



Keys to a Successful Stormwater Project in a Fully Developed Residential Area

Lessons Learned from the Keystone/Chartres
Stormwater Project

Presented by:

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PROJECT BACKGROUND



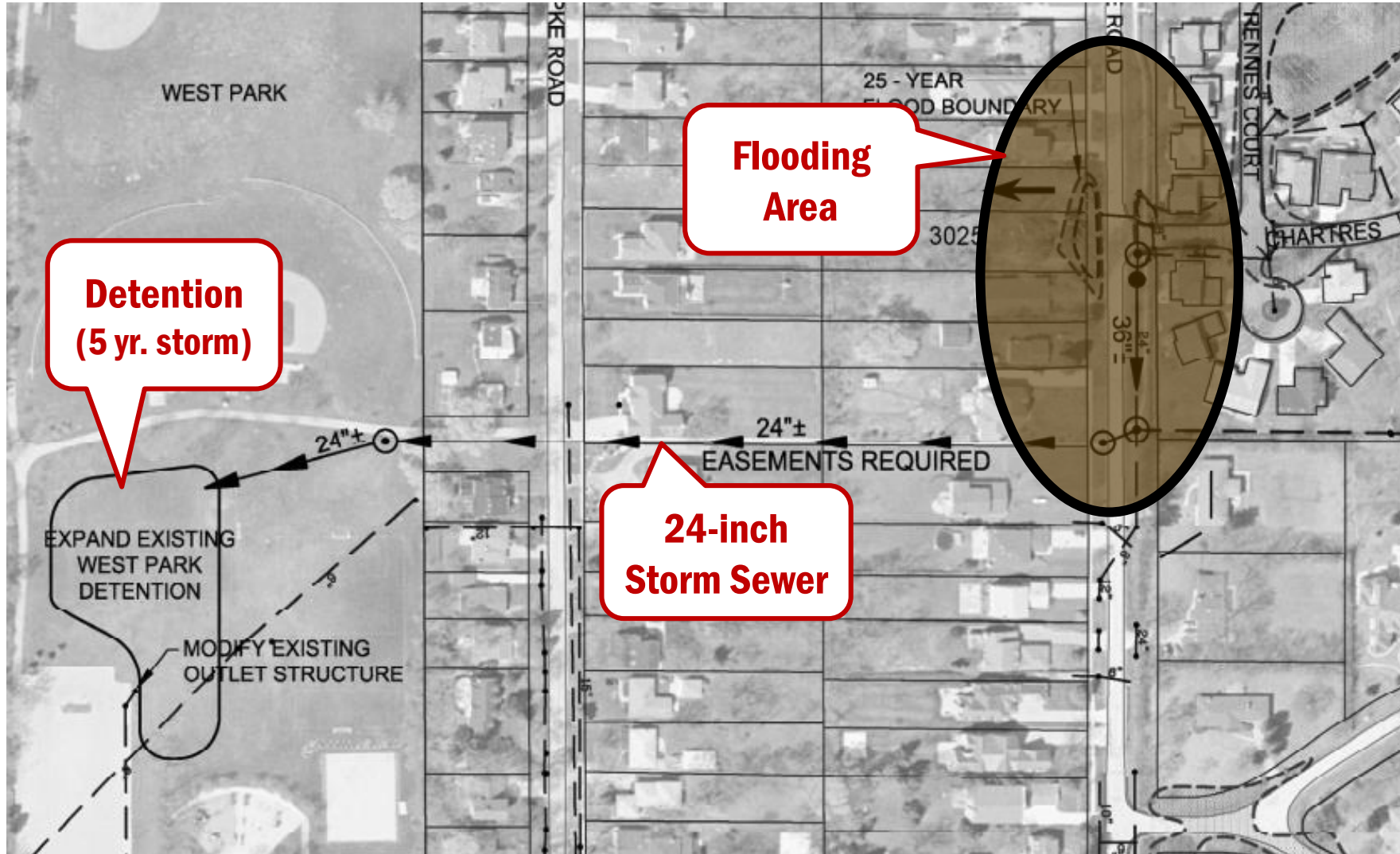
PROBLEM DESCRIPTION

FLOODING

JULY 23, 2011
(5.25 INCHES)

