.E.5: Delete article.
9) Par 2.03.I: Delete article.

Civil Drawings:

Item Description

6. SHEET C-101

A. TESC PLAN SOUTH

1) Add new portion of site plan to include the demolition and restoration work of the concrete sidewalk and landscaping. See 11x17 sheet C-101-A5 attached to this Addendum.
2) Add associated match lines to sheet C-100 as necessary.

7. SHEET C-201

A. PAVING & HORIZONTAL CONTROL PLAN SOUTH

1) Add new portion of site plan that shows the limits of restoration after telecommunication conduit is installed from City Hall to Lacey PD. See 11x17 sheet C-201-A5 attached to this Addendum.
2) Add associated match lines to Sheet C-200 as necessary.

8. SHEET C-401

A. OVERALL UTILITY PLAN SOUTH

1) Add new portion of site plan that shows the telecommunications conduit for reference. Also showing where direction drilling will be required underneath the existing City Hall Driveway. See 11x17 sheet C-401-A5 attached to this Addendum.

B. TYPICAL JOINT TRENCH

1) Add detail A per 11x17 sheet C-401-A5 attached to this Addendum.

Landscape Drawings:

Item Description

9. SHEETS L-001, L-002, & L-003

(Refer to Addendum No. 02 item 47 for table schedule listing trees for removal.)

A. L-001 TREE AND PLANT PROTECTION, SALVAGE, AND DEMO PLAN

1) Add new portion of site plan illustrating additional LRR trees for removal outside of parcel line per site plan view 1 (L-001) on 11x17 sheet L-001-A5 attached to this Addendum.

B. L-002 TREE AND PLANT PROTECTION, SALVAGE, AND DEMO PLAN

1) Add new portion of site plan illustrating additional LRR trees for removal outside of parcel line per site plan view 1 (L-002) on 11x17 sheet L-001-A5 attached to this Addendum.

C. L-003 TREE AND PLANT PROTECTION, SALVAGE, AND DEMO PLAN

1) Add new portion of site plan illustrating additional LRR trees for removal outside of parcel line per site plan view 2 (L-003) on 11x17 sheet L-003-A5 attached to this Addendum.
2) Add new portion of site plan illustrating additional LRR trees for removal outside of parcel line per site plan view 3 (L-003) on 11x17 sheet L-003-A5 attached to this Addendum.

10. SHEET L-004

A. TREE SUMMARY TABLE

1) Add new row “OFF SITE ROOT ROT TREES FOR REMOVAL” in table quantifying additional LRR trees for removal outside of parcel line per Tree Summary Table on 11x17 sheet L-001-A5 attached to this Addendum.

11. SHEET L-503

A. DETAIL 1 FREESTANDING GABION WALL

1) Revise Addendum No. 02 notes (item 49):

a) HILFIKER WELDED-WIRE MESH BASKETS. 3" X 3" WIRE GRID SPACING. UNIFINISHED MILD STEEL. NO GALVANIZED COMPONENTS.
b) DOUBLE LAYER MESH, OFFSET, TO PROVDE 1.5" MAXIMUM OPENINGS. SEE SPECIFICATION SECTION 323236 GABION RETAINING WALL FOR MATERIALS.

Structural Drawings:

Item Description

12. SHEET S-115
- **A.** ROOF FRAMING PLAN - WEST
  1) Add information regarding drag strut connections at multiple locations per full-size sheet S-115 attached to this Addendum.

13. SHEET S-116
- **A.** ROOF FRAMING PLAN - EAST
  1) Add information regarding drag strut connections at multiple locations per full-size sheet S-116 attached to this Addendum.

14. SHEET S-303
- **A.** FOUNDATION DETAILS
  1) Add detail 11, "SLAB AND WALL EDGE" per 8.5x11 sheet S-303-A5 attached to this Addendum.

15. SHEET S-511 (NEW SHEET)
- **A.** Add new full-size sheet S-511 BRACED FRAME BASE DETAILS attached to this Addendum.
  1) Add detail 1, "TYP BRACED FRAME COL BASE" per attached full-size sheet S-511.
  2) Add detail 2, "TYP BRACED FRAME COL BASE (AT BRACE)" per attached full-size sheet S-511.

Architectural Drawings:

Item Description

16. SHEET A-624
- **A.** MATERIALS LEGEND
  1) Acoustic Panels, AP-1: Replace 'Manufacturer' and 'Product' with "ARMSTRONG" and "TECTUM DIRECT-ATTACH WALLS, LONG AND SHORT EDGES BEVELED" respectively.

Electrical Drawings:

Item Description

17. SHEET E-003
- **A.** GENERAL NOTES AND ABBREVIATIONS
  1) Add general note 11 that reads: "E.C. SHALL PROVIDE ALL CONDUIT SLEEVES AS REQUIRED FOR ALL LOW VOLTAGE CABLE ROUTING THROUGH HEADERS OR WALLS, BETWEEN CABLE TRAY SECTIONS, AND FROM CABLE TRAY TO EACH ACCESSIBLE CEILING SPACE. MAINTAIN WALL RATING AND SEE CODE PLAN SHEETS FOR FIRE AND SMOKE-RATED WALLS. PROVIDE A MINIMUM OF (3) 4" CONDUITS BETWEEN CABLE TRAY SECTIONS. PROVIDE A MINIMUM OF (2) 2" AND (2) 1" EMT CONDUITS BETWEEN THE CABLE TRAY AND EACH ACCESSIBLE CEILING. DO NOT EXCEED 40% CONDUIT FILL CAPACITY AND PROVIDE ADDITIONAL CONDUIT SLEEVES AS REQUIRED. PROVIDE ACOUSTIC OR FIRE-RATED PUTTY IN EACH CONDUIT AFTER THE CABLES ARE INSTALLED AND HAVE PASSED TESTING. SEE ARCHITECTURAL FINISH SCHEDULE FOR CONDUIT PAINTING REQUIREMENTS."

Approved Substitutions:

18. No approved substitutions this addendum.

End of Addendum No. 05

This Addendum is being distributed to all listed plan holders. Recipients are responsible for dissemination of this information to all affected sub-bidders, suppliers, etc.

Attachments:

Specifications

074213.13	FORMED METAL WALL PANELS	9 pages
116723	SHOOTING RANGE EQUIPMENT	7 pages
323236	GABION RETAINING WALL	7 pages

Supplemental Drawings — 6 sheets

C-101-A5	TESC PLAN SOUTH
C-201-A5	PAVING & HORIZONTAL CONTROL PLAN SOUTH
C-401-A5	OVERALL UTILITY PLAN SOUTH
L-001-A5	TREE PROTECTION SALVAGE AND DEMO PLAN
L-003-A5	TREE PROTECTION SALVAGE AND DEMO PLAN
S-303-A5	FOUNDATION DETAILS

Full-size Drawings — 3 sheets

S-115	ROOF FRAMING PLAN - WEST
S-116	ROOF FRAMING PLAN - EAST
S-511	BRACED FRAME BASE DETAILS

Scott Egger, PE
Director of Public Works

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SECTION 074213.13

FORMED METAL WALL PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
1. Concealed-fastener metal wall panels.
2. Standing-seam metal wall panels.

B. Related Requirements:
1. Section 070543 – Cladding Support Systems.
2. Section 072715 Nonbituminous Self-Adhering Sheet Air Barriers.
3. Section 074113.16 – Standing-Seam Metal Roof Panels.
4. Section 076500 – Flexible Flashings.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Coordination:
1. Coordinate metal wall panel assemblies with rain drainage Work, flashing, trim, and other adjoining Work to provide a leakproof, secure, and noncorrosive installation.

B. Preinstallation Meetings: Conduct meeting at Project site.
1. Meet with Owner, Architect, Owner's insurer if applicable, testing and inspecting agency representative, metal wall panel Installer, metal wall panel manufacturer's representative, structural-support Installer, and installers whose Work interfaces with or affects metal wall panels.
2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
3. Review methods and procedures related to metal wall panel installation, including manufacturer's written instructions.
4. Examine support conditions for compliance with requirements, including alignment between and attachment to structural members.
5. Review flashings, special siding details, wall penetrations, openings, and condition of other construction that will affect metal wall panels.
6. Review governing regulations and requirements for insurance, certificates, and tests and inspections if applicable.
7. Review temporary protection requirements for metal wall panel assembly during and after installation.
8. Review of procedures for repair of metal panels damaged after installation.
9. Document proceedings, including corrective measures and actions required, and furnish copy of record to each participant.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.
1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of panel and accessory.

B. Shop Drawings:
1. Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.

2. Accessories: Include details of the flashing, trim, and anchorage systems, at a scale of not less than 1-1/2 inches per 12 inches.
3. Submit Shop Drawings that have been engineered and certified by professional engineer licensed in the State in which Project is located.
   a. Include seal and signature of professional engineer on Shop Drawings.

C. Samples for Verification: For each type of exposed finish, prepared on Samples of size indicated below:
1. Metal Panels: 12 inches long by actual panel width. Include fasteners, closures, and other metal panel accessories.

D. Delegated-Design Submittal: For formed metal wall panel systems, indicating compliance with performance and design criteria.
1. Include analysis data signed and sealed by qualified professional engineer responsible for their preparation.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data:
1. For Installer.
2. For professional engineer indicating experience with providing delegated-design engineering services of the kind indicated.
   a. Include documentation that engineer is licensed in state in which Project is located.

B. Product Test Reports: For each product, for tests performed by a qualified testing agency.

C. Sample Warranties: For special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For wall panels to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm that specializes in manufacturing of specified metal wall panel systems with a minimum of 10 years of documented experience.

B. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer with a minimum of 5 years of documented experience.

C. Delegated-Design Engineer Qualifications: Professional engineer experienced in providing delegated-design engineering services of the kind indicated and is legally qualified to practice in state where Project is located.

D. Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of Work.

E. Mockups: Comply with Section 014339 – Mockups.
1. Build mockups of typical wall panel assembly, where directed by Architect, including wall panel system, glazing, attachments to building frame, weather and air barriers, vapor retarder and air seal materials, weep drainage system, sealants, and related insulation.
   a. Mockup Size: Approximately 10 sq. ft.
   b. Illustrate a complete assembly of each profile, proposed thickness, and finish.
2. Water-Spray Test: Conduct water spray test of mockups of metal wall panel assembly, testing for water penetration per AAMA 501.2.
3. Approval of mockups does not constitute approval of deviations from Contract Documents contained in mockups unless Architect specifically approves such deviations in writing.

