

## Operation and Maintenance Report

Lake Chelan Community Hospital  
Chelan, Washington

*for*

**Lake Chelan Health**

September 23, 2022



**GEOENGINEERS**   
Earth Science + Technology

## **Operation and Maintenance Plan**

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**Lake Chelan Community Hospital**  
**Chelan, Washington**

**File No. 18155-001-06**

**September 23, 2022**

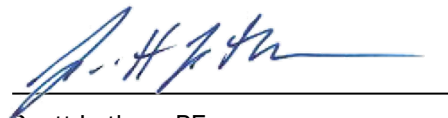
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SHL:BDW:mce

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## 1.0 INTRODUCTION

This Operations and Maintenance Plan (O&M Plan) addresses general procedures for maintaining the capped contaminated soil located at the Lake Chelan Community Hospital (LCCH). The LCCH is located on 106 South Apple Blossom Drive in Chelan, Washington as depicted on the Vicinity Map, Figure 1. Based on previous assessments (GeoEngineers 2009), shallow native soil at the site was contaminated with lead and arsenic at concentrations greater than the Washington State Model Toxics Control Act (MTCA) Method A cleanup level. The arsenic and lead impacting the soil are from historical lead arsenate pesticide application on fruit orchards that formerly occupied the property.

The contaminated soil at the site has been reported to the Washington State Department of Ecology (Ecology, Facility site ID: 66314) and the site was entered into the Voluntary Cleanup Program (VCP; cleanup site ID: 15142). Contaminated soil was capped during construction of the LCCH to limit direct contact with potential receptors and minimize the potential for precipitation to mobilize contaminants from soil to groundwater. The contaminated soil was capped with topsoil or hardscape (pavement or structures) to minimize contact with potential receptors. An environmental covenant was established for deed to the property to govern future actions at the site because contaminated soil is left on site,

This O&M Plan describes:

- A description of the remedial cap system and post-remediation site conditions;
- The parties responsible for monitoring and maintaining the implemented corrective action;
- Monitoring procedures and schedules;
- Maintenance procedures; and
- Reporting requirements.

## 2.0 CORRECTIVE ACTION DESCRIPTION

Lead and arsenic contaminated soil was broadly identified at the site during an assessment conducted in 2009. The contaminated soil was encountered at depths up to 3 feet below ground surface (bgs). During construction of the hospital, the contaminated soil was covered with either a topsoil cap or hardscape to limit potential direct contact. The topsoil and hardscape caps are described by the following:

- A geotextile separation fabric was placed over the contaminated soil in the areas of the topsoil cap to provide a physical and visual separation between the topsoil and underlying contaminated soil;
- 12 inches of topsoil was placed on top of the geotextile and the topsoil was seeded;
- The hardscape cap consisted of sidewalks (concrete), parking lots (asphalt) and building infrastructure.
- 2 to 6 inches of structural fill was placed beneath the concrete or asphalt that provided additional separation from the contaminated soil.

The topsoil and hardscape capped areas are depicted on the Site Plan, Sheet C1.3 included in Appendix A. Contaminated soil is not exposed at the site following completion of the hospital construction.

### 3.0 RESPONSIBLE PARTIES

The LCCH will be responsible for monitoring and maintaining the integrity of the topsoil and hardscape caps. Table I lists the contact information for the site.

**TABLE I. IMPORTANT CONTACT INFORMATION**

Name	Role	Contact	Phone Number	Additional Information
Lake Chelan Community Hospital	Responsible Party and Property Owner	Ken Peters, Facility Manager	Office: 509-682-6112	<a href="mailto:KPeters@lcch.net">KPeters@lcch.net</a> Facility Manager
GeoEngineers, Inc.	Environmental Engineer	Scott Lathen, Project Manager	Office: 509.363.3125	<a href="mailto:slathen@geoengineers.com">slathen@geoengineers.com</a> Environmental Consultant
Washington State Department of Ecology	Regulatory Oversight	Mary Monahan, Site Manager	509.454.7840	<a href="mailto:mmon461@ecy.wa.gov">mmon461@ecy.wa.gov</a>

### 4.0 MONITORING PROCEDURES AND SCHEDULE

The purpose of the cap is to reduce exposure and contact with the contaminated soil, minimize the potential for contaminants migrating to groundwater, and reducing the risk of airborne (dust) contaminant mobilization and off-site migration. Long-term monitoring of the cap will be conducted at the LCCH to maintain the protectiveness of the remedy. Long-term monitoring will include:

- Inspecting the topsoil cap for conditions that reduce the cap thickness;
- Inspecting the asphalt paving and concrete walkways for damage that might expose the underlying contaminated soil; and
- Observing maintenance, construction or landscaping activities that might disturb the contaminated soil to confirm proper handling and safety procedures are implemented.