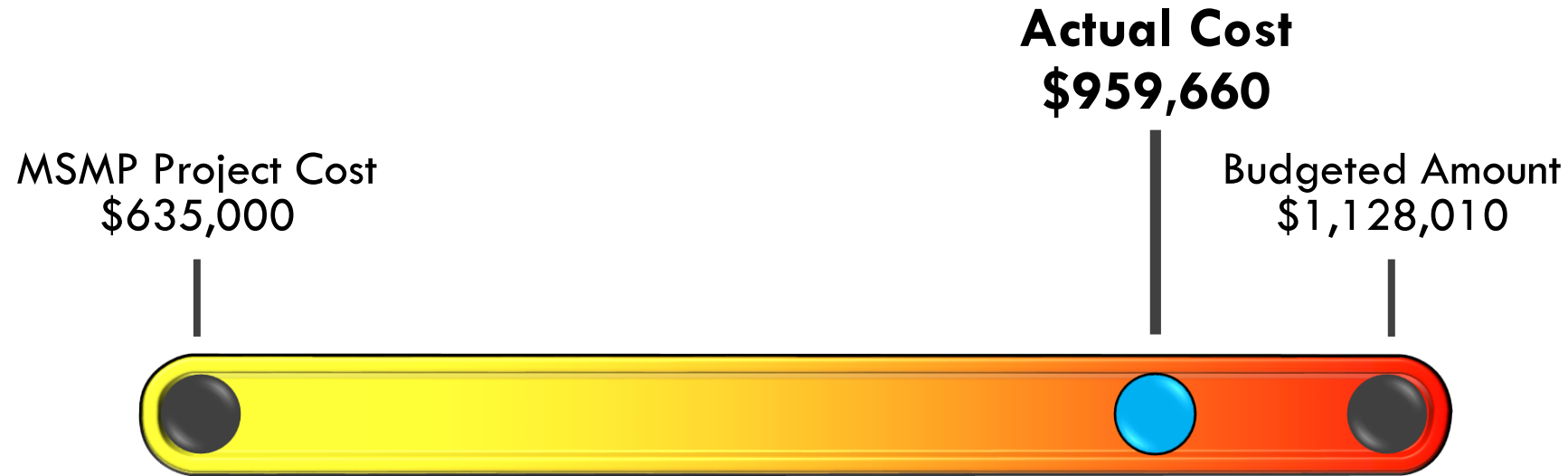
JUNE 26, 2013
(3.53 INCHES)