4. Subject to compliance with requirements, approved mockups may become part of completed Work if undisturbed at time of Substantial Completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Deliver components, metal wall panels, and other manufactured items so as not to be damaged or deformed. Package metal wall panels for protection during transportation and handling.

B. Unload, store, and erect metal wall panels in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack metal wall panels horizontally on platforms or pallets, covered with suitable weathertight and ventilated covering.
1. Store metal wall panels to ensure dryness, with positive slope for drainage of water.
2. Do not store metal wall panels in contact with other materials that might cause staining, denting, or other surface damage.

D. Retain strippable protective covering on metal panels during installation.

1.8 FIELD CONDITIONS

A. Weather Limitations: Proceed with installation only when existing and forecasted weather conditions permit assembly of metal panels to be performed according to manufacturers' written instructions and warranty requirements.

1.9 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.
1. Failures include the following:
a. Structural failures including rupturing, cracking, or puncturing.
b. Deterioration of metals and other materials beyond normal weathering.
2. Warranty Period: 25 years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.
1. Exposed Panel Finish: Deterioration includes the following:
a. Color fading more than 5 Hunter units when tested per ASTM D2244.
b. Chalking in excess of a No. 8 rating when tested per ASTM D4214.
c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Finish Warranty Period: Minimum 25 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE CRITERIA

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 013573 – Delegated-Design Procedures, to design formed metal wall panel systems, including attachment to building construction.

B. Structural Performance: Provide metal panel assemblies capable of withstanding effects of gravity loads, based on testing per ASTM E1592:
1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.
3. Deflection Limits: For wind loads, no greater than 1/180 of span.

C. Seismic Performance: Exterior metal composite material panel systems, including anchors and connections, shall withstand effects of earthquake motions determined according to ASCE 7.
   1. Component Importance Factor: 1.0.

D. Air Infiltration: Air leakage of not more than 0.025 cfm/sq. ft. when tested according to ASTM E283 at the following test-pressure difference:
   1. Test-Pressure Difference: 6.24 lbf/sq. ft.
   2. Test Panel Size: Minimum 10 feet square test panel that includes horizontal and vertical joints.

E. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 331 at the following test-pressure difference:
   1. Test-Pressure Difference: 20 lbf/sq. ft.

F. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.
   1. Temperature Change (Range): 120 deg F, ambient; 180 deg F, material surfaces.

2.2 CONCEALED-FASTENER, LAP-SEAM METAL WALL PANELS

A. Concealed-Fastener Metal Wall Panels: Formed with various raised profiles indicated by manufacturer's model numbers, spaced across panel width, designed to be field assembled by lapping and interconnecting side edges of adjacent panels and mechanically attaching through panel to supports using concealed fasteners and factory-applied sealant in side laps. Include accessories required for weathertight installation.
   1. Location: Main Police Station.
   2. Basis-of-Design Product: Subject to compliance with requirements, provide the following:
      a. AEP Span, a Division of ASC Profiles, LLC: Flex Series, in the following percentages:
         1) Series 1.2FX10-12: 25 percent.
         2) Series 1.2FX20-12: 25 percent.
         3) Series 1.2FX30-12: 25 percent.
         4) Series 1.2FX40-12: 25 percent.
      b. Approved substitution from one of the following:
         1) Taylor Metal Products.
         2) Bridger Steel, Inc.
         3) Metal Sales Manufacturing Corporation.
         4) Morin; a Kingspan Group Company.
         5) Petersen Aluminum Corp.
         6) IMETCO.
   3. Metallic-Coated Steel Sheet: Aluminum-zinc alloy-coated steel sheet complying with ASTM A792, Class AZ50 coating designation; structural quality. Prepainted by coil-coating process to comply with ASTM A755.
      a. Nominal Thickness: 0.0294 inch.
      b. Exterior Finish: 3-coat fluoropolymer.
      c. Color: Selected by Architect from manufacturer's full range.
   4. Yield Strength: 50,000 psi.
   5. Rib Wdith and spacing:
      a. Series 1.2FX10-12: 2 inch ribs at 4 inches on center, 3 up, 3 down.
      b. Series 1.2FX20-12: One 10 inch rib with 2 inch reveal.
      c. Series 1.2FX30-12: 6 inch rib with 6 inch reveal, 1 up, 1 down.
      d. Series 1.2FX40-12: Two 4 inch ribs at 6 inches on center with two 2 inch reveals, 2 up.
   6. Panel Coverage, Net: 12 inches.
   7. Panel Height: Nominal 1.25 inches.

B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Wall Panels: Structural metal panel formed with vertical ribs at panel edges and intermediate striations symmetrically spaced between ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.
   1. Location: Training Building, Add Alternate No. 1A.
   2. Basis-of-Design Product: Subject to compliance with requirements, provide the following:
      a. Taylor Metal Products: 2" MS-200 Mechanical Seamed Metal Roof Panel.
      b. Approved substitution from one of the following:
         1) Bridger Steel, Inc.
         2) Metal Sales Manufacturing Corporation.
         3) Morin; a Kingspan Group Company.
         4) Petersen Aluminum Corp.
         5) AEP Span. [via Addendum No. 01]
         6) IMETCO. [via Addendum No. 03]
   3. Metallic-Coated Steel Sheet: Aluminum-zinc alloy-coated steel sheet complying with ASTM A792, Class AZ50 coating designation; structural quality. Prepainted by coil-coating process to comply with ASTM A755.
      a. Nominal Thickness: 0.0269 inch.
      b. Exterior Finish: 2-coat fluoropolymer.
      c. Color: Graphite Black SRI-26.
   4. Clips: 2-piece floating to accommodate thermal movement.
      a. Material: 0.0250 inch thick or as required to meet performance requirements.
   5. Panel Coverage: 18 inches.
   6. Panel Height: 2 inches.

2.3 MISCELLANEOUS METAL FRAMING

A. Miscellaneous Metal Subframing and Furring: ASTM C645; cold-formed, metallic-coated steel sheet, ASTM A653, G90 coating designation or ASTM A792, Class AZ50 coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.
   1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
   2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
   3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam, or closed-cell laminated polyethylene; minimum 1 inch thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Formed from same material as metal panels as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal panels.

D. Panel Fasteners: Self-tapping screws designed to withstand design loads. Provide EPDM, PVC, or neoprene sealing washers for exposed fasteners.

E. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
   1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing; 1/2 inch wide and 1/8 inch thick.

2. Joint Sealant: ASTM C920 as recommended in writing by metal panel manufacturer and complying with Section 079200.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C1311.

2.4 FABRICATION

A. Fabricate and finish metal panels and accessories at factory, by manufacturer's standard procedures and processes, and as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

C. Fabricate metal panel joints with factory-installed sealant that provide weathertight seal and prevent metal-to-metal contact, and minimize noise from movements.

D. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.
3. Sealed Joints: Form nonexpansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view.
5. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
    a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.5 FINISHES

A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within 1/2 of range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

B. Steel Panels and Accessories:
1. 2-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent polyvinylidene fluoride (PVDF) resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions. Finish consists of the following:
    a. Prime Coat: Minimum total dry film thickness of 0.15 to 0.20 mils.
    b. Finish Coat: Minimum total dry film thickness of 0.70 to 0.80 mils.
    c. Total Dry Film Thickness: 0.85 to 1.00 mils.
    d. Secular Gloss: ASTM D523; 8 to 15 at 60 deg.
2. Concealed Finish: Apply pretreatment and manufacturer's standard white or light-colored acrylic or polyester backer finish consisting of prime coat and wash coat
    a. Total Dry Film Thickness: Minimum 0.50 mils.

C. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, metal panel supports, and other conditions affecting performance of Work.
   1. Examine wall framing to verify that girts, angles, channels, studs, and other structural panel support members and anchorage have been installed within alignment tolerances required by metal wall panel manufacturer.
   2. Examine wall sheathing to verify that sheathing joints are supported by framing or blocking and that installation is within flatness tolerances required by metal wall panel manufacturer.
      a. Verify that air- or water-resistive barriers have been installed over sheathing or backing substrate to prevent air infiltration or water penetration.

B. Examine roughing-in for components and systems penetrating metal panels to verify actual locations of penetrations relative to seam locations of metal panels before installation.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C754 and metal panel manufacturer's written recommendations.

3.3 INSTALLATION OF METAL WALL PANELS

A. Install metal panels according to manufacturer's written instructions and approved Shop Drawings in orientation, sizes, and locations indicated. Anchor metal panels and other components of Work securely in place, with provisions for thermal and structural movement.
   1. Shim or otherwise plumb substrates receiving metal panels.
   2. Flash and seal metal panels at perimeter of openings.
      a. Fasten with self-tapping screws.
      b. Do not begin installation until air- or water-resistive barriers and flashings that will be concealed by metal panels are installed.
   3. Install screw fasteners in predrilled holes.
   4. Locate and space fastenings in uniform vertical and horizontal alignment.
   5. Install flashing and trim as metal panel Work proceeds.
   6. Locate panel splices over, but not attached to, structural supports.
      a. Stagger panel splices and end laps to avoid a 4-panel lap splice condition.
   7. Align bottoms of metal panels and fasten with blind rivets, bolts, or self-tapping screws.
      a. Fasten flashings and trim around openings and similar elements with self-tapping screws.
   8. Provide weathertight escutcheons for pipe- and conduit-penetrating panels.

B. Fasteners:
   1. Steel Panels: Use stainless steel fasteners for surfaces exposed to the exterior; use galvanized-steel fasteners for surfaces exposed to the interior.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action as recommended in writing by metal panel manufacturer.

D. Standing-Seam Metal Wall Panel Installation: Fasten metal wall panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.
   1. Install clips to supports with self-tapping fasteners.
   2. Install pressure plates at locations indicated in manufacturer's written installation instructions.

3. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal wall panel, and factory-applied sealant are completely engaged.
4. Watertight Installation:
   a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
   b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
   c. At panel splices, nest panels with minimum 6 inch end lap, sealed with sealant and fastened together by interlocking clamping plates.

E. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.
1. Install components required for a complete metal panel system including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items. Provide types indicated by metal wall panel manufacturer; or, if not indicated, provide types recommended by metal panel manufacturer.

F. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install Work with laps, joints, and seams that are permanently watertight.
1. Install exposed flashing and trim that is without buckling and tool marks, and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and achieve waterproof performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet with no joints allowed within 24 inches of corner or intersection. Where lapped expansion provisions cannot be used or would not be sufficiently waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch deep, filled with mastic sealant (concealed within joints).