Maintenance and landscaping personnel should be instructed to observe the conditions of the capped area during the performance of their regular duties. Conditions observed that might reduce the effectiveness of the cap should be reported to the responsible party (Table I). An inspection of the entire capped area should be conducted and documented annually by the responsible party.

Ecology must be notified and provide written approval, as required in the environmental covenant, in advance of any maintenance, construction or landscaping activities that have the possibility of damaging the cap or disturbing the capped contaminated soil. These types of activities include, but are not limited to:

- Drilling or driving samplers, stakes or posts;
- Planting shrubs or trees;
- Installing underground utilities including irrigation; and
- Excavation or grading.

#### 4.1. Cap Inspection

Cap inspections will be conducted annually to assess the integrity of the cap. Annual monitoring should be conducted at a time of year when the ground is completely visible (i.e., not covered with snow) and ideally, during the growing season to assess the health of vegetative covers. During the inspections, LCCH's representative will document and photograph the capped area. The inspection form is included in Appendix B. The representative performing the inspection will document the following conditions:

- The health of the seeded cover vegetation on the topsoil cap, including documenting areas of apparent stressed or dead vegetation;
- Exposed or damaged geotextile separation fabric;
- Animal burrows, other holes and ruts, or areas of erosion that reduce the topsoil cap thickness; and
- Cracks or damage to the concrete and asphalt pavement.

If damage to the cap or one of the above conditions is observed, the inspector will make the notifications required in Section 6.0. Damage observed will be assessed, documented and photographed. Per the requirements in the environmental covenant, Ecology will be notified within 48 hours of damage to the cap and LCCH will be responsible to repair the damage. Documentation should be provided to Ecology within 30 days of completion of the repair.

#### 5.0 HEALTH AND SAFETY

Construction, maintenance and landscaping personnel should be informed of the contaminated soil remaining on the site that might be encountered during fulfillment of their responsibilities. If disturbance of the contaminated soil is planned, workers should be appropriately informed and trained to handle the contaminated soil, including Hazardous Waste Operations and Emergency Response (HAZWOPER) training as applicable.

#### 6.0 MAINTENANCE

Cap maintenance will be conducted by LCCH's authorized contractors and will be performed, as needed, based on the inspection observations. Maintenance activities might include:

- Filling in low spots, burrows, ruts or holes with topsoil to establish at least 12 inches of cover over the geotextile;
- Repairing damage to the geotextile separation fabric. The area around the damaged geotextile will be carefully exposed such that the repair overlaps at least 12 inches around the damaged fabric;
- Re-seeding repaired areas of the topsoil cap or areas with sparse vegetation;
- Filling cracks in the asphalt paving with tar or similar sealing compounds;
- Filling potholes or other damage to the asphalt paving with hot-mix asphalt (HMA) patch. The asphalt patch should match the thickness, grade and quality of the existing asphalt; and
- Sealing cracks or other damage to concrete walkways.