MASTER STORMWATER MANAGEMENT PLAN



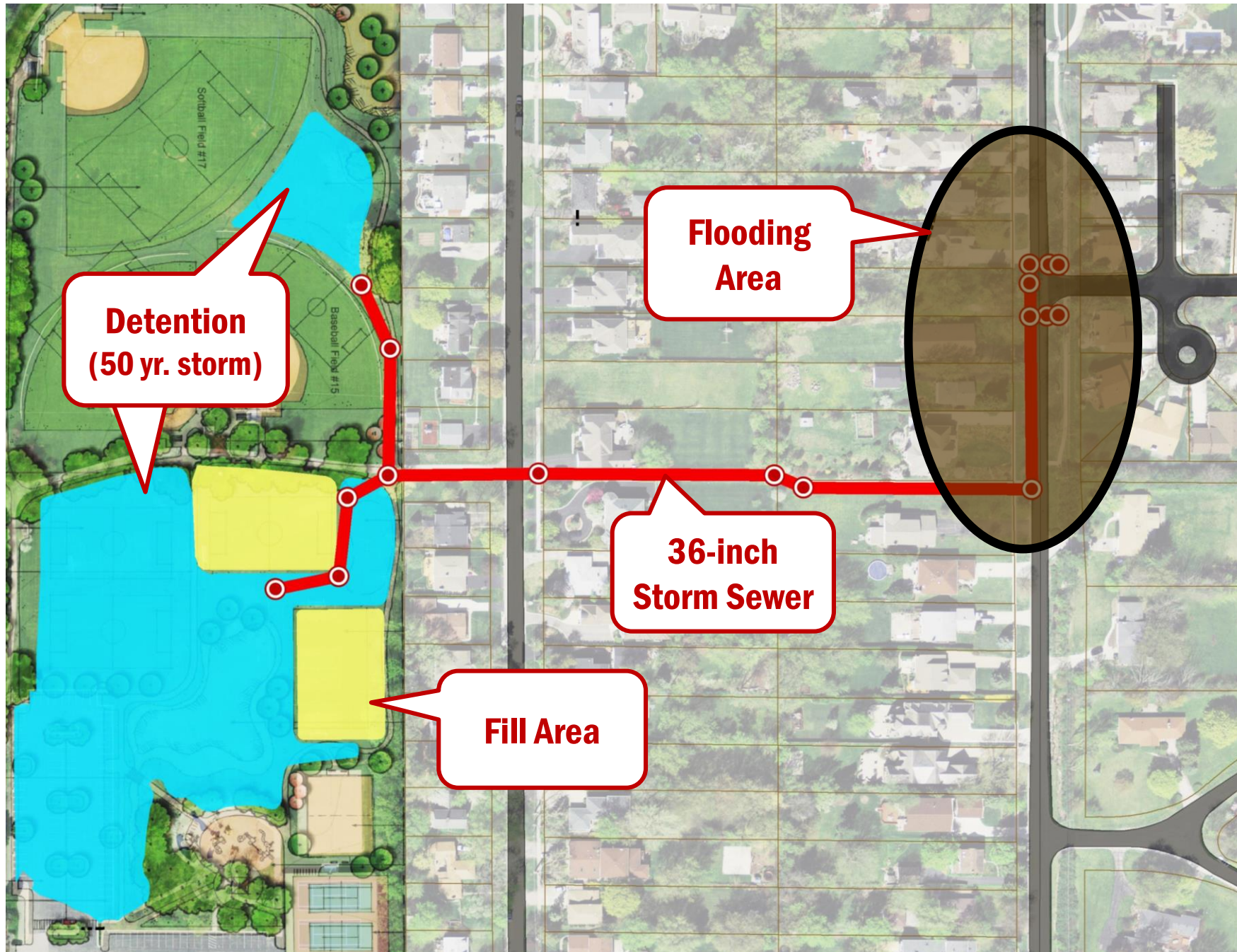
ORIGINAL
CONCEPT
PLAN

MASTER STORMWATER MANAGEMENT PLAN



PROJECT COSTS

MSMP
UNDERESTIMATED
PROJECT COSTS



UPDATED CONCEPT PLAN

DESIGN CHALLENGES

Engineering Design kick-off meeting - 9/19/16

NBK Park District Board Meeting - 1/1/17