3.4 REPAIR

A. Replace formed metal panels that have been damaged or have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

3.5 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Water-Spray Test: After installation, test assembly area as directed by Architect, for water penetration according to AAMA 501.2.

C. Manufacturer's Field Service: Engage factory-authorized service representative to inspect and test completed metal wall panel installation, including accessories.

D. Remove and replace metal wall panels where tests and inspections indicate that they do not comply with specified requirements.

E. Additional tests and inspections, at Contractor's expense, are performed to determine compliance of replaced or additional Work with specified requirements.

F. Prepare test and inspection reports.

3.6 CLEANING

A. On completion of formed metal panel installation, remove unused materials.

B. Clean exposed metal finished surfaces as recommended in writing by formed metal panel manufacturer.

C. Clear weep holes and drainage channels of obstructions, dirt, and sealant.

3.7 PROTECTION

A. Remove temporary protective coverings and strippable films as formed metal panels are installed unless otherwise indicated in manufacturer's written installation instructions.

B. Maintain standing-seam metal panels in clean condition during construction.

END OF SECTION 074213.13

SECTION 116723

SHOOTING RANGE EQUIPMENT

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Shooting range equipment including the following:
   1. Bullet traps and collection.
   2. Target systems.
   3. Safety baffles and ballistic barriers.

1.2 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct meeting at Project.

1.3 ACTION SUBMITTALS

A. Product Data:
   1. Manufacturer's data sheets on each product shall be used.
   2. Preparation instructions and recommendations.
   3. Storage and handling requirements and recommendations.

1.4 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this Section with a minimum 10 years documented experience.

B. Equipment Installer Qualifications: Company specializing in performing Work of this Section. Minimum 5 years documented experience with projects of similar scope and complexity.
   1. Range Ventilation Installer: Contractor experienced in design, construction, testing, commissioning, and operation of indoor shooting range ventilation systems.

C. Source Limitations: Provide each product type from single manufacturer ensuring uniformity.

1.5 SEQUENCING

A. Supply products to affected trades in time to prevent interruption of construction progress.

1.6 WARRANTY

A. Manufacturer's Warranty:
   1. Manufacturer warrants products to be free from manufacturing defects. This warranty covers both parts and labor for a period of 3 years. During this time, manufacturer warranty shall become void shall have no obligation to repair or replace the Work; pursuant to the Repair Warranty, if such Work was (collectively, "Exclusions"):
      a. Improperly used by Customer or others (i.e., exceeded the operational and/or functional scope for which it was intended, including use of unsupported bullets).
      b. Improperly maintained by Customer (regular maintenance items shall be performed by Customer include the following, light bulbs, circuit breakers, batteries, filters, oil, grease, consumable items including those identified herein or accepted as consumables in the industry, etc. or complete maintenance records not kept in accordance with manufacturer's instructions.

c. Modified or altered by Customer or others during and/or after implementation of Work (including the removal of manufacturer's logos, badging and/or other branding from the manufacturer's materials).
d. Serviced incorrectly by any third party.
e. Damaged or rendered inoperative as a result of:
1) The acts or omissions of Customer or others, including:
Failure to implement recommended protection and/or armoring measures.
Failure to comply with the manufacturer's printed instructions.
Abuse.
Rodents or pests.
a) Acts of nature, including lightning, flood, fire, earthquake, etc.
b) Primary or secondary bullet strikes to or from non-impact surfaces (e.g., ceiling or wall baffles, moving target tracks, target trolleys, target stands, target holders, etc.).
c) Inadequate, incorrect, or unstable electricity supply.
d) Exposure to environmental conditions that exceed the scope of the product's design.
e) Corrosion, moisture contamination, abrasion, or normal wear and tear.
f) Power surge.
2) Not operated in compliance with applicable building, mechanical, plumbing, or electrical codes.
3) Supplied and/or installed incorrectly by any third party.
4) Damaged, in whole or in part, due to Customer's failure to give manufacturer timely notice of the alleged defect or non-conforming portion of Work; or

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by the following:
1. Action Target Inc.
2. Approved substitution.

2.2 BULLET TRAPS AND COLLECTION

A. Bullet trap made from chopped rubber.
1. Basis-of-Design Products: Subject to compliance with requirements, provide the following:
a. Action Target Inc.: Structural Rubber Berm Trap.
b. Approved substitution.
2. Performance Requirements:
a. Ballistic Rating: ATI Class 2 (Rifle). Shotguns using ammunition 00 Buckshot.
b. Comply with structural requirements; wind, seismic, and snow loads.
1) Deck Plate: Secure to framework with Grade 5 nuts and bolts in horizontal and vertical directions.
2) Toe of Deck Plate: Anchors to concrete floor creating a structural diaphragm.
3) Structural strap.
3. Trusted partner warranty.
4. Angle: Maximum 30 deg from horizontal.
5. Width per Foot: As indicated on Drawings.
6. Media Depth: Perpendicular deck plane, 24 inches ; horizontal shooting depth, 48 inches.
7. Frame: Galvanized steel with interlocking and bolted connections.
8. Retaining Base: Galvanized steel with proprietary fin system to retain rubber layer.
a. Fins eliminate need for a continuous top-fill device.
9. Height: 6 feet. Mining Requirements: After 60,000 rounds per lane.
10. Height: 8 feet. Mining Requirements: After 80,000 rounds per lane.

11. Height: 10 feet. Mining Requirements: After 80,000 rounds per lane.
12. Height: 12 feet. Mining Requirements: After 80,000 rounds per lane.
13. Media: Standard chopped rubber, 0.75 in average size, pure SBR, 99.9 percent free of loose wire and exposed steel.
14. Media: Premium chopped rubber, 1.25 in average size, pure SBR from off-the-road tires and 99.9 percent free of loose wire and exposed steel.
15. Deck Plate: 10 gauge galvanized A36 steel.
16. Deck Plate: 1/4 inch A36 steel.
17. Deck Plate: 1/4 inch AR-500 steel.
18. Back Plate: 10 gauge galvanized A36 steel, 26.5 inches tall.
19. Back Plate: 1/4 inch AR500 steel, 26.5 inches tall.
20. Configuration: Wall supported.
21. Configuration: Free standing.
22. Install over existing berm. Modify structure as required.
    a. Allows for use of oblique angles for shooting.
    b. Shall not require rear access for cleaning or service.
    c. Allow for recovery of spent rounds for periodic recycling.
    d. Contains no EPA regulated materials or water-absorbing material.
23. Sidewall Protection: 10 gauge galvanized A36 steel.
24. Sidewall Protection: 1/4 inch thick A36 steel.
25. Eyebrow Protection: 10 gauge galvanized steel.
    a. Size: 12 inch.
    b. Size: 18 inch.
    c. Size: 24 inch.
    d. Size: 30 inch.
26. Fire Protection: ASTM E108, Class A.
    a. Shall adhere to chopped rubber granules.
    b. Fire protectant media shall not contain absorbent materials.
    c. Shall not require water application to maintain fire rating.
27. Back Plate Fascia: Replaceable 1-1/2 inch thick SBR panel.
    a. SureStop 2 inch Rubber Panel

2.3 TARGET SYSTEMS

A. Fixed turning target system.
Provide at least one target and target carrier per lane. [via Addendum No. 03]
1. Basis-of-Design Products: Subject to compliance with requirements, provide the following:
    a. Action Target Inc.: Electric Fixed Lateral.
    b. Approved substitution.
2. Actuator Performance:
    a. Suspended from an overhead track behind barrier or baffle.
    b. Capable of independent or synchronized operation.
    c. Can be positioned laterally up to 30 inches in either direction.

3. Construction:
    a. Spacing can be reconfigured without use of tools.
    b. Cabling and mounting system allows multiple target carriers shall be mounted on single track.
    c. Actuator Housing: Fully enclosed clamshell design. 11 gauge (0.1196 inch thick mild plated steel with zinc plated or powder coated finish.
    d. Downrigger: Quick-release clamp assembly of ballistic steel to hold target below carrier body.
        1) Clutch: Disengages clamp from turning motor if large external force is applied to motor. Automatically re-engages when force is removed.
    e. Rotation: Controlled by 360 degree Random Edging target-turning mechanism.

f. Control and Power Circuits: Made through a connector with a positive lock and quarter-turn release.
g. Locking Thumbscrews: Secure carrier at desired position.
h. Track: Accutrac 11 gauge thick satin-coated galvannealed.

4. Control System: Mancom Master Control.

B. Computerized track runner system:
1. Basis-of-Design Products: Subject to compliance with requirements, provide the following:
a. Action Target Inc.: Dual Running Man Pro (DRM Pro).
b. Approved substitution.
2. Performance Requirements:
a. Runner: Computerized programmable control system capable of:
1) Automatic track length detection.
2) Automatic trolley drift compensation.
3) Trolley Speeds: Up to 20 fps. Adjust without knobs or switches.
a) 10 fps requires 21 ft. of track.
b) 15 fps requires 30 ft. of track.
c) 20 fps requires 48 ft. of track.
4) Change trolley direction and speed while moving.
5) Position control within 6 inches.
6) Intelligent error reporting:
a) Cable slip detection.
b) Drive errors.
c) Proximity sensor errors.
d) Wiring errors.
7) Status monitoring.
8) Calibration.
9) Data logging.
10) In-field programming for feature add-ons and bug fixes.
11) Capturing odometer data for maintenance scheduling and general use.
12) Real-time speedometer for validation of speeds for consistent training.
13) Capable of connecting to the Action Target cloud network for remote updates and diagnostics (network connection required).
b. Accelerating up to 0.5 g.
c. Accelerating the carrier to 10 fps within 5 ft. of track
d. Operates in winds up to 30 mph.
e. Temperature rating: Minus 20 to 120 deg F.
f. All system components rated to IP54 minimum environmental protection.
g. Runner uses electronic braking to stop without requiring mechanical braking.
h. Runner is able to operate without limit switches to determine end of track.
i. Runner will not make contact with end bumpers except during calibration runs.
3. Trusted partner warranty.
4. Runner System: Two trolleys operating on parallel tracks.
a. Trolleys:
1) Adjustable for target widths from 12 to 24 inches.
2) Accept wooden 1 by 2 inch target holders.
3) Powder coated and zinc plated components.
4) Ratcheting mechanism for quick cable adjustments.
5) Integrated tension indicators for precise cable tensioning.
6) Easily serviceable with use of standard hand tools.
5. Construction:
a. Motor Section: Induction motor. 3 phase, powered by single phase panel.
1) High precision sealed encoders.
2) Hardened tool-steel pulleys.
3) Urethane bumpers.

b. Idler Section: Steel idler pulleys on bronze bushings for smooth operation.
   1) Urethane bumpers for trolley calibration.
c. Track: Modular to allow replacement or repair of individual damaged sections.
   1) Consists of universal 6-foot Action Target Accutrac sections.
   2) Fabricated from pre-galvanized material.
d. Mounting: Ground mounted on a concrete pad using wedge anchors.
e. Mounting: Inverted mounting from channel strut.
f. Downrange Control Panel: UL listed, with pre-terminated connectors.
g. Proximity Sensors: Reset trolley position and compensate for any drift.
h. Cable: 1/8 inch 7x19 galvanized steel cable for trolley movement.
i. Electronics: Rated for indoor or outdoor use.
   1) Wiring: Protected by metal-lined wide-temperature flexible conduit.
j. Electrical Requirements: Operate on 208/240 V, single phase, 20 A service.