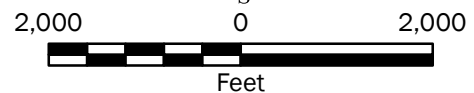
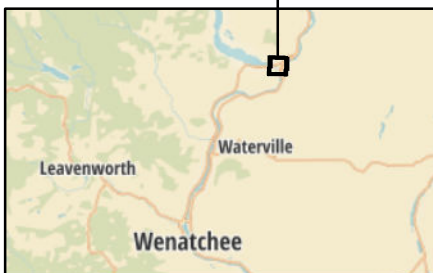
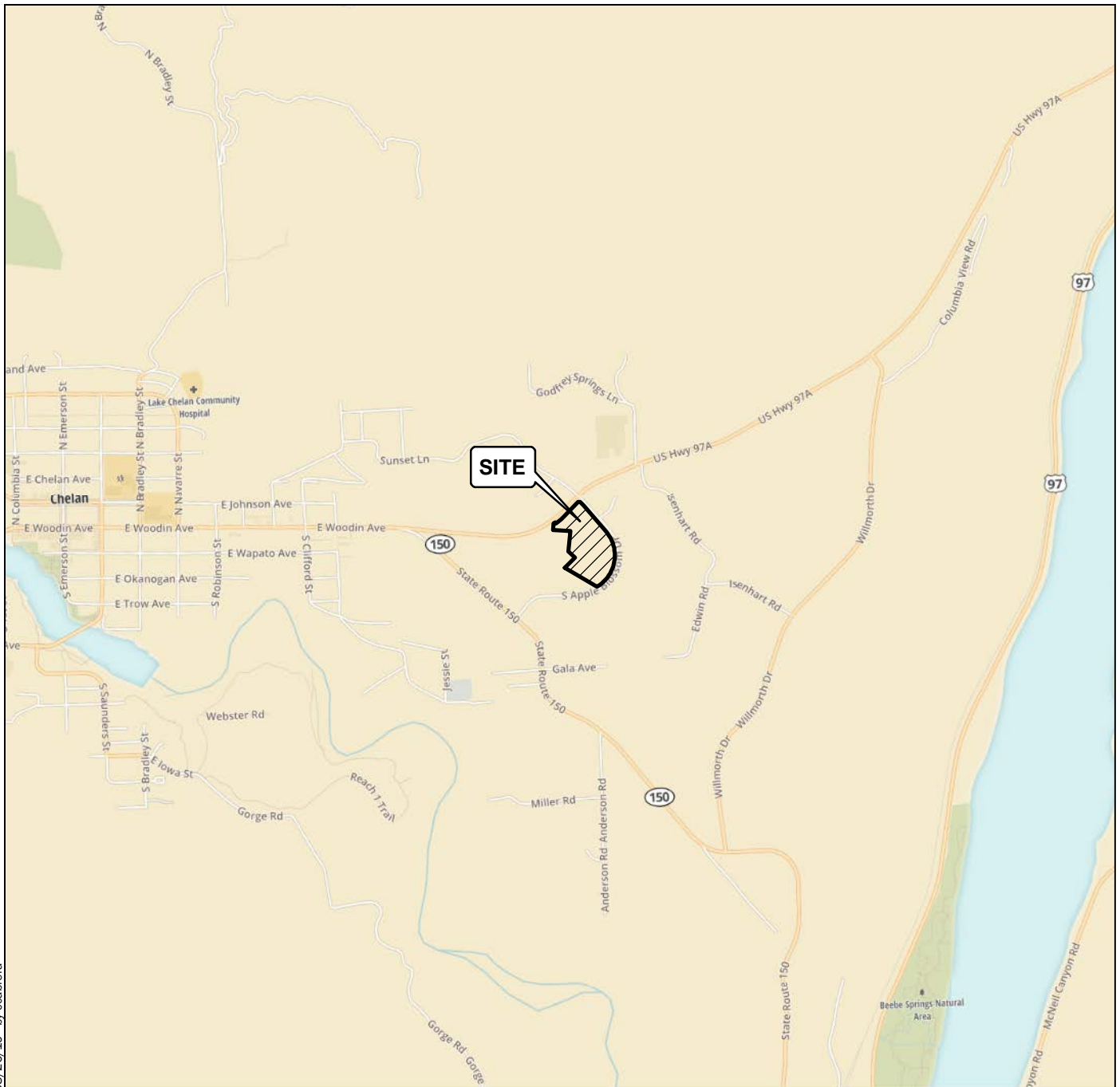
## 7.0 REPORTING

Ecology will be notified of planned development activities, earthwork, utility installation or any other activity that might disturb the capped area or increase the risk of contaminant exposure to human health and the environment as required in the environmental covenant. LCCH will be responsible to provide the required reports and notifications listed below to Ecology:

Report	Frequency	Description
Cap Inspection Checklist	Annually	Checklist completed annually documenting the observations of the cap inspection. The annual checklist should be retained and provided to Ecology upon request.
Cap Damage	As Needed	Damage to the cap must be reported to Ecology within 48 hours of discovery.
Repair Report	As Needed	Documentation of repairs to the cap must be provided within 30 days of completion of the repairs.