MWRD Permit revision deadline - 4/28/17

NBK Park District Pool Opening – Memorial Day Weekend 2017

MWRD Permit Issued – 7/20/17

Construction Start – 8/28/17

3050 Koepke Road Wedding Date – Labor Day weekend

Park Restoration Deadline – 10/6/17

Construction Completion Deadline – 11/10/17

PROJECT SCHEDULE

PROJECT CHALLENGES



**TIGHT WORK
AREAS**

PROJECT CHALLENGES



TIGHT WORK AREAS

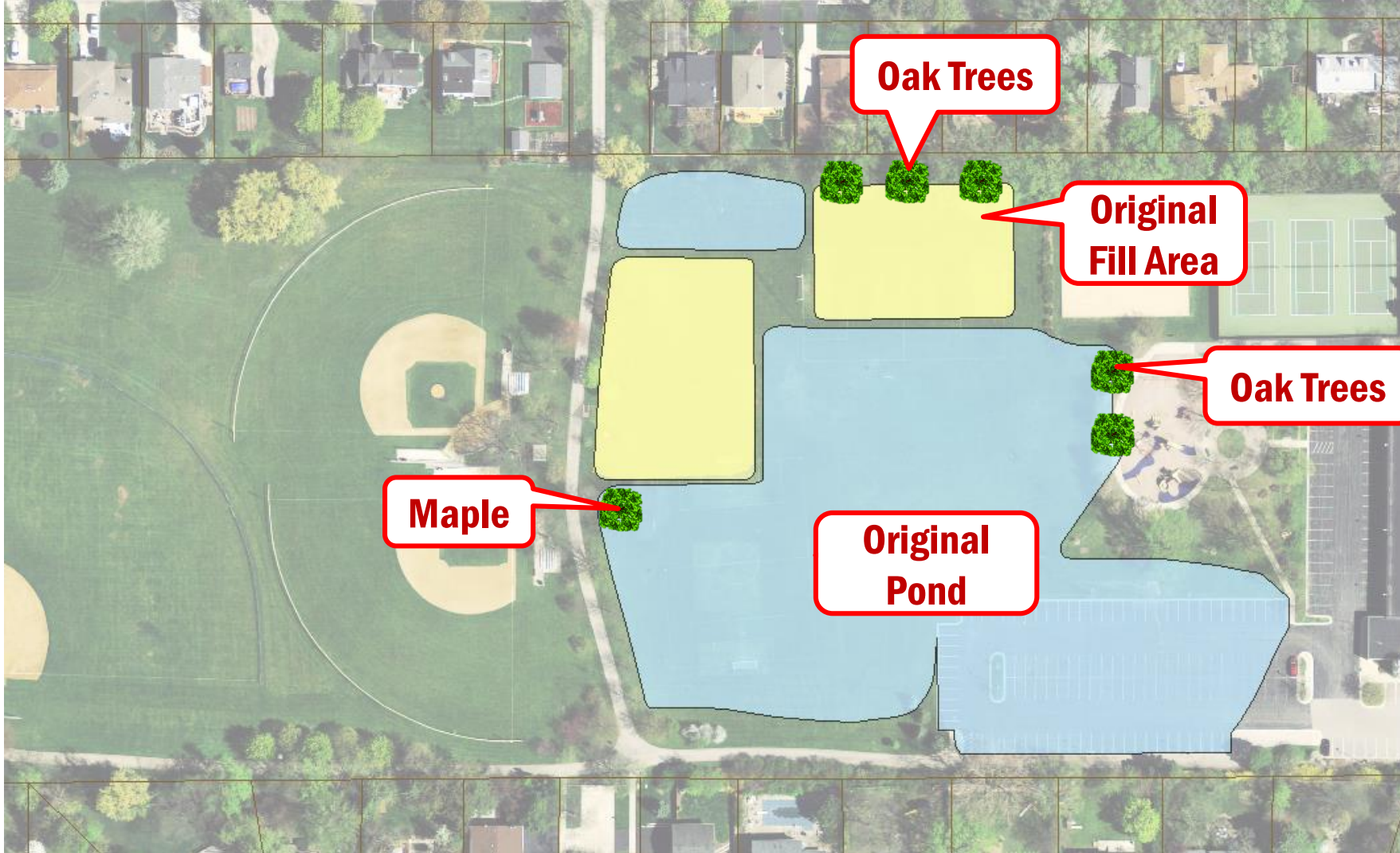
SOLUTION

SPECIAL WORK AREA

TREE PROTECTION
REQUIREMENTS

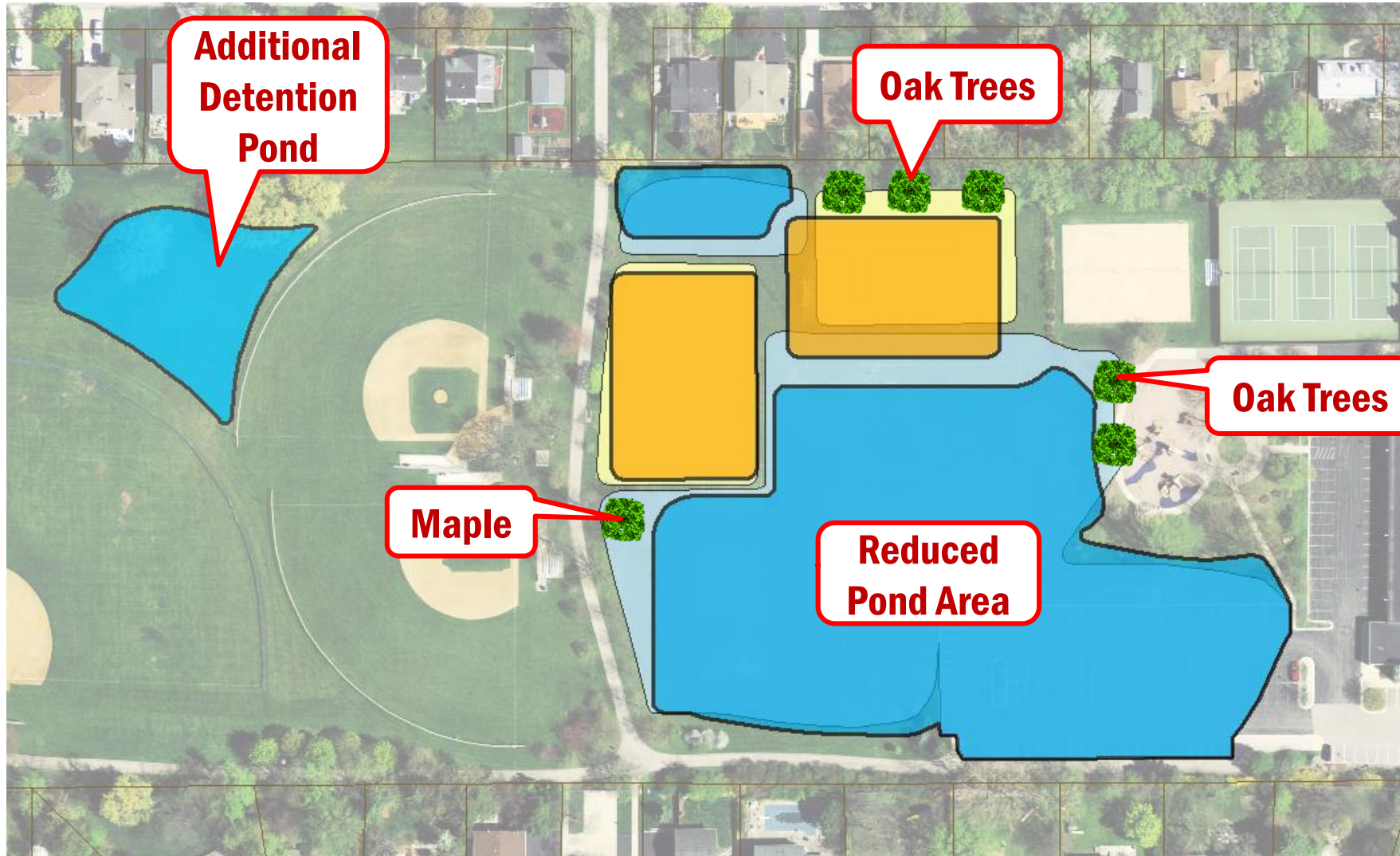
EQUIPMENT SIZE
RESTRICTIONS

PROJECT CHALLENGES



PRESERVING
TREES

PROJECT CHALLENGES



PRESERVING TREES

SOLUTION

ADDITIONAL
