

# Appendix D1

Comprehensive Drain & Storm Investigation Report

Issued October 30<sup>th</sup>, 2025, by Element Building Systems

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## **Comprehensive Drain & Storm Investigation Report**

**Project:** 1116 King Street West – Buildings 8 & 9

**Client:** City of Toronto / IBI Group

**Prepared For:** Nabil Layoun (ARCADIS)

**Prepared By:** Element Building Systems (EBS)

**Date:** October 30<sup>th</sup>, 2025

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### **1. Project Background & Objective**

Element Building Systems (EBS) was engaged to carry out a comprehensive investigation of the existing underground sanitary and storm water drainage systems serving Buildings 8 and 9 at 1116 King Street West.

The objective was to document the pipe routing, materials, diameters, invert levels, and physical condition, confirm the system configuration, and determine connection points to the municipal network to support upcoming design and coordination activities.

The existing infrastructure was observed to be of considerable age and in a state of material deterioration. The system no longer conforms to current construction standards, and several sections exhibit conditions inconsistent with safe or sustainable reuse.

### **2. Scope of Work**

The following scope was completed as part of this investigation:

1. CCTV inspection of all accessible sanitary and storm water lines.
2. Locating and tracing underground drainage runs from interior fixtures to exterior points.
3. Identification of pipe materials, diameters, and physical condition.
4. Confirmation that the systems are separate, not combined.
5. Mapping of floor drains, cleanouts, and trench connections.
6. Inspection of the oil interceptor for condition and invert depths.
7. Preparation of layouts with approximate invert levels, pipe sizes, and utility connections.
8. Delivery of a comprehensive assessment report with findings and recommendations.

### **3. Methodology**

- **Inspection Date:** September 26, 2025
- **Inspection Process:** Push-camera CCTV runs through available cleanouts and floor drains, combined with sonde depth locating equipment.
- **Measurements:** Invert elevations determined from finished-floor benchmarks and camera depth readings. Where direct measurement was not possible, data were inferred from adjacent accessible segments and field observations.
- **Verification Level:** All findings represent conditions verified by direct inspection or reasonably inferred from connected sections. Measurements and inverts are sufficient for design and coordination purposes.
- **Media Reference:** Photo and video records have been retained by EBS and are available upon request.(refer Appendix – A for picture report)

## 4. System Overview

### 4.1 Sanitary Drainage System

Location	Pipe Material	Approx. Diameter	Invert (from Finished Floor)	Condition	Remarks
Unit 8 – Main Sewer (CO81 to Exterior)	Clay	6 in	7.2 ft	Fair	Traced to municipal sewer; flow verified via camera run.
Unit 9 – Main Sewer	Clay / Cast Iron	4–6 in	7.0 ft	Damaged	Localized fracture and shift at Hydro Pole location (7 ft depth).
Floor Drains – Unit 9	Cast Iron	4 in	N/A	Fully blocked	Non-functional; replacement required.
Interior Branches	Clay	4 in	5–6 ft typ.	Corroded	Offset joints and partial blockages observed.
Oil Interceptor Outlet	Cast Iron	4 in	N/A	Sealed	Outlet completely solidified with oil residue.

**Summary:** The sanitary network was successfully traced and connected to the municipal sewer main on the west side of the property. Pipe materials are predominantly clay and cast iron ranging from 4–6 inches in diameter. Structural damage was identified near the Hydro Pole area, and several branches show moderate corrosion.

### 4.2 Storm Drainage System

Location	Pipe Material	Approx. Diameter	Invert (from Finished Floor)	Condition	Remarks
Unit 8 – Storm (Point 81)	Clay	6 in	6.8 ft	Broken/Shifted	Pipe extends north toward exterior; U-trap located immediately beyond break.
Unit 9 – Storm (Internal)	Cast Iron	4 in	N/A	Blocked	Trap filled with debris; flow toward north side confirmed by camera direction.
Catch Basins (CB1, CB2)	Clay	6 in	5–6 ft	Blocked	Sediment accumulation prevented camera entry.
Roof Drains (RD2–RD6)	Cast Iron	4 in	N/A	Limited access	Connections visually confirmed from surface conditions.
Exterior Storm Outlet	Clay	6 in	6–7 ft (assumed)	Good	Route inferred to connect to municipal storm main on north side.

