# End-to-End Testing Plan - Onyx MVP

**Project:** Onyx Facility Condition Assessment Platform  
**Version:** 1.0 MVP  
**Date:** August 30, 2025  
**Environment:** Production (https://onyxreport.com)

## 📋 Testing Overview

### **Objective**

Conduct comprehensive end-to-end testing to ensure all critical features work correctly before MVP launch.

### **Scope**

* Core application functionality
* User workflows and experience
* Cross-browser compatibility
* Mobile responsiveness
* Performance and reliability
* Error handling

### **Test Environment**

* **Frontend:** https://onyxreport.com
* **Backend API:** https://onyx-backend-f7vh.onrender.com/api
* **Database:** PostgreSQL (Production)
* **Test User:** admin@onyx.com / password123

## 🧪 Test Scenarios & Acceptance Criteria

### **1. Authentication & Onboarding Flow**

#### **Test Scenarios:**

* New user registration with valid invitation token
* Login with correct credentials
* Login with incorrect credentials
* Password reset flow
* Session persistence after browser refresh
* Auto-logout after token expiration
* First-time user dashboard experience (no welcome screen)
* Logout and re-login functionality

#### **User Acceptance Criteria:**

* ✅ New users can register successfully with invitation token
* ✅ Login redirects directly to dashboard (bypasses welcome screen)
* ✅ Invalid credentials show clear, user-friendly error messages
* ✅ Session persists across browser tabs and page refreshes
* ✅ Users can logout and login again seamlessly
* ✅ Token expiration redirects to login with appropriate message
* ✅ Password reset sends email and allows password change

#### **Expected Results:**

* Login time: < 2 seconds
* Error messages are clear and actionable
* No broken authentication states

### **2. Dashboard Experience**

#### **Test Scenarios:**

* New user with 0 buildings (empty state)
* Returning user with buildings and assessments (populated state)
* Dashboard metrics calculation accuracy
* Quick actions functionality (4 action cards)
* Refresh button updates data
* Time-based greeting display
* FCI status color coding

#### **User Acceptance Criteria:**

* ✅ Empty state shows clear CTAs (Add Building, Invite Team)
* ✅ Metrics cards display correct data:
  + Total Buildings count
  + Assessments YTD count
  + Average FCI with status label
  + Estimated Repairs with proper formatting
* ✅ FCI status indicators use correct colors:
  + Excellent (≤0.05): Green
  + Good (0.05-0.10): Yellow
  + Fair (0.10-0.30): Orange
  + Critical (>0.30): Red
* ✅ Quick action cards navigate to correct pages
* ✅ Refresh button updates data without page reload
* ✅ Buildings at Risk section shows high FCI buildings
* ✅ Recent/Upcoming assessments display correctly

#### **Expected Results:**

* Dashboard loads in < 3 seconds
* All metrics are mathematically accurate
* Visual hierarchy is clear and intuitive

### **3. Building Management (Core Feature)**

#### **Test Scenarios:**

* Add new building with all required fields
* Add building with minimal required fields only
* Edit existing building information
* Delete building (admin role only)
* View building details page
* Search buildings by name
* Filter buildings by various criteria
* Upload building images (JPG, PNG)
* Handle large building lists (50+ buildings)

#### **User Acceptance Criteria:**

* ✅ All building fields save correctly:
  + Name (required)
  + Address (required)
  + Square footage
  + Year built
  + Building type
  + Replacement value
* ✅ Form validation prevents submission with missing required fields
* ✅ Image upload works with common formats (JPG, PNG, max 5MB)
* ✅ Building list shows search results accurately
* ✅ Filter functionality works for all filter options
* ✅ Delete functionality only available to admin users
* ✅ Building details page shows complete information and assessment history
* ✅ Building edit preserves all existing data

#### **Expected Results:**

* Form submission time: < 1 second
* Image upload time: < 10 seconds
* Search results appear instantly
* No data loss during edit operations

### **4. Assessment Workflow (Critical Path)**

#### **Test Scenarios:**

* Pre-assessment: Select building from list
* Pre-assessment: Select elements from Uniformat II list
* Pre-assessment: Save and proceed to field assessment
* Field assessment: Rate elements (1-5 scale)
* Field assessment: Add deficiencies with categories
* Field assessment: Upload deficiency photos
* Field assessment: Add notes for elements
* Assessment completion and FCI auto-calculation
* Assessment status transitions (pending → in\_progress → completed)
* Multiple assessments per building
* Resume incomplete assessment