### Vicinity Map

Lake Chelan Community Hospital  
Chelan, Washington



Figure 1

### Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2016

Projection: NAD 1983 UTM Zone 10N



## **APPENDIX A**

### **Site Plan**



PROJECT  
**LAKE CHELAN COMMUNITY HOSPITAL**

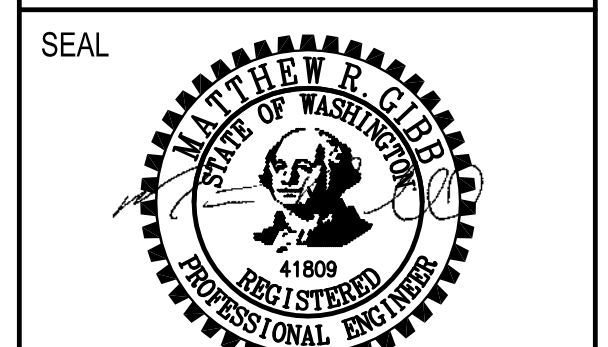
110 SOUTH APPLE  
BLOSSOM DRIVE  
CHELAN, WA 98816

OWNER  
**LAKE CHELAN HEALTH**

CONSULTANT  
**EDCI**  
737 W. 2ND AVENUE  
SPokane, Washington 99201  
PHONE: (509) 455-4444 • FAX: (509) 455-7402  
WWW.EDCI-ENGINEERS.COM

MARK	DATE	DESCRIPTION
	04/30/2021	CONFORMANCE SET
	05/27/2021	CITY RESPONSES
	06/09/2021	CITY RESPONSES
	06/22/2021	TRANSFORMER RELOCATION
	09/08/2021	RFI 085 RI REVISION
	10/04/2021	RFI-076 & 116
	11/30/2021	RFI-210

