

Figure 6.2: YOLOv8 workflow for detection

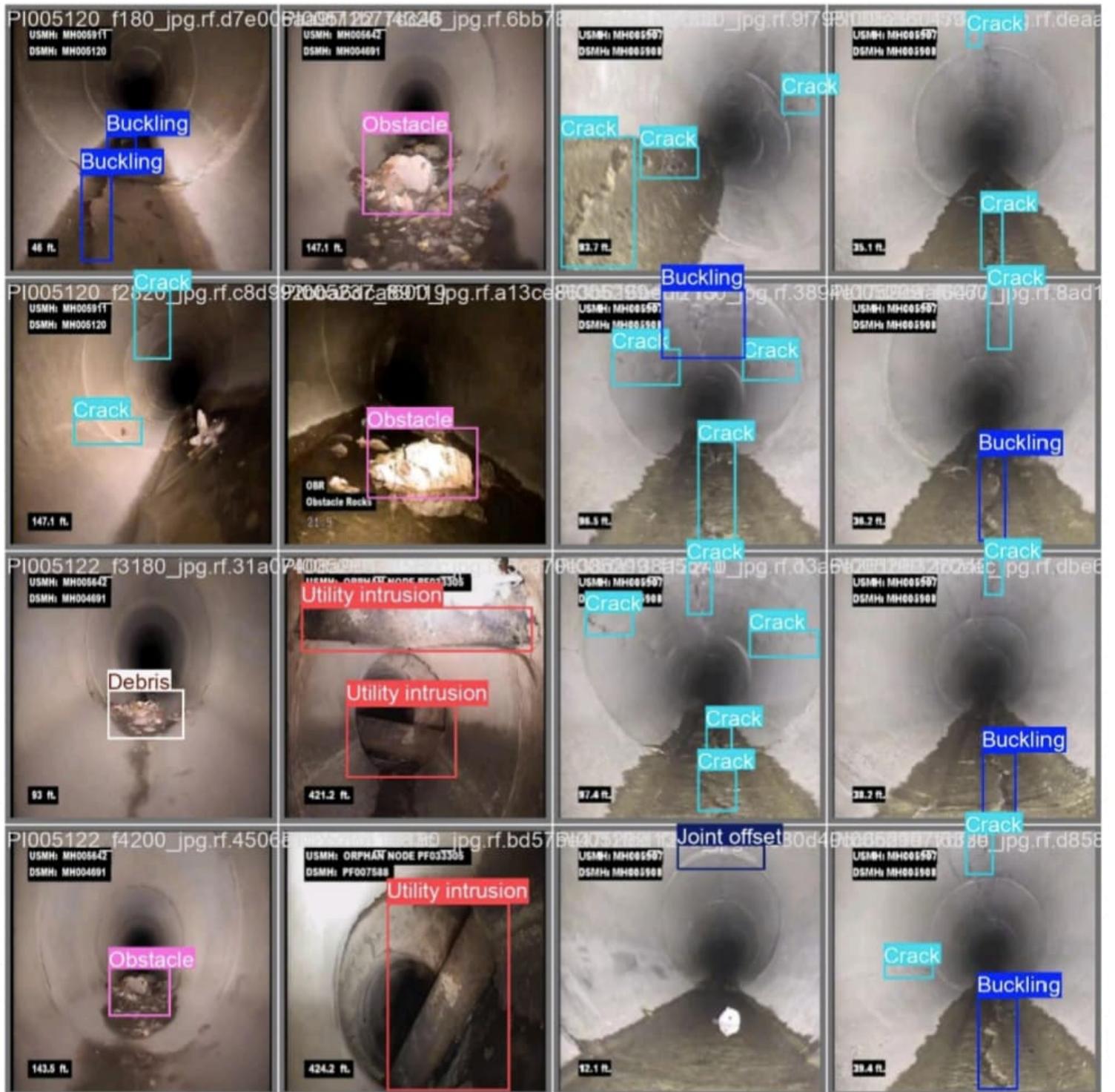
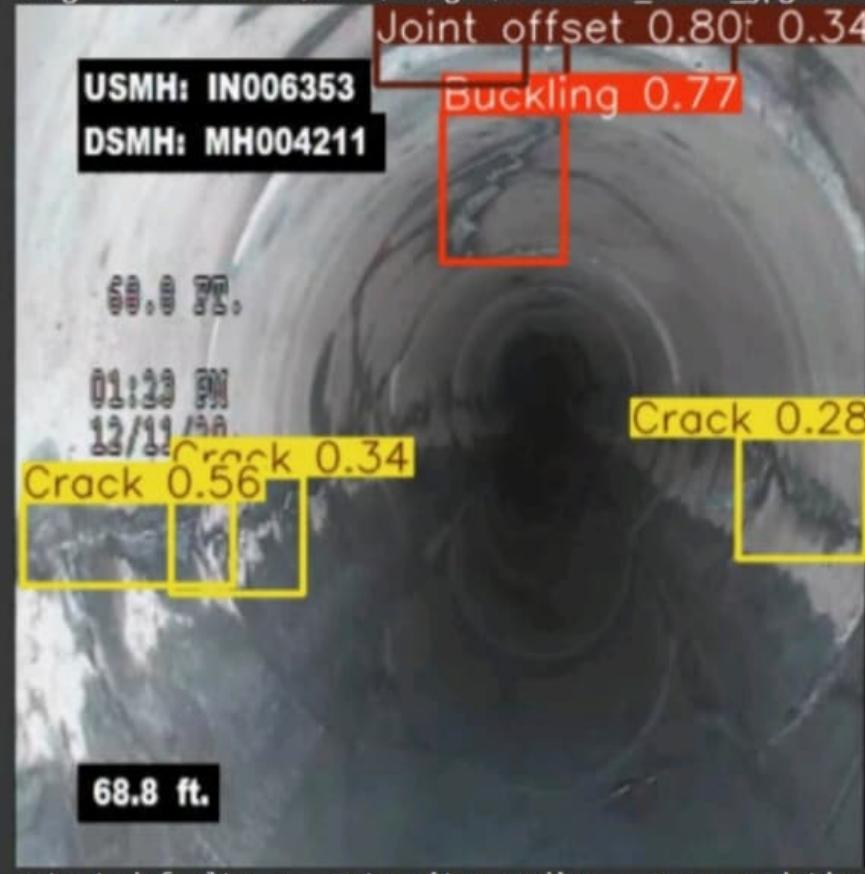