**Summary:** The storm water and sanitary systems are fully separate. Storm pipes discharge northward to the municipal storm main; invert levels and flow direction were inferred from accessible segments. No cross-connections observed.

### 4.3 Oil Interceptor

- **Type:** Three-chamber unit located in Unit 9.
- **Condition:** Both inlet and outlet completely blocked with hardened oil and debris.
- **Status:** Non-functional and at end-of-life condition.
- **Recommendation:** Power washing is not effective; mechanical clean-out or replacement is required before reuse or system integration.
- **Invert Depth:** Approximately 7 ft below finished floor based on camera readings.

### 5. Utility Connections and Layout Summary

- **Sanitary System:** Confirmed to connect to the municipal sanitary main on the west side of the property at an estimated invert of 7.2 ft.
- **Storm System:** Assumed to connect to the municipal storm main on the north side based on pipe gradient and direction.
- **Backwater Valves:** No backwater valves were observed on either system during inspection.
- **Pipe Slopes:** Flow direction and invert differentials indicate functional gravity drainage with typical 1–2 % slope between known points.
- **Pipe Diameters:** 4 – 6 inches across both systems; consistent with standard commercial building services.

#### System Integrity Note:

During the investigation, EBS identified that both sanitary and storm networks consist of legacy clay and cast-iron systems likely exceeding their original design life expectancy. The degree of corrosion, offset joints, and blockages suggests that system integrity has been substantially compromised. Reuse of these existing lines poses a risk of future failure, infiltration, and non-compliance with modern design codes and municipal standards.

### 6. Condition Assessment Summary

System Component	Observed Issue	Impact	Recommended Action
Hydro Pole Area (Unit 9 Sewer)	Fractured pipe at 7 ft depth	Potential leakage and infiltration	Repair section during construction.
Storm Line (Point 81)	Broken and shifted clay pipe	Restricted storm flow	Replace damaged segment prior to reuse.
Oil Interceptor	Completely blocked	Non-functional / environmental risk	Replace unit with new separator.
Catch Basins	Sediment buildup	Reduced drainage capacity	Clean and restore access.
Roof Drains	Limited access	Potential ponding risk	Inspect and clear during facility upgrades.

#### General Observation:

The overall deterioration pattern indicates progressive degradation typical of long-term service exposure. Based on the current findings, the existing system cannot be considered reliable for future operational or load-bearing use. Restoration would not provide adequate assurance of performance or lifespan, and complete replacement of the network is recommended for any redevelopment or reconfiguration work.

### 7. Conclusions

The investigation confirms that the sanitary and storm water systems are independent and fully separated. Both networks are predominantly constructed of 4–6 inch clay and cast-iron pipes.



Overall condition: Fair to poor – localized damage, corrosion, and blockage in multiple sections. The oil interceptor is non-functional and requires replacement. Invert levels and pipe sizes have been determined for all accessible locations and inferred for inaccessible runs, providing a complete representation of the existing system. No further field work is required to satisfy the design intent or documentation needs of this project.

Given the age, material composition, and extent of structural compromise, the existing drain and storm systems are not suitable for reuse or long-term service. For liability, warranty, and performance assurance under the forthcoming construction scope, EBS recommends complete replacement with new PVC or HDPE piping systems conforming to current Ontario Building Code and City of Toronto sewer standards. Any attempt to retain or recondition the existing network would constitute work on an as-is, non-warrantable basis, subject to potential future failure.

## **8. Recommendations**

Due to observed degradation and structural instability, full replacement of the existing underground drainage system is strongly recommended.

- Replacement to be performed under a new installation scope, using approved materials and fittings that meet current City of Toronto and CSA standards.
- Any continued use of existing lines shall be limited to temporary or bypass conditions and must be clearly noted as non-conforming, beyond contractor warranty, and at client's discretion.

## **9. Limitations and Professional Statement**

All investigation activities were performed by plumbers using accessible points and industry-standard methods. Where direct inspection was restricted, conditions and invert data were derived from adjacent accessible segments, camera readings, and field inference. This report represents a complete and final assessment of the existing drainage and storm water systems for design and documentation purposes.