#### **User Acceptance Criteria:**

* ✅ User can select building and proceed to element selection
* ✅ All 64 Uniformat II elements load correctly and are categorized
* ✅ Element selection saves and persists
* ✅ Condition ratings (1-5) save for each selected element
* ✅ Deficiency categories display all 6 options:
  + Life Safety & Code Compliance
  + Critical Systems
  + Energy Efficiency
  + Asset Life Cycle
  + User Experience
  + Equity & Accessibility
* ✅ Deficiency photos upload successfully (multiple per deficiency)
* ✅ FCI calculates automatically upon assessment completion
* ✅ FCI calculation uses correct formula: (Total Deficiency Cost / Replacement Value)
* ✅ Assessment status updates correctly throughout workflow
* ✅ Assessment data persists throughout entire workflow
* ✅ Completed assessment appears in dashboard and reports

#### **Expected Results:**

* Pre-assessment completion: < 5 minutes
* Field assessment saves progress continuously
* Photo upload: < 5 seconds per image
* FCI calculation: < 1 second after completion

### **5. Reports Generation**

#### **Test Scenarios:**

* View reports list with all completed assessments
* Filter reports by status (Published, Draft, Archived)
* Filter reports by FCI range
* Search reports by building name, location, or assessor
* Generate PDF report from completed assessment
* Export reports to Excel format
* View report details page
* Share report functionality
* Delete report (admin only)

#### **User Acceptance Criteria:**

* ✅ Reports list displays all completed assessments with correct data:
  + Building name
  + Location
  + Assessment date
  + FCI score with status label
  + Assessor name
  + Report status
* ✅ PDF generation includes comprehensive data:
  + Executive summary
  + Building information
  + Assessment methodology
  + Element condition ratings
  + Deficiency photos and descriptions
  + FCI calculation breakdown
  + Recommendations
* ✅ Excel export contains tabular data with all key metrics
* ✅ Report filters work correctly (status, date range, FCI range)
* ✅ Search functionality finds reports by multiple criteria
* ✅ Report details show complete assessment information
* ✅ Generated reports maintain professional formatting

#### **Expected Results:**

* Reports list loads: < 2 seconds
* PDF generation: < 10 seconds
* Excel export: < 5 seconds
* All generated reports are accurate and complete

### **6. Analytics Dashboard**

#### **Test Scenarios:**

* Age vs FCI correlation chart displays data
* Cost efficiency rankings show buildings
* Cost trends over time (6-month trend)
* Performance metrics scatter plot
* FCI distribution by category
* Analytics refresh with time range selector
* Handle empty analytics states

#### **User Acceptance Criteria:**

* ✅ Charts render with actual data (no empty placeholder states)
* ✅ FCI distribution shows correct categories:
  + Excellent (0.00-0.05)
  + Good (0.05-0.10)
  + Fair (0.10-0.30)
  + Critical (>0.30)
* ✅ Building efficiency rankings sort by accurate calculations
* ✅ Cost trends display monthly data with proper scaling
* ✅ Age vs FCI correlation uses building age and latest FCI scores
* ✅ Performance scatter plot shows meaningful correlations
* ✅ Time range selector (6, 12, 24 months) updates all charts
* ✅ Analytics refresh button updates data without page reload

#### **Expected Results:**

* Analytics page loads: < 3 seconds
* Charts render: < 2 seconds
* All calculations are mathematically correct
* Visual representations are clear and intuitive

### **7. Team Management & Roles**

#### **Test Scenarios:**

* Admin creates invitation tokens for team members
* Team members register using valid tokens
* Role-based permissions enforcement:
  + Admin: Full access, can delete buildings/assessments
  + Manager: Can view reports, cannot delete
  + Assessor: Can conduct assessments, limited access
* Multi-tenant data isolation
* User profile management
* Token expiration and management

#### **User Acceptance Criteria:**

* ✅ Admin can generate invitation tokens with role specification
* ✅ Generated tokens work for new user registration
* ✅ Team members successfully register with valid tokens
* ✅ Role permissions are correctly enforced:
  + Assessors can conduct assessments but cannot delete buildings
  + Managers can view all reports but cannot manage users
  + Admins have full system access
* ✅ Multi-tenant isolation ensures users only see their organization’s data
* ✅ User profiles can be updated (name, email, password)
* ✅ Invitation tokens have appropriate expiration

#### **Expected Results:**

* Token generation: < 1 second
* Registration with token: < 5 seconds
* Permission checks work consistently across all features
* No data leakage between organizations

### **8. Mobile Responsiveness**

#### **Test Scenarios:**

* Dashboard layout on mobile devices (320px-768px)
* Building management forms on mobile
* Assessment workflow on tablets and phones
* Navigation menu on mobile
* Touch interactions and gestures
* Charts and tables on small screens
* Image upload from mobile camera

#### **User Acceptance Criteria:**

* ✅ All pages are fully responsive across device sizes (320px to 1920px)
* ✅ Touch targets are minimum 44px for comfortable interaction
* ✅ Forms are fully usable with mobile keyboards
* ✅ Charts and tables adapt appropriately to smaller screens
* ✅ Mobile navigation menu provides access to all features
* ✅ Assessment workflow maintains usability on mobile
* ✅ Image capture and upload works from mobile devices
* ✅ Text remains readable at all screen sizes