6. Control System: Standalone Wireless Controls.
   a. Web-based graphical user interface.
   b. Independent trolley control.
   c. 3 user-adjustable speed controls.
   d. Dynamic positioning.
   e. Real-time speed, position, and status feedback.
   f. Delay function for standalone training.
   g. Continuous mode function.
   h. Status, settings, and configurations.
   i. Error reports.
   j. System reset function.
   k. Built-in user manual.
7. Control System: Mancom Master Control.
   a. Requires server panel with communications bridge.
   b. Includes standalone wireless controls.
8. Control System: Smart Range Application.
   a. Requires server panel with communications bridge.
   b. Includes standalone wireless controls.

2.4 SAFETY BAFFLES AND BALLISTIC BARRIERS

A. Ceiling Baffles: Interconnected baffles attached to building structure.
1. Basis-of-Design Products: ~~Wide-Span Ceiling Baffles~~ Modular Ceiling Baffles, as manufactured by Action Target Inc.
   a. Approved substitutions allowable, subject to compliance with requirements.
2. Joints: Overlapping surfaces so there is no potential for gaps.
   ~~a. Rating: ATI Class 2 (Rifle). 3/8 inch thick AR500 steel panels.~~ [Redundant.]
3. Depth: 96 to 196 inch minimum to maximum.
4. Configuration: Tactical.
~~5. Configuration: Fixed firing position.~~
6. Overall Width: 41 feet, confirm dimensions.
~~7. Rating: ATI Class 1 (Handgun). 1/4 inch thick AR500 steel panels.~~
8. Rating: ATI Class 2 (Rifle). 3/8 inch thick AR500 steel panels.
~~9. Hangers: Rigid.~~
~~10. Hangers: Flexible cable hangers. Only for 96 inch depth baffles.~~
11. Hangers: Structural flexible cable hangers per International Building Code (IBC).
   ~~a. For areas that require a structural stamp for baffling.~~
   ~~b. This option is only valid for 96 inch depth baffles.~~
12. Wall attachment: Concrete or filled CMU block wall.
~~13. Wall attachment: Hollow block wall.~~
~~14. Wall attachment: None.~~
~~15. Splatter Protection: CDX plywood, unpainted.~~

~~16. Splatter Protection: CDX plywood, sealed.~~
~~17. Splatter Protection: Pressure treated plywood.~~
18. Splatter Protection: Includes metal Z-purlin attachment which provides air gap to increase splatter protection material life.
~~19. Splatter Protection: Fire treated plywood, sealed.~~
~~20. Acoustic Tile: 1 inch, Charcoal PEPP.~~
~~21. Acoustic Tile: 1 inch, White PEPP.~~
~~22. Acoustic Tile: 2 inch, Charcoal PEPP.~~
~~23. Acoustic Tile: 2 inch, White PEPP.~~
24. Acoustic Ceiling Panel: 1 inch thick, Wood Wool Composite Acoustical panel
    a. Material: Wood fiber bonded with inorganic binder, Portland cement
    b. Size: 24 x 48 inches.
    c. Edge Profile: Beveled.
    d. Finish: Factory applied paint; single color as selected by Architect.
    e. Surface Burning Performance (Fire Rating per ASTM E84): Flammability, Class A.
    f. Contribution to Room Fire Growth per NFPA 286: Passed.
25. Acoustic Backing: 1.5 inches thick, Mineral Wool Insulation, infill between Z-purlins.
    a. Density: 2.5 lbs. per cu. foot.
    b. Size: 24 x 48 inches.
~~26. Sound Absorption Panels that mfeet the sound requirements of the UFC 4-179-02.~~
~~27. Sound Absorption Blankets that meet the sound requirements of the UFC 4-179-02.~~
[Project is not required to comply with the Unified Facilities Criteria (UFC).]

B. Wall Baffles: Ballistic protection for wall structures. [added via Addendum No. 02]
1. Basis-of-Design Products: Wall Baffles, as manufactured by Action Target Inc.
    a. Approved substitutions allowable, subject to compliance with requirements.
~~2. 3 Year Trusted partner warranty.~~ [Redundant, see Par. 1.6 this section for Warranty requirements.]
3. Tied directly into existing wall structure.
4. Size ~~(inches):~~ ~~8 feet x 36 feet~~ 10 feet x 44 feet (HxL).
~~5. Thickness, Without Fascia: 7/8 inch (22.25 mm).~~
6. Rating: ATI Class 2 (Rifle). 3/8 inch (9.5 mm) thick AR500 steel panels.
7. Wall Attachment: Concrete or filled CMU block wall.
8. Splatter Protection: Includes metal Z-purlin or fire-treated 2x4s which provides air gap to increase splatter protection material life.
    a. 1/2 inch fire-treated plywood unpainted with 2 inch (51mm) rubber panel.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly constructed and prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect in writing of unsatisfactory preparation before proceeding.

3.2 INSTALLATION

A. Install in accordance with manufacturer's instructions, approved submittals and in proper relationship with adjacent construction.

3.3 FIELD QUALITY CONTROL

A. Testing Agency: Owner will engage a qualified testing agency to perform tests and inspections.

3.4 CLEANING AND PROTECTION

A. Clean products in accordance with the manufacturer's recommendations.

B. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION 116723

SECTION 323236
GABION RETAINING WALL

PART 1 - GENERAL

1.01 DESCRIPTION

A. This work consists of designing and constructing gabion wall system as specified herein and in conformity with the lines, grades, design, and dimensions shown on the Contract Drawings.
   1. The gabion walls shall be designed and constructed of the following wall types, or approved equal:
      a. Hilfiker Art Weld Gabion Wall, by Hilfiker Retaining Walls.

1.02 REFERENCES

A. This Section incorporates by reference the latest revisions of the following documents:
   1. American Association of State Highway and Transportation Officials (AASHTO)
      a. LRFD Bridge Design Specifications, 6th Edition
      b. AASHTO M 32: Steel Wire, Plain, for Concrete Reinforcement
      c. AASHTO M 55: Steel Welded Wire Fabric, Plain, for Concrete Reinforcement
      d. AASHTO M 111: Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
      e. AASHTO M 164: High-Strength Bolts for Structural Steel Joints
      f. AASHTO M 194: Chemical Admixtures for Concrete
      g. AASHTO M 223: High-Strength Low-Alloy Columbium-Vanadium Steels of Structural Quality
      h. AASHTO M 232: Zinc Coating (Hot-Dip) on Iron and Steel Hardware
      i. AASHTO M 288: Geotextile Specification for Highway Applications
      j. AASHTO T 96: Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
      k. AASHTO T 267: Determining Organic Content in Soils by Loss on Ignition
      l. AASHTO T 289: Determining pH of Soil for Use in Corrosion Testing
      m. AASHTO T 290: Determining Water-Soluble Sulfate Ion Content in Soil
      n. AASHTO T 291: Determining Water-Soluble Chloride Ion Content in Soil
   2. Washington State Department of Transportation (WSDOT)
      a. Standard Specifications for Road, Bridge and Municipal Construction, (WSDOTSS)
      b. Test Method 113: Determination of Degradation Value
      c. Test Method 417: Determining Minimum Resistivity and pH of Soil and Water
   3. American Society for Testing and Materials (ASTM)
      a. ASTM A1011: Standard Specifications for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability and Ultra High Strength
      b. ASTM A185: Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete
      ~~c. ASTM A641: Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire~~
      d. ASTM D1557: Standard Test Method for Laboratory Compaction Characteristics of soil using Modified Effort (56,000 feet lb/ft^3)
      e. ASTM D2216: Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass

1.03 SUBMITTALS

A. Certificate of Compliance: Transmit a Certificate of Compliance certifying that the wall materials comply with the applicable Articles of this Section.

~~1. Provide a manufacturer's Certificate of Compliance for all concrete admixtures, cement, fly ash, steel reinforcing bars, reinforcing strips, reinforcing mesh, tie strips, fasteners, and joint materials.~~

2. Provide a manufacturer's Certificate of Compliance for gabion wall assembly including wire mesh baskets, spiral binders, lacing and tie wire.

B. Transmit: A copy of all test results performed by the Contractor, or the Contractor's supplier, to ensure compliance with this Section.

C. Transmit: Before fabrication, transmit a field construction manual, prepared by the wall manufacturer, for the walls. This manual shall provide step-by-step directions for construction of the wall system.