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## **10. Executive Summary**

Element Building Systems (EBS) has completed a final comprehensive CCTV and locating investigation of the underground sanitary and storm water networks serving Buildings 8 and 9 at 1116 King Street West. All accessible lines were inspected, and invert elevations, pipe sizes, materials, and routing have been determined and documented. Both systems are independent and function as gravity drains to their respective municipal connections. However, given the advanced age, structural deterioration, and non-conformance of materials, the existing system cannot be feasibly reused or warranted. EBS formally recommends complete replacement of the drainage network as part of any upcoming redevelopment or connection works. With new system installation conforming to code and design requirements, the site drainage and storm infrastructure will meet the performance and compliance expectations for future facility operations.

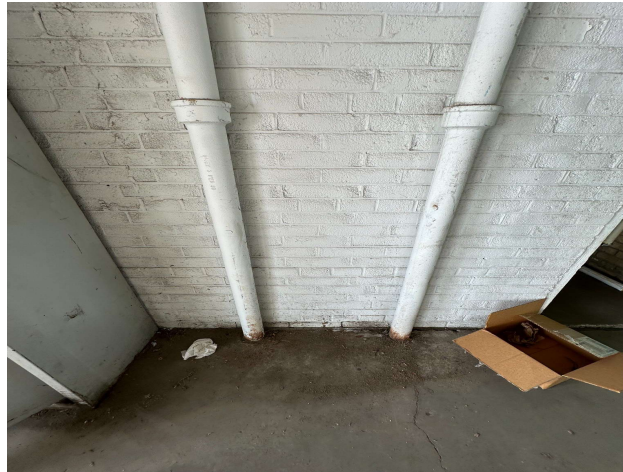
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**Appendix – “A”**  
**1116 King St: Camera Investigation Picture Report**

unit 9 unknown \_vent\_



unit 9 unknown no access vent



unit 9 washroom sewer pipe location



unit9 storm pipe cast 4



unit 9 branch from RD to storm



unit 9 cleanout from washroom to main





Unit 9 point 93 Full blocked floor drain



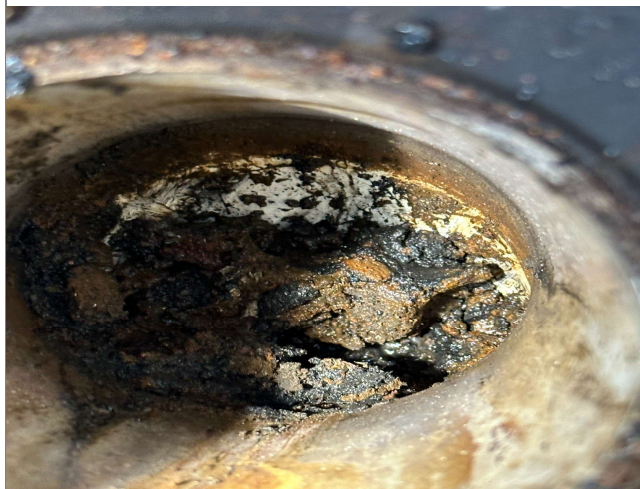
unit 9 point 93 protector net



unit 9 point 93(1)



unit 9 point 93



unit 9 sewer trap leading to outside

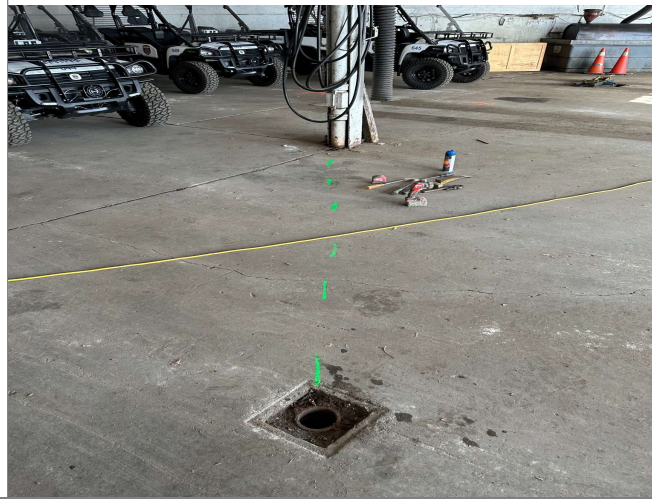


unit 9 sewer trap





unit 9 SS with clean out



unit 9 storm pipe





Trap Assembly - Corroded Connection



Trap Assembly - Side View



Storm Pipe - Unit 9 Alignment (Green markings)