PROJECT NO. LAKE01.16.079  
DRAWN BY KLE  
ISSUE DATE 06/22/2021



SHEET TITLE / NUMBER  
**SITE PLAN**

**C1.3**

**REFERENCE NOTES:**

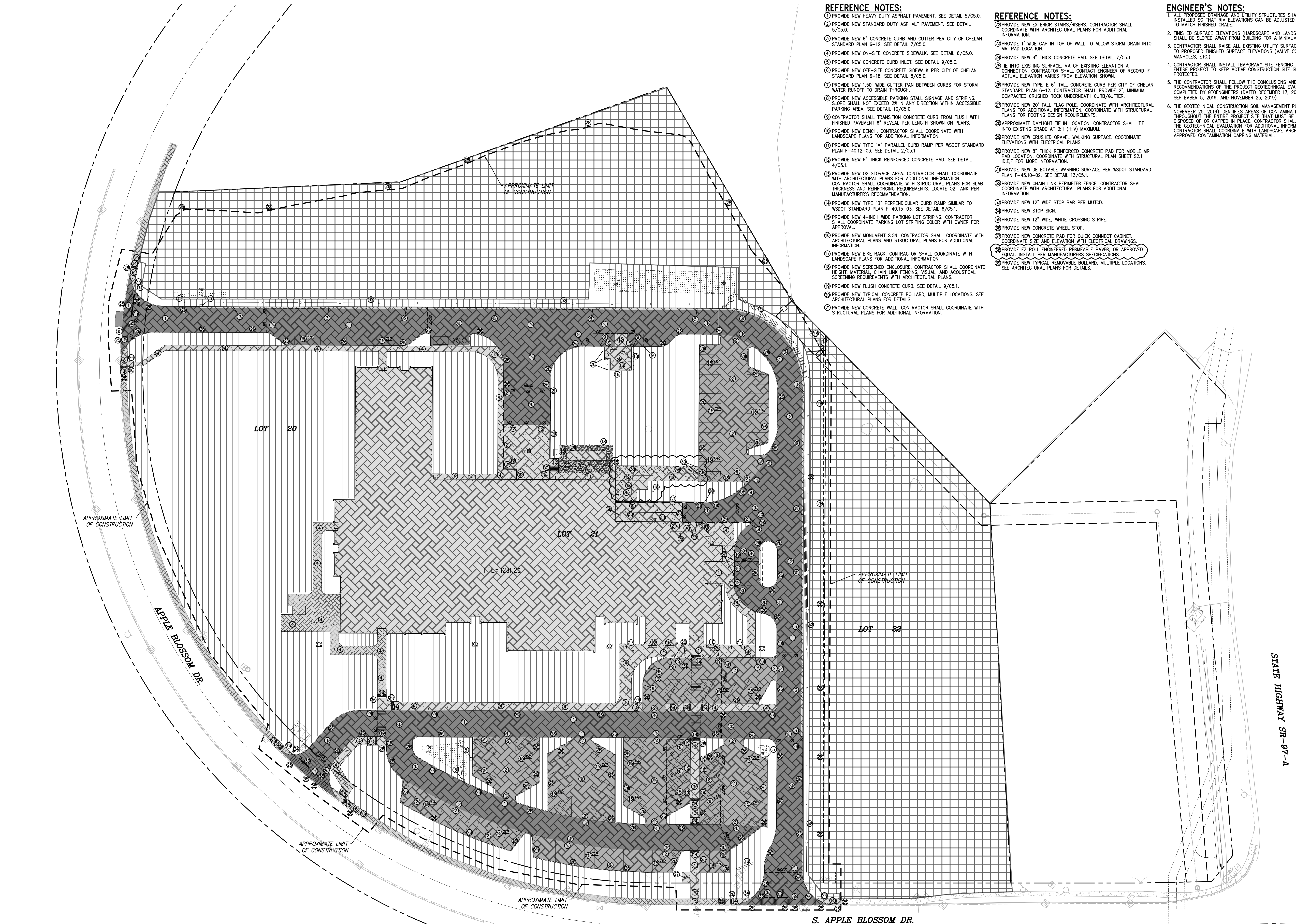
1. PROVIDE NEW HEAVY DUTY ASPHALT PAVEMENT. SEE DETAIL 5/C5.0.
2. PROVIDE NEW STANDARD DUTY ASPHALT PAVEMENT. SEE DETAIL 5/C5.0.
3. PROVIDE NEW 6" CONCRETE CURB AND GUTTER PER CITY OF CHELAN STANDARD PLAN 6-12. SEE DETAIL 7/C5.0.
4. PROVIDE NEW ON-SITE CONCRETE SIDEWALK. SEE DETAIL 6/C5.0.
5. PROVIDE NEW CONCRETE CURB INLET. SEE DETAIL 9/C5.0.
6. PROVIDE NEW OFF-SITE CONCRETE SIDEWALK PER CITY OF CHELAN STANDARD PLAN 6-18. SEE DETAIL 8/C5.0.
7. PROVIDE NEW 1.50' WIDE GUTTER PAN BETWEEN CURBS FOR STORM WATER RUNOFF TO DRAIN THROUGH.
8. PROVIDE NEW ACCESSIBLE PARKING STALL SIGNAGE AND STRIPING. SLOPE SHALL NOT EXCEED 2% IN ANY DIRECTION WITHIN ACCESSIBLE PARKING AREA. SEE DETAIL 10/C5.0.
9. CONTRACTOR SHALL TRANSITION CONCRETE CURB FROM FLUSH WITH FINISHED PAVEMENT 6" REVEAL PER LENGTH SHOWN ON PLANS.
10. PROVIDE NEW BENCH. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE PLANS FOR ADDITIONAL INFORMATION.
11. PROVIDE NEW TYPE "A" PARALLEL CURB RAMP PER WSDOT STANDARD PLAN F-4012-03. SEE DETAIL 2/C5.1.
12. PROVIDE NEW 6" THICK REINFORCED CONCRETE PAD. SEE DETAIL 4/C5.1.
13. PROVIDE NEW 02 STORAGE AREA. CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL PLANS FOR SLAB THICKNESS AND REINFORCING REQUIREMENTS. LOCATE 02 TANK PER MANUFACTURER'S RECOMMENDATION.
14. PROVIDE NEW TYPE "B" PERPENDICULAR CURB RAMP SIMILAR TO WSDOT STANDARD PLAN F-4015-03. SEE DETAIL 6/C5.1.
15. PROVIDE NEW 4-INCH WIDE PARKING LOT STRIPING. CONTRACTOR SHALL COORDINATE PARKING LOT STRIPING COLOR WITH OWNER FOR APPROVAL.
16. PROVIDE NEW MONUMENT SIGN. CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL PLANS AND STRUCTURAL PLANS FOR ADDITIONAL INFORMATION.
17. PROVIDE NEW BIKE RACK. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE PLANS FOR ADDITIONAL INFORMATION.
18. PROVIDE NEW SCREENED ENCLOSURE. CONTRACTOR SHALL COORDINATE HEIGHT, MATERIAL, CHAIN LINK FENCING, VISUAL, AND ACOUSTICAL SCREENING REQUIREMENTS WITH ARCHITECTURAL PLANS.
19. PROVIDE NEW FLUSH CONCRETE CURB. SEE DETAIL 9/C5.1.
20. PROVIDE NEW TYPICAL CONCRETE BOLLARD, MULTIPLE LOCATIONS. SEE ARCHITECTURAL PLANS FOR DETAILS.
21. PROVIDE NEW CONCRETE WALL. CONTRACTOR SHALL COORDINATE WITH STRUCTURAL PLANS FOR ADDITIONAL INFORMATION.