~~D. Transmit: Letter of authorization from manufacturer for wall contractor.~~

E. Design Calculations and Shop Drawings

1. Submit detailed ~~design calculations and~~ shop drawings. Wall construction shall not begin without the Owner's Representative written acceptance of the ~~design calculations and~~ shop plans.
2. The submittal shall include ~~detailed design calculations and all~~ details, dimensions, quantities, and cross-sections necessary to construct the wall. ~~The calculations shall include a detailed explanation of all symbols and computer programs used in the design of the walls. All computer output submitted shall be accompanied by supporting hand calculations detailing the calculation process.~~
3. Base design details on the current AASHTO LRFD Bridge Design Specifications and also based on the following:
   a. Base design on the following documents, listed in order of precedence, with those toward the top of the list having highest precedence:
      1) AASHTO LRFD Bridge Design Specifications

   ~~b. The design shall take into consideration application of all dead and live, construction phase and permanent loads. Construction phase loads include dynamic loading due to construction equipment and activities. Permanent loads include the sidewalk, fill and other features.~~

   c. The face of the walls 24 inches or greater in height shall be embedded to a depth of 14 percent of the exposed wall height but not less than 2 feet, unless otherwise supported with concrete footing and internal steel post.
   d. The bottom reinforcement shall be located no higher than the final grade elevation, and the minimum length of all reinforcement shall be 70 percent of the wall height.
   e. Design shall ensure a design life of 75 years for the integrated wall system. Welded wire facing, gabion facing baskets, all connection materials, wire screen, and steel shall be designed to have corrosion resistance and durability to ensure a minimum design life of 75 years.
      1) Submit corrosion resistance design calculations for all elements such that the elements maintain the required capacity, after corrosion loss, at the end of the minimum design life.
      ~~2) Design of steel elements for corrosion resistance shall be in accordance with FHWA NHI-09-087. Design corrosion rates for ungalvanized plain (black wire) steel shall be determined by the designer and shall not be less than 1.0mils/year. Resin Bonded Epoxy and Polymeric Barrier coatings shall not be considered to contribute to the corrosion resistance of steel elements.~~
         ~~a) Include drainage provisions in design and coordinate with underground drainage if required by Civil Engineering specifications and drawings.~~

b) Design, fabricate and install corner details including brackets and reinforcement.
c) Include design calculations showing maximum lateral wall displacements. These maximum lateral displacements shall be computed for all wall heights. Develop, design, and detail remedial measures that will ensure the structural integrity of the wall in the event that the maximum allowable lateral displacements are exceeded. Maximum allowable wall displacement shall be limited to 1 inch.

4. Fully detailed shop drawings including the following items:
   a. Plan and elevation sheet(s) for each wall, containing:
      1) Elevation view of each wall with: elevation at top of wall, at all horizontal and vertical break points, at each wall end, and at least every 50 feet along the wall; elevations at top of leveling pads and foundations, distance along face of wall to all steps in foundations and leveling pads; designation as to type of panel or module; and location of original and final ground line; summary of quantities for all items for each wall, including incidentals.
      2) Plan view of each wall indicating offset from construction centerline to face of wall at all changes in horizontal alignment; limit of widest module, mesh; and centerline of any drainage structure or drainage pipe behind or passing under or through the wall.
      3) General notes for design and construction of wall.
      4) Horizontal and vertical curve data affecting wall construction.
      5) Cross-sections showing construction limits, and limits and extent of backfill and fill material placed above original ground.
      6) Gabion style wall details and detailed sequencing of gabion wall installation.
      7) Submit extent and details of finishes for the gabion wall.
      8) Details of connections and joints between the footing and the gabion wall materials.
      9) Details of supplemental corrosion protection systems such as grounding rods, spiral ties, or coatings.
   b. All details, including reinforcing bar bending details. Bar bending details shall be in accordance with WSDOTSS Section 9-07.1.
   c. Foundation and leveling pad details, including details for steps in foundations or leveling pads.
   d. All modules and facing elements shall be detailed. Show all dimensions necessary to construct the element, all reinforcing steel in the element, and the location of reinforcement element attachment devices embedded in the facing.
   e. All details for construction of the wall, structural abutments, and foundation elements shall be clearly shown.
   f. All details for connections to top cap shall be shown.
   g. All details for the top of the wall, including cross section geometry and reinforcement.
5. The plans shall be prepared under the direction of and signed by a Professional Engineer, licensed in the State of Washington.
6. Provide a schedule for construction of each wall. Include start and finish dates, and duration for major tasks.
7. Provide manufacturer's product data and details for gabion wall system.
8. Provide aggregate source, size, shape, gradation and species of rock fill.

1.04 QUALITY ASSURANCE

A. The completed walls shall meet the following tolerances:
   1. Vertical design batter for gabion walls on this project shall be 0 degrees (vertical face)

2. Deviation from the horizontal alignment shall not exceed 1 inch when measured along a 10-foot straight edge.
3. Deviation from the vertical design batter of the wall shall not exceed 1-1/2 inches per 10 feet of wall height.
4. Maximum allowable offset in any facing joint shall be 1/2 inch.
5. Maximum outward bulge of the face between welded wire-faced structural earth wall reinforcement layers shall not exceed 1 inch.
6. Base of retaining wall excavation shall be within 3 inches of approved shop drawing elevations.
7. External wall dimensions shall be placed within 2 inches of approved shop drawing locations.

B. Provide a qualified and experienced representative at the start of wall construction to resolve wall construction problems as directed by the Owner's Representative. Qualified representatives shall have a minimum 5 years' experience in gabion wall construction prior to the start of wall construction under this Contract. The Contractor shall implement recommendations made by the representative, as accepted by the Owner's Representative.

PART 2 - PRODUCTS

2.01 GENERAL

A. Make arrangements to purchase reinforcing strips or reinforcing mesh, wall system materials, attachment devices, joint filler, and all necessary incidentals from one of the following sources or approved alternate. All materials shall be from the same source. Basis of Design:
1. Hilfiker Retaining Walls, Eureka, CA 95503

2.02 WALL FILL AGGREGATE

A. Backfill material used as Wall Fill Aggregate within gabion shall be fractured rock from clean basalt quarry spalls. Fractured aggregate shall be washed and free of soil, fines, and debris, with 100% passing an 4-inch sieve opening and 0% passing a 2-inch sieve opening, and shall be uniformly graded between the maximum and minimum sieve sizes given.
1. Rock color shall be dark gray.
2. Wall Fill Aggregate sample shall be approved prior to any wall construction.

B. Facing fill aggregate shall meet the durability and chemical requirements for Wall Backfill Material and shall be classified as non-aggressive. Facing fill aggregate shall be free from organic or otherwise deleterious material.

C. Wall Fill Aggregate contained within the rock-filled wire mesh and gabion facing system shall match the approved submittal sample uniformly throughout the length and height of constructed walls. Wall Fill Aggregate shall be obtained from one of the following sources or approved alternate. Aggregate supplier shall ensure consistent availability of similar facing fill material throughout the duration of construction.
1. Washington Rock Quarries, Inc.
   21711 103rd Ave Ct. E Graham, WA 98338
   (253) 262-1661
2. Cadman, Inc.
   PO Box 97038
   Redmond, WA 98073
   (425) 867-1234
3. 410 Quarry, Inc.
   31818 Highway 410

Enumclaw, WA 98022
(360) 825-7505

D. Wall Fill Aggregate shall be placed directly in the gabion, and shall be visible from the front, back and top of the wall.

2.03 WIRE MESH GABION

A. The gabion system shall be constructed of wire mesh units filled with stone aggregate. Gabions shall be of a single unit construction. The base, ends, sides, and top shall be fabricated from 3"x3" 9 Gauge Black Welded Wire Mesh with additional (offset) 3" x 3" welded-wire mesh on interior to provide maximum 1-1/2" openings.

B. Welded wire mesh panels and components shall be connected in such a manner that strength and flexibility at the connection are at least equal to that of the wire mesh. The gabions shall be fabricated in such a manner that they can be assembled at the construction site with Spiral Binders and pre-formed stiffeners to form rectangular baskets of the specified size.

C. The height, length, and width of the gabions shall not vary more than 5 percent from the dimensions shown on the plans.

D. Gabions shall be divided into cells of equal length, not more than 3 feet long, by diaphragms made of the same wire mesh as used for the gabion body.

E. Each gabion shall be fabricated with the necessary diaphragm or diaphragms secured in proper position on the base in such a manner that no additional tying at the base will be necessary.

F. A Certificate of Compliance shall accompany each shipment of gabions to a job site.

G. Wire for the manufacture and assembly of gabions shall meet or exceed all of the following requirements:

Description	Requirement
3"x3" (9 ga. - 0.144 in. min.) Welded Wire Fabric	ASTM A1064
Exception: Weld Shear at 800 lbs of force min.	
9 ga. Pre-Formed Stiffener	ASTM A1064
9 ga. Spiral Binder	ASTM A1064

H. Wall Aesthetics: The finished wall system shall consist of wire mesh gabion arranged in panels divided into a consistent repeating pattern. The fill aggregate shall be exposed and visible between individual wires of the facing mesh. Fill aggregate shall be of uniform gradation and color throughout the entire wall.

~~I. All rock-filled wire mesh units shall be electrically interconnected. Electrical interconnection shall be achieved with continuous metallic connections, bonding wire, or other explicitly defined electrical continuity path between wire mesh units.~~

PART 3 - EXECUTION

3.01 WALL EXCAVATION:

A. Excavation shall be in accordance with the requirements of Section 312000, Earth Moving, and in conformity with the limits required for each stage of construction.

3.02 FOUNDATION PREPARATION (IF REQUIRED)

A. If standard base detailing cannot be installed due to field conditions, then foundation preparation shall be in accordance with the requirements of Section 312000, Earth Moving.

B. The foundation for the wall structure shall be graded level for a width equal to or exceeding the length of reinforcing as shown in the approved shop drawings, and in accordance with WSDOTSS Section 2-12.3.

C. At each gabion basket foundation level, provide an unreinforced concrete leveling pad as required to construct the wall to within the required tolerances. Cure leveling pad a minimum of 12 hours before placement of wall panels. Concrete leveling pad, if required, shall be sized to conform to the allowable soil bearing pressure.

3.03 WALL ERECTION

A. Gabions shall be placed vertically.

B. Gabions shall be placed in successive horizontal lifts in the sequence shown in the Approved Shop Drawings as backfill placement proceeds.

C. As backfill and planting soil material is placed around the gabions, the gabions shall be maintained in vertical position.

D. Reinforcing shall be placed normal to the face of the wall, unless otherwise shown in the Approved Shop Drawings. Prior to placement of the reinforcing, backfill shall be compacted. Gabions shall first be assembled individually as empty units. Each gabion shall be manufactured with the necessary panels, properly spaced and secured, so they can be rotated into position at the construction site with no additional tying of the rotation joint. The panels and diaphragms shall be rotated into position and joined along vertical edges.

E. When 13.5-gauge tie wire is used as the joint material, all vertical edges of each gabion panel shall first be constructed to form individual empty gabions. Simple spiraling (looping without locking) of 13.5-gauge tie wire is not permitted. For welded-mesh, the joint shall be constructed using alternating single and double half hitches (locked loops) in every mesh opening along the joint.

F. When 9-gauge spiral binders are used, the spiral shall be screwed into position such that it passes through each mesh opening along the joint. Both ends of all 9-gauge spiral binders shall be crimped to secure the spiral in place.

G. Temporary fasteners may be used to hold panels wherever gabion-to-gabion joints are constructed. Temporary fasteners may remain in place.