Trap Unit 9 - Marked on Floor



Storm Pipe - Unit 9 Alignment (Green markings)



Trap Unit 9 - Marked on Floor



Unit 8 Catch Basin 1 (View 1)



Unit 8 Catch Basin 1 (View 2)





Unit 8 Catch Basin 1 (View 3)



Unit 8 Catch Basin 1 (Wide View)



Unit 8 Catch Basin 2 - Outlet



Unit 8 Inspection Point 81



Blocked Trap



Clean Out





Clean Out (alternate view)



Clean Out (labeled)

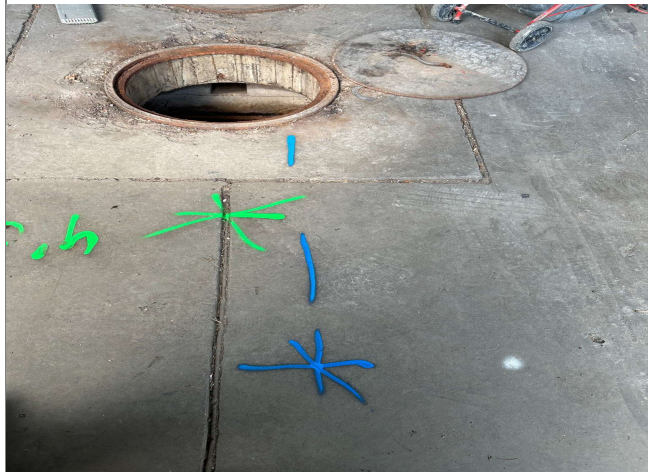




Downstream Chamber



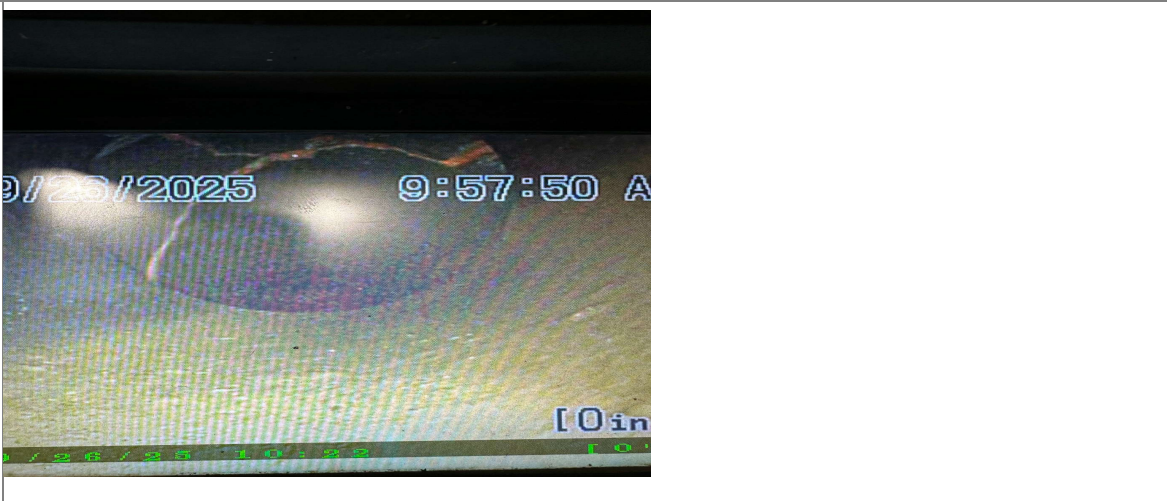
Oil Separator Chamber