**REFERENCE NOTES:**

22. PROVIDE NEW EXTERIOR STAIRS/RSIS. CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
23. PROVIDE 1" WIDE GAP IN TOP OF WALL TO ALLOW STORM DRAIN INTO MRI PAD LOCATION.
24. PROVIDE NEW 9" THICK CONCRETE PAD. SEE DETAIL 7/C5.1.
25. TIE INTO EXISTING SURFACE. MATCH EXISTING ELEVATION AT CONNECTION. CONTRACTOR SHALL CONTACT ENGINEER OF RECORD IF ACTUAL ELEVATION VARIES FROM ELEVATION SHOWN.
26. PROVIDE NEW TYPE-E 6" TALL CONCRETE CURB PER CITY OF CHELAN STANDARD PLAN 6-12. CONTRACTOR SHALL PROVIDE 2" MINIMUM, COMPACTED CRUSHED ROCK UNDERNEATH CURB/GUTTER.
27. PROVIDE NEW 20' TALL FLAG POLE. COORDINATE WITH ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION. COORDINATE WITH STRUCTURAL PLANS FOR FOOTING DESIGN REQUIREMENTS.
28. APPROXIMATE DAYLIGHT TIE IN LOCATION. CONTRACTOR SHALL TIE INTO EXISTING GRADE AT 3:1 (H:V) MAXIMUM.
29. PROVIDE NEW CRUSHED GRAVEL WALKING SURFACE. COORDINATE ELEVATIONS WITH ELECTRICAL PLANS.
30. PROVIDE NEW 8" THICK REINFORCED CONCRETE PAD FOR MOBILE MRI PAD LOCATION. COORDINATE WITH STRUCTURAL PLAN SHEET S21 (SEE FOR MORE INFORMATION).
31. PROVIDE NEW DETECTABLE WARNING SURFACE PER WSDOT STANDARD PLAN F-45.10-02. SEE DETAIL 13/C5.1.
32. PROVIDE NEW CHAIN LINK PERIMETER FENCE. CONTRACTOR SHALL COORDINATE WITH ARCHITECTURAL PLANS FOR ADDITIONAL INFORMATION.
33. PROVIDE NEW 12" WIDE STOP BAR PER MUTCD.
34. PROVIDE NEW STOP SIGN.
35. PROVIDE NEW 12" WIDE, WHITE CROSSING STRIPE.
36. PROVIDE NEW CONCRETE WHEEL STOP.
37. PROVIDE NEW CONCRETE PAD FOR QUICK CONNECT CABINET. COORDINATE SIZE AND ELEVATION WITH ELECTRICAL DRAWINGS.
38. PROVIDE 22 ROLL ENGINEERED PERMEABLE PAVEMENT OR APPROVED EQUAL INSTALL PER MANUFACTURER'S SPECIFICATIONS.
39. PROVIDE NEW TYPICAL REMOVABLE BOLLARD, MULTIPLE LOCATIONS. SEE ARCHITECTURAL PLANS FOR DETAILS.