H. Assembly of Successive Gabions (Gabion-to-Gabion Joints)
1. Empty gabions shall be set in place. Individually constructed empty gabions shall be joined successively to the next empty gabion with 13.5-gauge tie wire or 9-gauge spirals, before filling with rock begins. The 13.5-gauge tie wire or 9-gauge spiral binders shall secure, in one pass, all selvage or end wires of panels of all the adjacent gabions along the joint.

I. Assembly of Single-Layered Gabions
1. Single-layered gabion configurations shall be butted and joined along the front, back, and ends as shown on the plans, including tops and bottoms of adjacent gabions.

J. Modified Geometry

1. To match the geometry of the planned gabion configuration, or to meet specific conditions panels shall be folded, cut, and/or re-tied to dimensions shown on the plans or as approved by the Engineer.

K. Filling with Rock

1. Rock shall be placed in gabions to ensure proper alignment, avoid bulges, and provide a minimum of voids. All exposed rock surfaces shall have a smooth and neat appearance. No sharp edges shall project through the wire mesh.

2. When constructing with 1.5-foot-tall or 3-foot-tall gabions, pre-formed stiffeners shall be used to produce a flat, smooth external surface.

3. Pre-formed Stiffeners shall be installed on the exposed face of the gabion prior to rock placement, two rows at 1/3 points on 3' high gabions, one row at 1/2 point in 1.5' high gabions.

4. When filling 3-foot-tall gabions, rock shall be placed in 3 nominal 12-inch layers; when filling 1.5-foot-tall gabions, rock shall be placed in two 9-inch layers.

5. The last layer of rock shall slightly overfill the gabions such that the lid will rest on rock when it is closed.

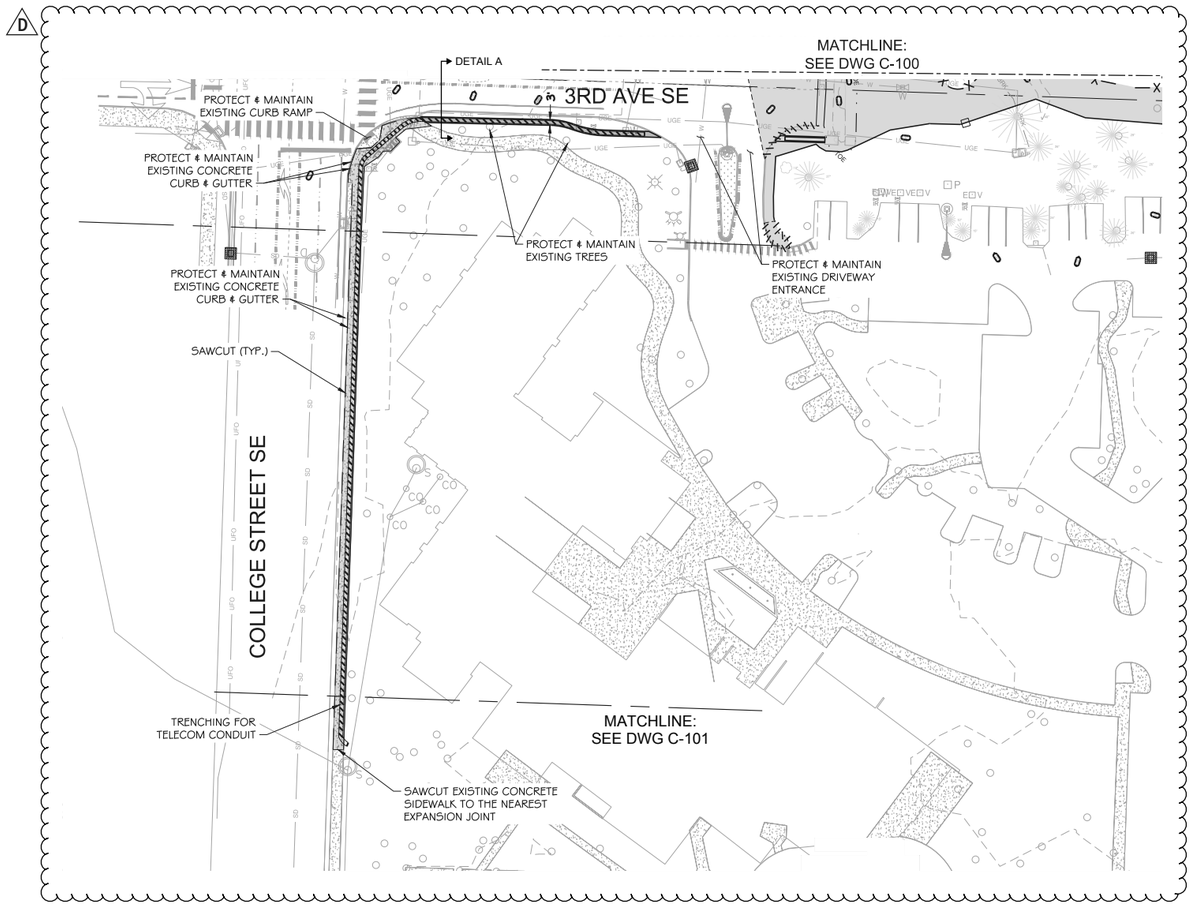
L. Closure of Lids

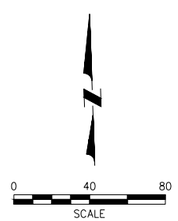
1. Lids shall be tied along the front, ends, and diaphragms of individual gabions and to successive gabions with 9-gauge spiral binders in the same manner as specified elsewhere in this specification.

3.04 FINISHED WALL PROTECTION

A. Protect finished wall from adjacent construction activities, including but not limited to, soil installation and backfilling and prevent fine granular rock, soil, organics, or other construction material deposition within the facing fill aggregate.

END OF SECTION





VERTICAL DATUM
NGVD 29

BASIS OF MERIDIAN
CITY OF LACEY
COORDINATE SYSTEM

CALL
UNDERGROUND
LOCATE TWO (2)
WORKING DAYS
BEFORE YOU DIG
811

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360.352.8883

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KPFF Project # 1018202200044