# Oil Separator Chamber 3



Inspection Point 81



RD3 Cleanout



RD3



Oil Separator Inlet Pipe Upstream PC2



Oil Separator Inlet Pipe Upstream PC3





Point 92 Unit 9 PC1



Point 92 Unit 9 PC2



Point 92 Unit 9 PC3



RD1\_and\_branch PC1



RD1\_and\_branch PC2



RD1\_and\_branch PC3



Unit 8 CB1 PC1



Unit 8 CB1 PC2





Unit 9 CO3 PC1



Unit 9 CO3 PC2



Unit 9 CO3 PC3



Unit 9 RD91 PC1



Unit 9 RD91 PC2



Unit 9 sewer pipe leading to hydro pole section  
PC 1



Unit 9 sewer pipe leading to hydro pole section  
PC 2



unit8 CO81 PC1



unit8 CO81 PC2

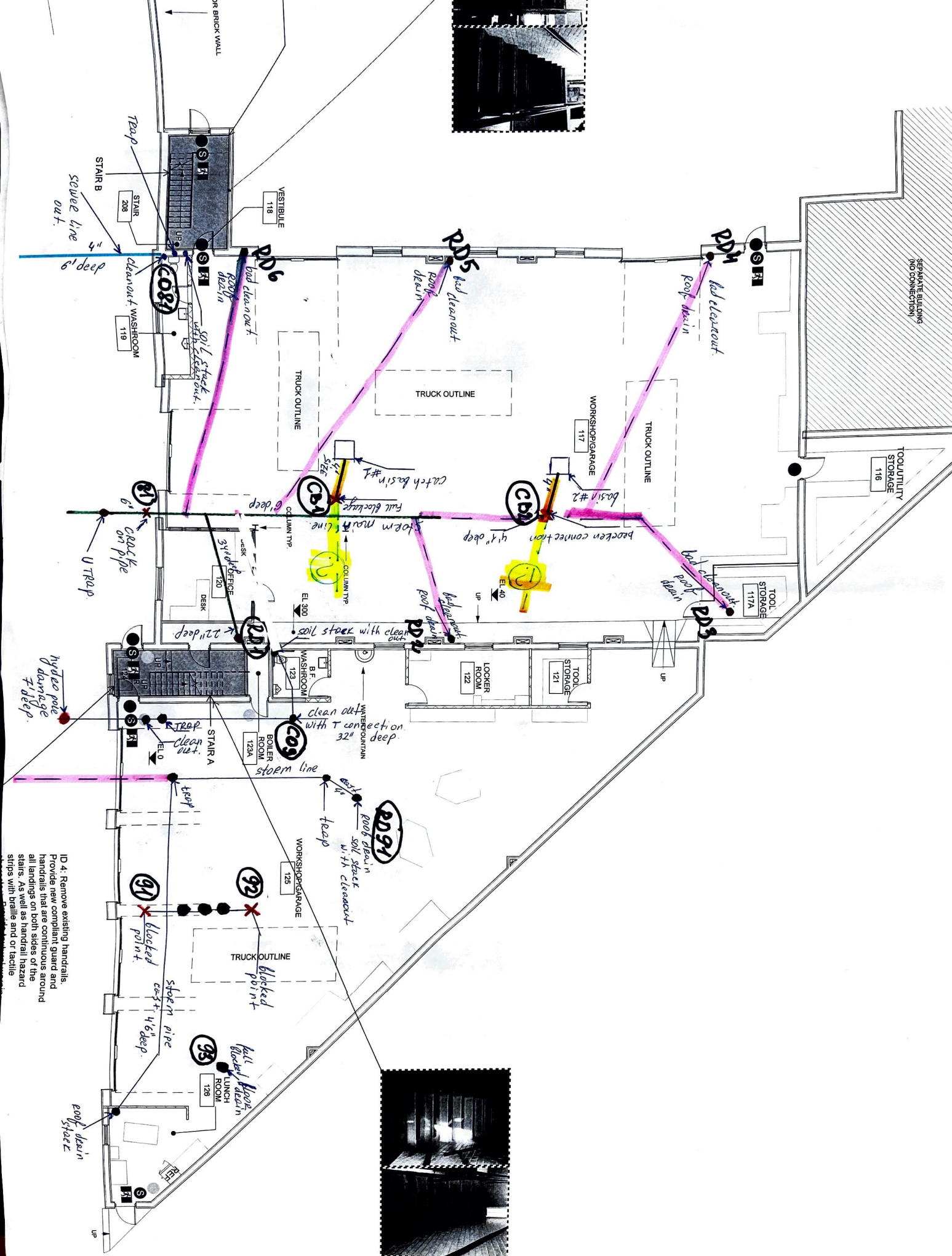


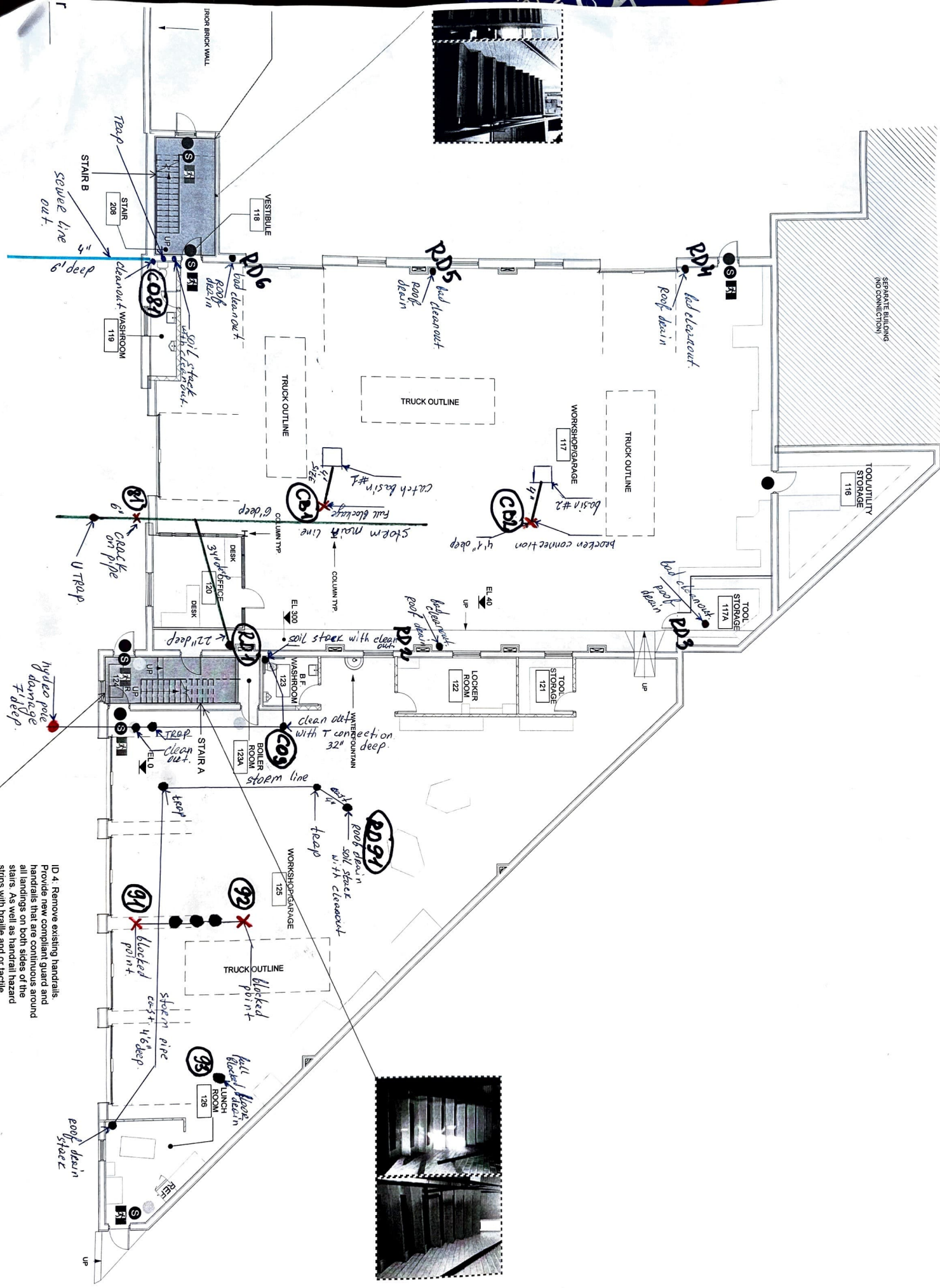
**Note:**

All referenced images and videos are stored in the project drive for review:

<https://drive.google.com/drive/folders/1My-ACNIgVUu8OzgYjmzJBqfjWb0mHf6Q>







ID 4: Remove existing handrails. Provide new compliant guard and handrails that are continuous around all landings on both sides of the stairs. As well as handrail hazard strips with braille and or tactile