DETENTION POND

GRADED AROUND
PROTECTED TREES

PARK DISTRICT REQUIREMENTS



NATIVE BASIN

PROBLEM

SAFETY/ASTETIC
CONCERNS

INCREASED
MAINTENANCE

PARK DISTRICT REQUIREMENTS



NATIVE BASIN

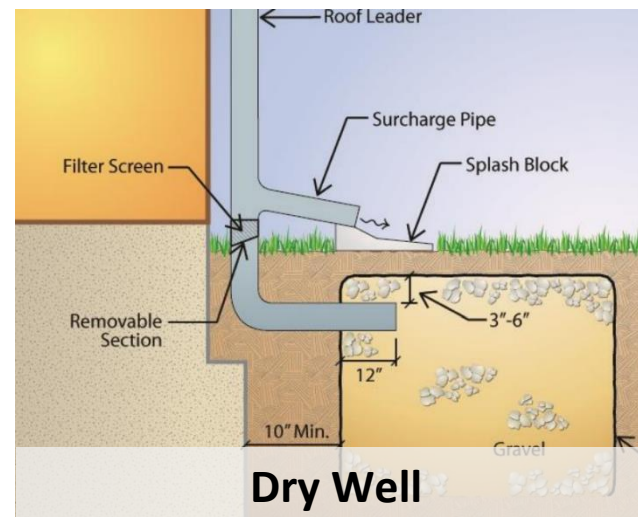
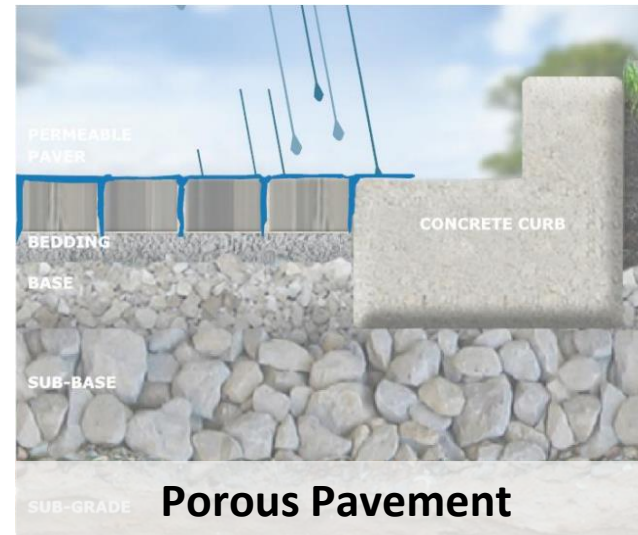
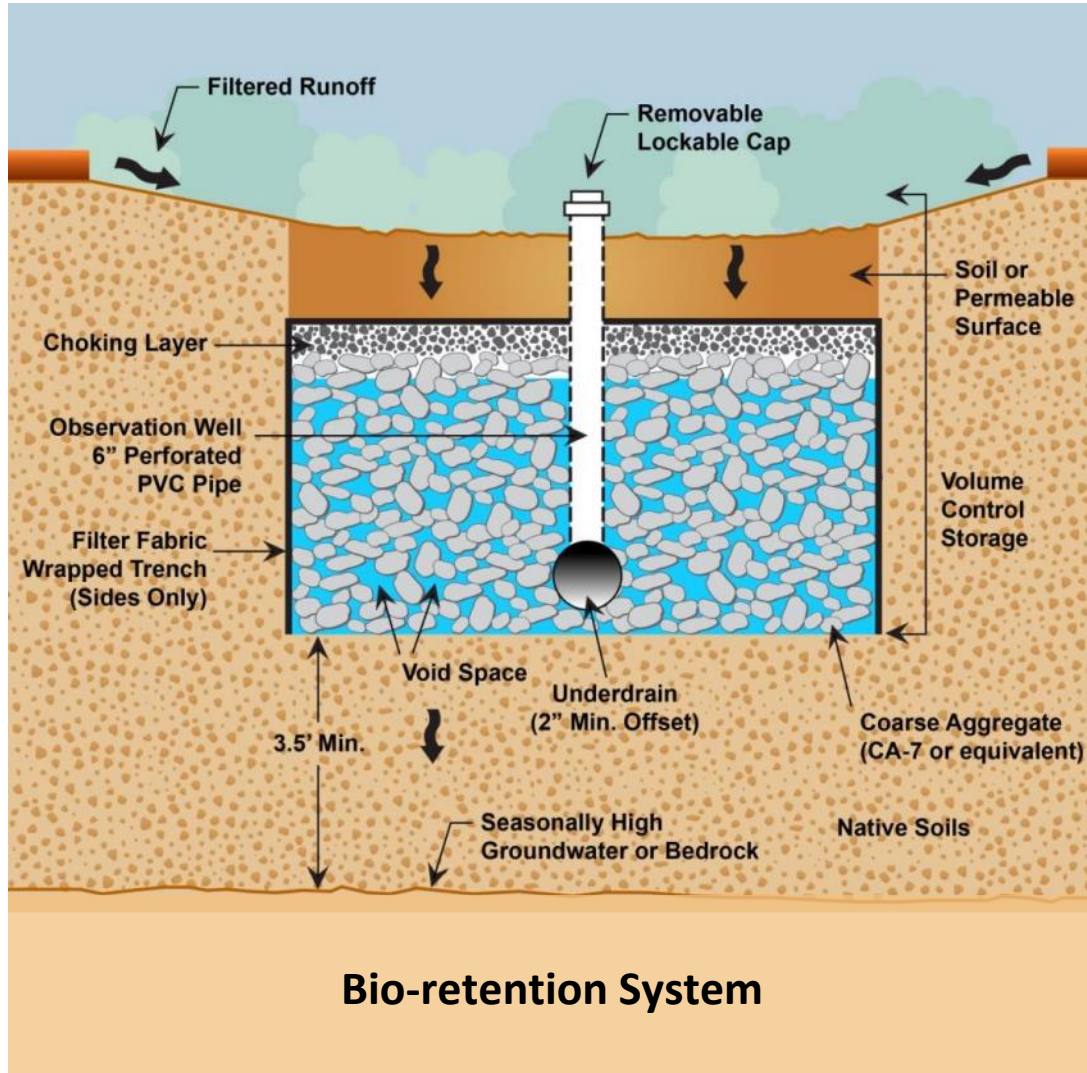
SOLUTION