NEW POLICE STATION
CITY OF LACEY
222 COLLEGE STREET SE, LACEY, WA 98503
CITY PROJECT NO. PW 2022-13

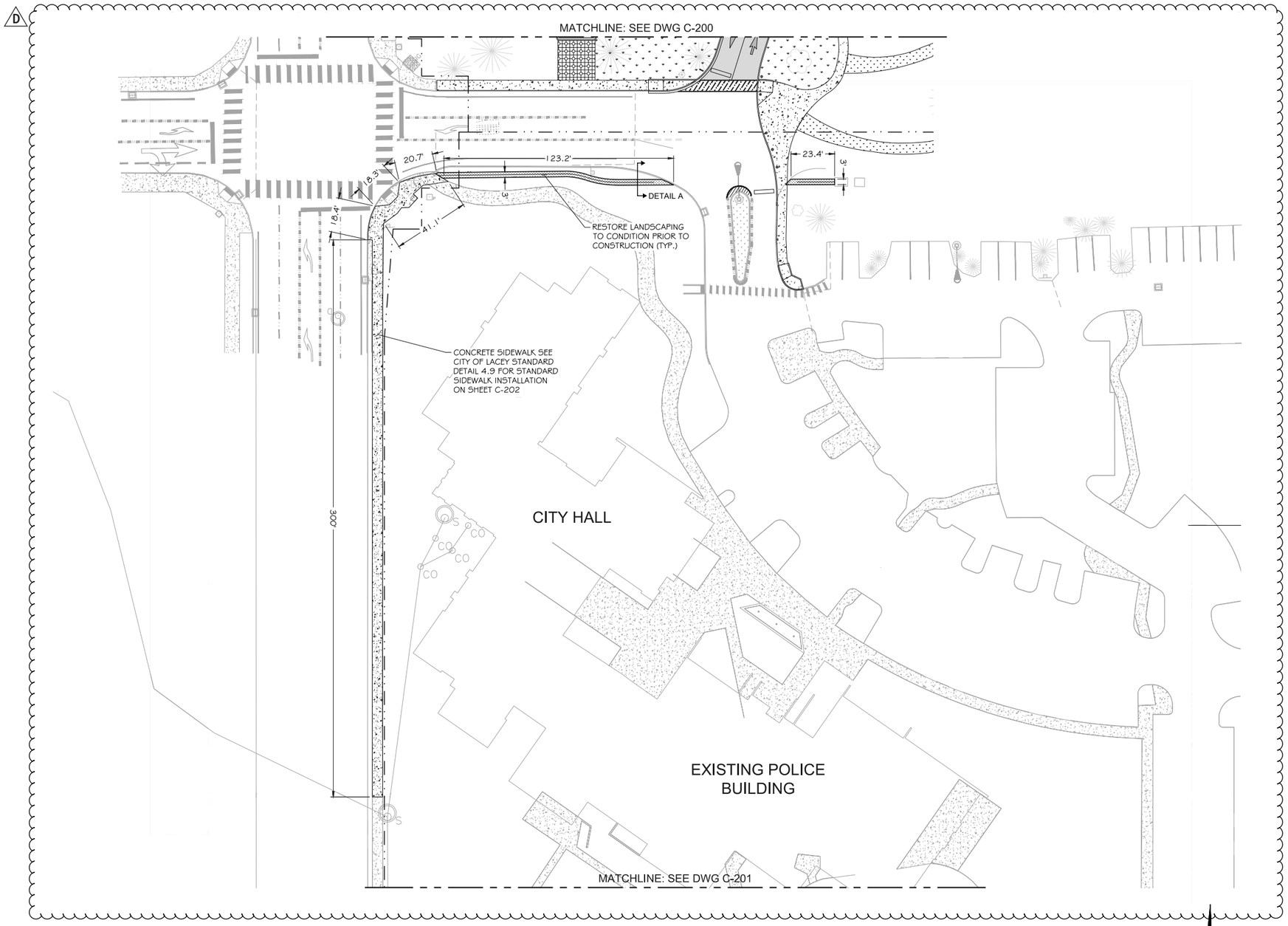
ORIGINAL SHEET SIZE = 11 x 17
HALF SIZE REDUCTIONS = N/A

REVISIONS:
D ADDENDUM NO. 05 11.07.2023

DATE:
11.07.2023

ADDENDUM NO. 05

SHEET NO.
C-101-A5
TESC PLAN SOUTH



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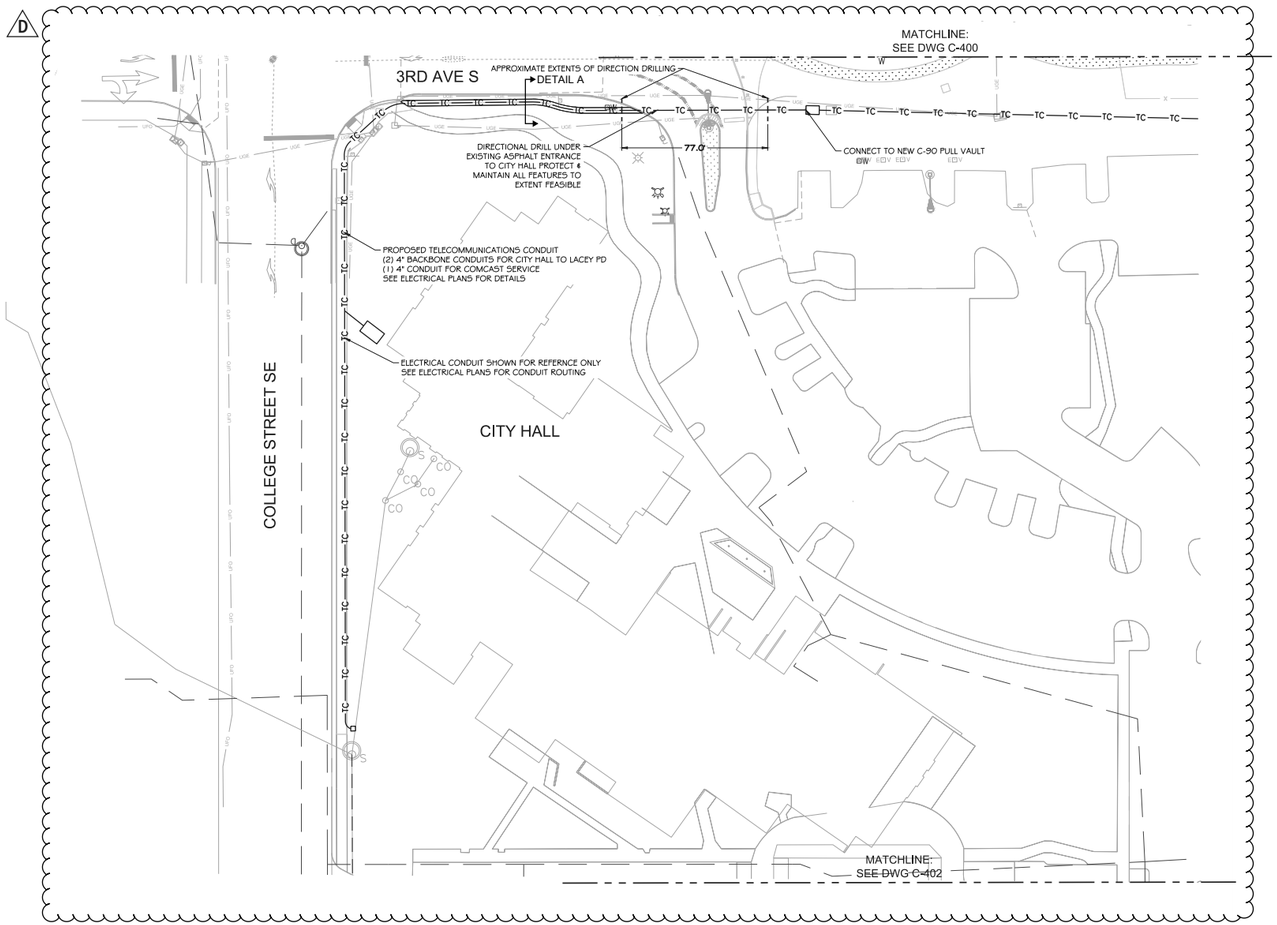
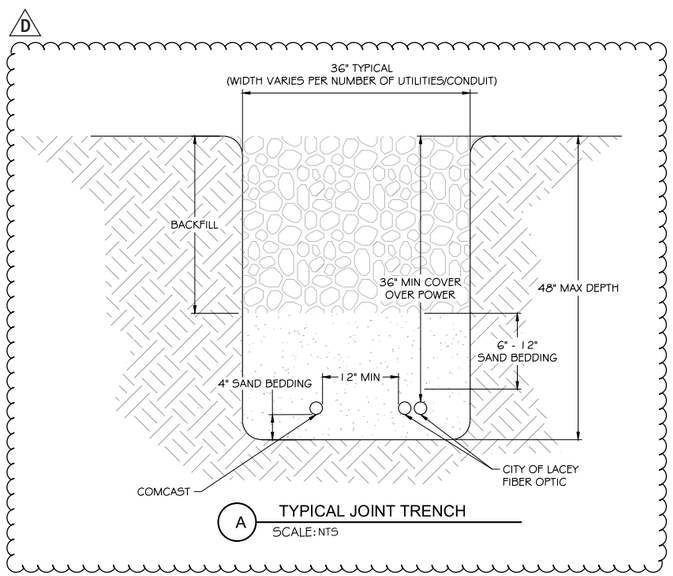
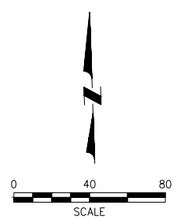
ADDENDUM NO. 05

SHEET NO.
C-201-A5

PAVING & HORIZONTAL CONTROL PLAN SOUTH







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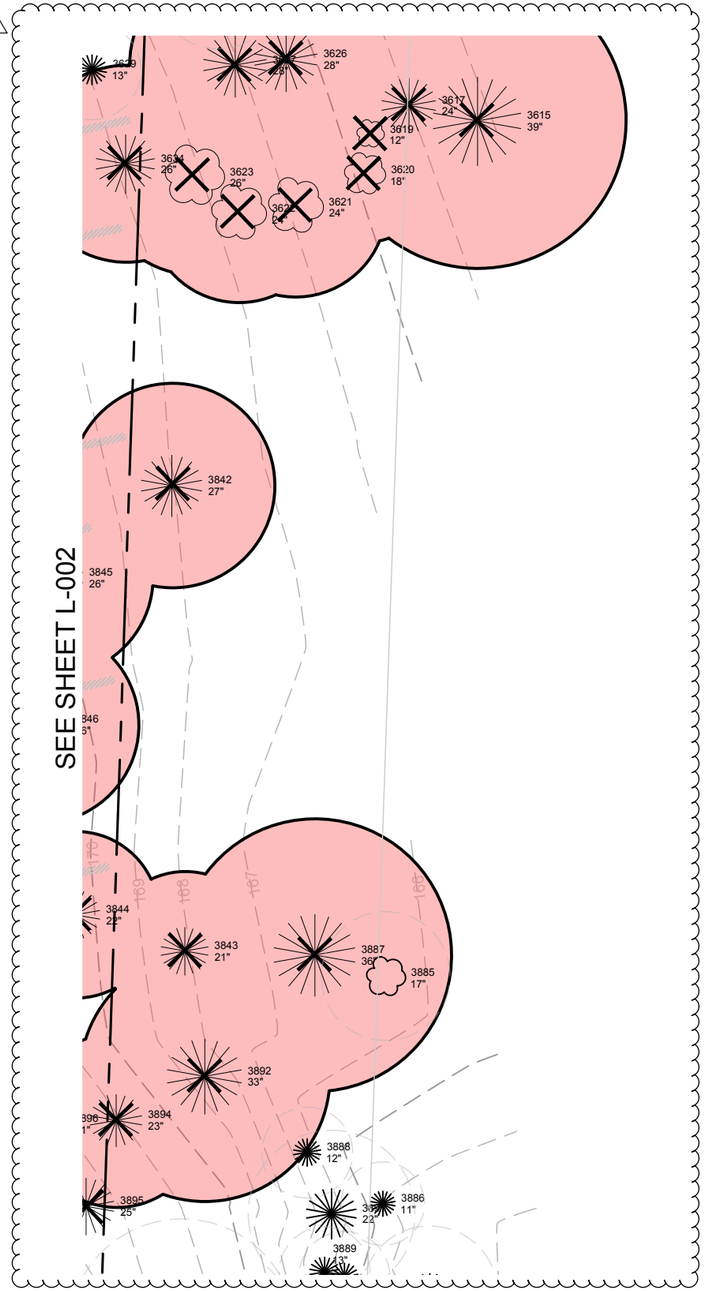
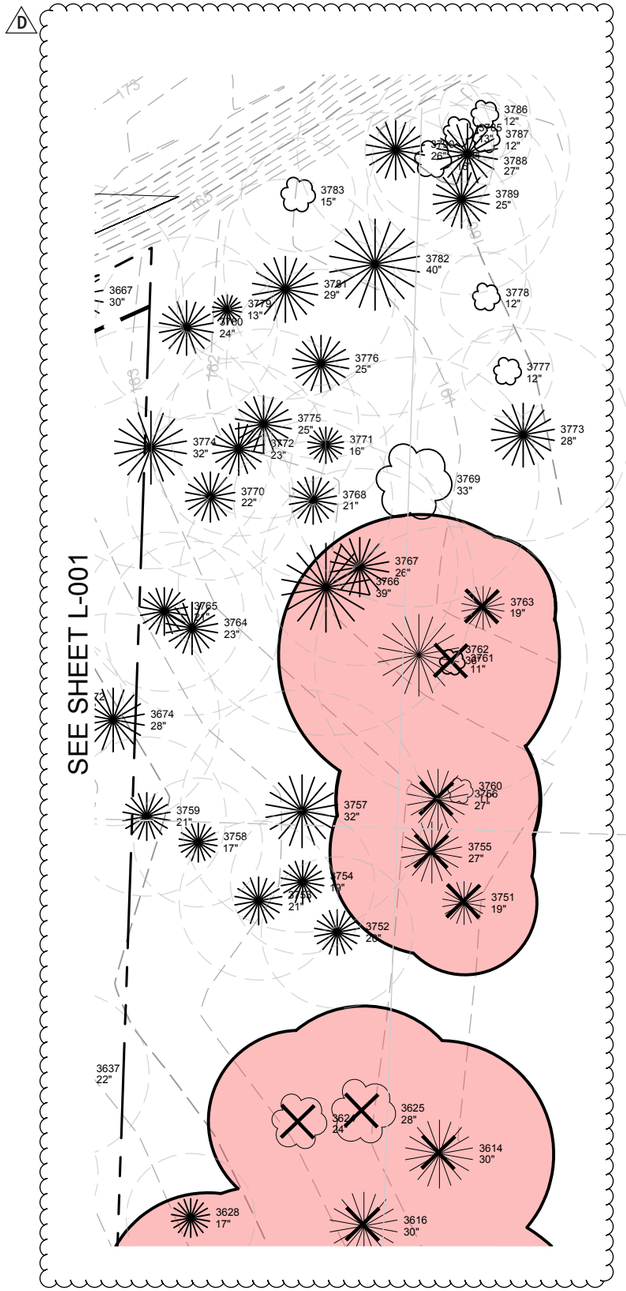
SHEET NO.
C-401-A5