#### **Expected Results:**

* No horizontal scrolling on mobile
* All features accessible and usable on mobile
* Touch interactions feel natural and responsive

### **9. Error Handling & Edge Cases**

#### **Test Scenarios:**

* Network connectivity interruptions
* Server errors (500, 502, 503)
* Invalid data submission attempts
* Large file upload failures
* Concurrent user actions (multiple users, same data)
* Browser back/forward button behavior
* Session timeout scenarios
* API rate limiting responses

#### **User Acceptance Criteria:**

* ✅ Clear, actionable error messages for all failure scenarios
* ✅ Application handles network disconnection gracefully
* ✅ Form validation prevents invalid data submissions
* ✅ Loading states display for all asynchronous operations
* ✅ No data loss during network interruptions
* ✅ Concurrent user actions don’t create data conflicts
* ✅ Browser navigation doesn’t break application state
* ✅ Session timeout provides clear re-authentication path
* ✅ Rate limiting shows appropriate retry messaging

#### **Expected Results:**

* Users never see technical error details
* All error states have recovery options
* Application remains stable under stress conditions

### **10. Performance & Reliability**

#### **Test Scenarios:**

* Dashboard load time with 50+ buildings
* Assessment workflow with 100+ elements
* Large file upload performance (5MB images)
* Chart rendering with large datasets (100+ data points)
* Concurrent user load testing
* Memory usage monitoring
* Database query performance

#### **User Acceptance Criteria:**

* ✅ Dashboard loads in < 3 seconds with 50+ buildings
* ✅ Assessment pages load in < 2 seconds
* ✅ Image uploads complete in < 10 seconds (5MB)
* ✅ Charts render smoothly with 100+ data points
* ✅ Application supports 10+ concurrent users
* ✅ No memory leaks or performance degradation over time
* ✅ Database queries execute efficiently

#### **Expected Results:**

* All performance benchmarks met consistently
* Application remains responsive under normal load
* No performance regression over extended use

## 🌐 Cross-Browser & Device Testing Matrix

### **Browsers:**

* Chrome (latest)
* Firefox (latest)
* Safari (latest)
* Edge (latest)

### **Devices:**

* Desktop (1920x1080, 1366x768)
* Tablet (768x1024, 1024x768)
* Mobile (375x667, 390x844, 360x640)

### **Operating Systems:**

* Windows 10/11
* macOS (latest)
* iOS (latest)
* Android (latest)

## 🚀 Testing Execution Priority

### **Phase 1: Critical Path (Blocking)**

1. **Authentication Flow** - Must work for all other testing
2. **Dashboard Experience** - First impression and core navigation
3. **Building Management** - Core feature for data entry
4. **Assessment Workflow** - Primary value proposition

### **Phase 2: Core Features (High Priority)**

1. **Reports Generation** - Key deliverable output
2. **Team Management** - Multi-user functionality
3. **Analytics Dashboard** - Business intelligence features

### **Phase 3: Quality Assurance (Medium Priority)**

1. **Mobile Responsiveness** - User experience across devices
2. **Error Handling** - Application stability
3. **Performance Testing** - Scalability and speed

## 📊 Test Results Template

### **Test Execution Summary:**

* **Total Test Scenarios:** 75
* **Passed:** \_\_\_
* **Failed:** \_\_\_
* **Blocked:** \_\_\_
* **Not Executed:** \_\_\_

### **Critical Issues Log:**

| Issue ID | Severity | Feature | Description | Status |
| --- | --- | --- | --- | --- |
| E2E-001 | Critical | Login | [Description] | Open |

### **Performance Results:**

| Metric | Target | Actual | Status |
| --- | --- | --- | --- |
| Dashboard Load | < 3s | \_\_\_s | ✅/❌ |
| Assessment Load | < 2s | \_\_\_s | ✅/❌ |

### **Browser Compatibility:**

| Browser | Version | Status | Notes |
| --- | --- | --- | --- |
| Chrome | Latest | ✅/❌ |  |
| Firefox | Latest | ✅/❌ |  |

## 🔍 Post-Testing Actions

### **Before MVP Launch:**

* All critical and high-severity issues resolved
* Performance benchmarks met
* Cross-browser compatibility confirmed
* Mobile responsiveness verified
* Security testing completed

### **Documentation Updates:**

* User documentation reflects actual application behavior
* API documentation is current
* Known issues documented
* Release notes prepared

### **Go/No-Go Decision Criteria:**

* Authentication flow: 100% pass rate
* Building management: 100% pass rate
* Assessment workflow: 100% pass rate
* Reports generation: 100% pass rate
* No critical or high-severity issues remain
* Performance targets achieved

**Testing Team:** Claude Code Assistant  
**Review Date:** August 30, 2025  
**Approval:** [Pending Test Execution]