**ENGINEER'S NOTES:**

1. ALL PROPOSED DRAINAGE AND UTILITY STRUCTURES SHALL BE INSTALLED SO THAT FIN ELEVATIONS CAN BE ADJUSTED 60.5 FEET TO MATCH FINISHED GRADE.
2. FINISHED SURFACE ELEVATIONS (HARDSCAPE AND LANDSCAPING) SHALL BE SLOPED AWAY FROM BUILDING FOR A MINIMUM OF 5 FEET.
3. CONTRACTOR SHALL RAISE ALL EXISTING UTILITY SURFACE FEATURES TO PROPOSED FINISHED SURFACE ELEVATIONS (VALVE COVERS, MANHOLES, ETC.).
4. CONTRACTOR SHALL INSTALL TEMPORARY SITE FENCING AROUND ENTIRE PROJECT TO KEEP ACTIVE CONSTRUCTION SITE SECURE AND PROTECTED.
5. THE CONTRACTOR SHALL FOLLOW THE CONCLUSIONS AND RECOMMENDATIONS OF THE PROJECT GEOTECHNICAL EVALUATIONS COMPLETED BY GEOENGINEERS (DATED DECEMBER 17, 2008, SEPTEMBER 5, 2019, AND NOVEMBER 25, 2019).
6. THE GEOTECHNICAL CONSTRUCTION SOIL MANAGEMENT PLAN (DATED NOVEMBER 25, 2019) IDENTIFIES AREAS OF CONTAMINATION THROUGHOUT THE ENTIRE PROJECT SITE THAT MUST BE LEGALLY DISPOSED OF OR CAPPED IN PLACE. CONTRACTOR SHALL REFERENCE THE GEOTECHNICAL EVALUATION FOR ADDITIONAL INFORMATION. CONTRACTOR SHALL COORDINATE WITH LANDSCAPE ARCHITECT FOR APPROVED CONTAMINATION CAPPING MATERIAL.



**LEGEND**

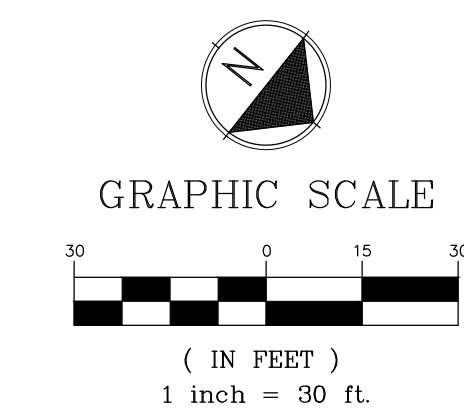
- Building/Sidewalk/Asphalt Hardscape
- Topsoil Cap
- Unmitigated for Future Project

**FOR PERMIT**

THESE DRAWINGS ARE SUFFICIENTLY COMPLETE FOR SUBMISSION TO THE JURISDICTION HAVING AUTHORITY FOR PERMIT. THE CONTRACTOR SHALL NOT USE THESE DRAWINGS FOR CONSTRUCTION UNTIL THE CONTRACTOR RECEIVES WRITTEN APPROVAL FOR USE IN CONSTRUCTION BY THE JURISDICTION HAVING AUTHORITY AND DO ENGINEERS.

**CONTRACTOR NOTE**

ALL EXISTING UTILITIES SHOWN ON PLANS ARE TO BE VERIFIED HORIZONTALLY AND VERTICALLY PRIOR TO ANY CONSTRUCTION. ALL EXISTING FEATURES INCLUDING BURIED UTILITIES ARE SHOWN AS INDICATED ON RECORD MAPS AND SURVEYS FURNISHED BY OTHERS. WE ASSUME NO LIABILITY FOR THE ACCURACY OF THOSE RECORDS AND SURVEYS. CONTACT THE UTILITY OWNER/AGENCY FOR THE FINAL LOCATION OF EXISTING UTILITIES IN AREAS CRITICAL TO CONSTRUCTION.





## **APPENDIX B**

### **Inspection Form**

## Table B-1

### Cap Monitoring and Maintenance Field Form

Lake Chelan Community Hospital  
Chelan, Washington

Date: \_\_\_\_\_

Time: \_\_\_\_\_

Name: \_\_\_\_\_

Component	Condition	Action Needed/Notes
Geotextile		
Topsoil Cover (minimum 12")		
Vegetation		
Asphalt Pavement		
Concrete Walkways		