Figure 7.1: Detection of sewer defects using YOLOv8.

Image 21: /content/test/images/PI008481_f5160.jpg.rf.df7b0d13b6c46909eb0cf98ee481851a.jpg



Detected fault: 4 – Intensity: medium – Recommendation: Plan adjustment for joint offset.

Detected fault: 0 – Intensity: medium – Recommendation: Schedule inspection for buckling.

Detected fault: 1 – Intensity: medium – Recommendation: Seal crack soon.

Detected fault: 1 – Intensity: low – Recommendation: Monitor crack periodically.

Detected fault: 4 – Intensity: low – Recommendation: Monitor joint offset.

Figure 7.2: Generated recommendation for detected sewer defects.

Image 39: /content/test/images/PI010523-a_f13620.jpg.rf.f5e6c7f9dc9356fe0d250aa40440358d.jpg



Detected fault class: 6 (Name: Utility intrusion)

Confidence: 0.9053 | Box Area: 54719

RF Recommendation: Urgent action: notify utility/excavate.
(Original Intensity Check: HIGH)

Figure 7.4: Utility image combining detection and recommendation output.

Image 21: /content/test/images/PI008481_f5160.jpg.rf.df7b0d13b6c46909eb0cf98ee481851a.jpg



Detected fault class: 4 (Name: Joint offset)

Confidence: 0.7973 | Box Area: 2756

RF Recommendation: Plan adjustment for joint offset.

(Original Intensity Check: MEDIUM)

Detected fault class: 0 (Name: Buckling)

Confidence: 0.7720 | Box Area: 4254

RF Recommendation: Schedule inspection for buckling.

(Original Intensity Check: MEDIUM)

Figure 7.5: Detection of multiple sewer defects and respective recommendations.

Image 22: /content/test/images/PI008708_f2100.jpg.rf.017b368c13d113e2578a89df69692405.jpg



Figure 7.6: Detection of obstacle and generated maintenance recommendation.