OVERALL UTILITY PLAN
SOUTH



1 TREE PROTECTION SALVAGE AND DEMO PLAN

(L-002)



1 TREE PROTECTION SALVAGE AND DEMO PLAN

(L-001)

TREE SUMMARY TABLE	
ROOT ROT TREES FOR REMOVAL	59
TOTAL TREES REMOVED FOR CONSTRUCTION	206
TOTAL TREES REMOVED	265
TOTAL TREES PROTECTED	174
TOTAL TREES	439
D OFF SITE ROOT ROT TREES FOR REMOVAL	45

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE PROTECTED

LAMINATED ROOT ROT AREA

TREE PROTECTION FENCING

PLANTING AREAS TO BE PROTECTED AND RESTORED

EXISTING ROOT PROTECTION ZONE

0 20' 40'

1" = 40'-0"

N

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SWIFTCOMPANY LLC
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Project #202202

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CITY PROJECT NO. PW 2022-13

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11.07.2023

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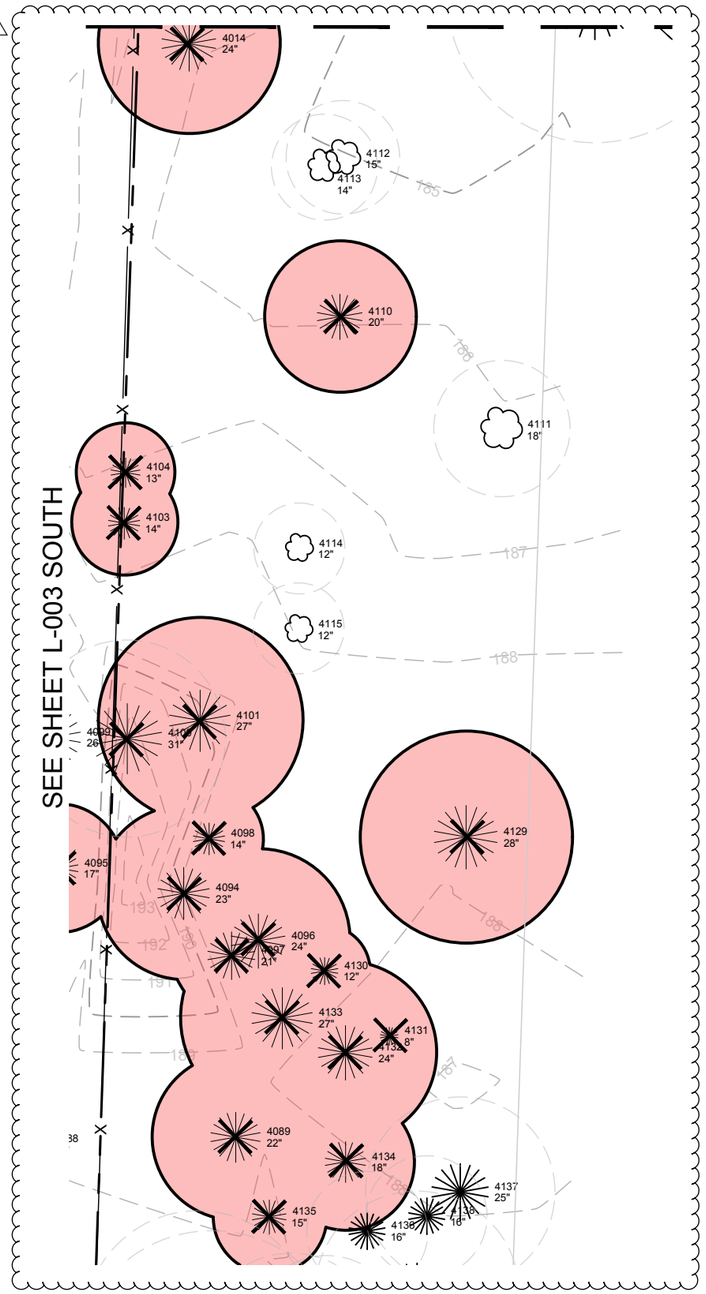
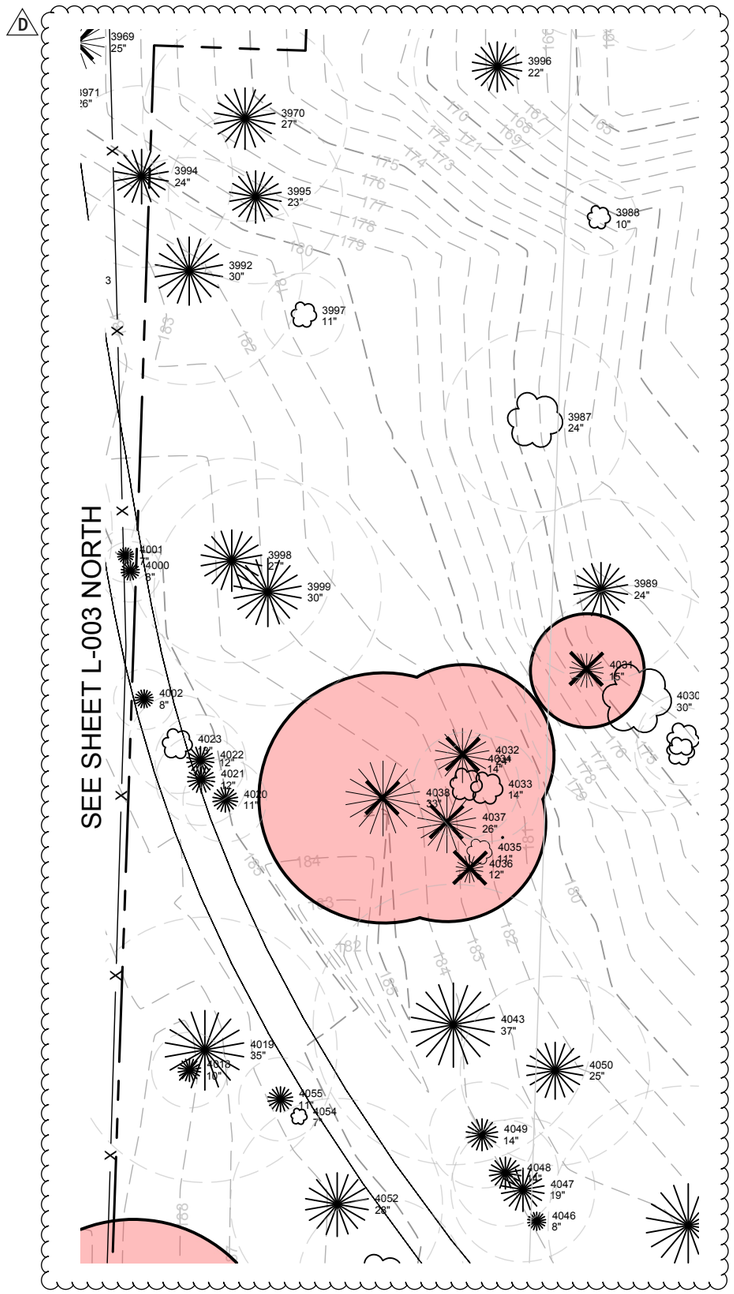
SHEET NO.
L-001-A5

TREE PROTECTION SALVAGE AND DEMO PLAN



3 TREE PROTECTION SALVAGE AND DEMO PLAN, AREA 4

(L-003)



2 TREE PROTECTION SALVAGE AND DEMO PLAN, AREA 5

(L-003)

EXISTING TREE TO BE REMOVED

EXISTING TREE TO BE PROTECTED

LAMINATED ROOT ROT AREA

TREE PROTECTION FENCING

PLANTING AREAS TO BE PROTECTED AND RESTORED

EXISTING ROOT PROTECTION ZONE

0 20' 40'

1" = 40'-0"

N

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SWIFTCOMPANY LLC

Project #202202

NEW POLICE STATION
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222 COLLEGE STREET SE, LACEY, WA 98503
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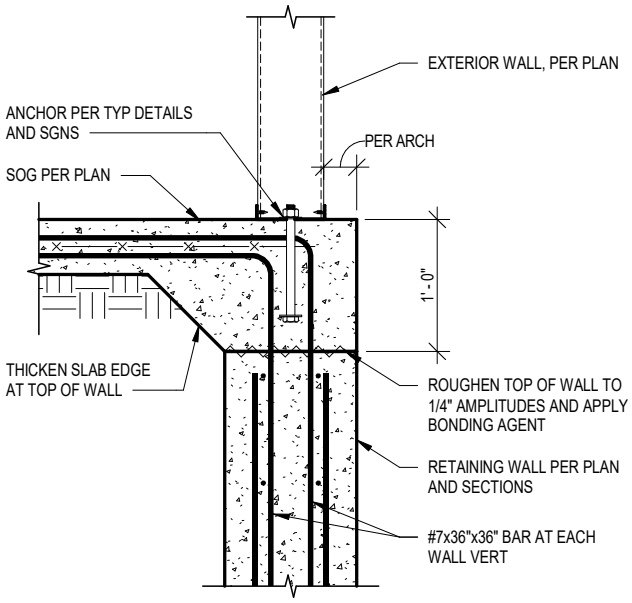
11.07.2023

ADDENDUM NO. 05

SHEET NO.
L-003-A5
TREE PROTECTION SALVAGE AND DEMO PLAN



11 SLAB AND WALL EDGE

SCALE: 1" = 1'-0"

D

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WSP JOB # B2303902.000

JASON PAUL TORNOW STATE OF WASHINGTON 47450 STRUCTURAL ENGINEER PROFESSIONAL ENGINEER

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CITY PROJECT NO. PW 2022-13

ORIGINAL SHEET SIZE = 8.5 x 11
HALF SIZE REDUCTIONS = N/A

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11.07.2023

ADDENDUM NO. 05

SHEET NO.
S-303-A5
FOUNDATION DETAILS