CONVERTED TO DRY
DETENTION POND

ADDED STORM SEWER

ADDITIONAL
RECREATIONAL SPACE

MWRD & PARK DISTRICT REQUIREMENTS



VOLUME CONTROL

PROBLEM

PARK DISTRICT &
VILLAGE PROJECT
AREA OVERLAP

TIMING FOR POOL
OPENING

MWRD & PARK DISTRICT REQUIREMENTS



VOLUME CONTROL

SOLUTION

MWRD PERMIT
MODIFICATION

INFILTRATION TRENCH

NATIVE GRASS FILTER
STRIP

DESIGN CHALLENGES



GRADING

PROBLEM

BUDGETARY
CONSTRAINTS

DETENTION POND
OVERFLOW ROUTE

DESIGN CHALLENGES



GRADING

SOLUTION

BALANCE EARTHWORK
ON-SITE

RE-GRADE EXISTING
LANDSCAPE ISLAND

DESIGN CHALLENGES



UTILITIES

PROBLEM

CONFLICTS WITH
EXISTING UTILITIES

UNKNOWN HOUSE
SERVICE LOCATIONS

DESIGN CHALLENGES



UTILITIES

SOLUTION

POTHOLE UTILITIES
DURING DESIGN

RELOCATE GAS MAINS
& SERVICES PRIOR TO
CONSTRUCTION

BALANCE DESIGN NEEDS AND BUDGET

DYNAMIC SITES

ENGINEERING
DESIGN COST



Low
Cost

High
Cost

PLAN DETAILS



Less
Detailed

More
Detailed

DYNAMIC
SITES



LOWER
ENGINEERING
COST

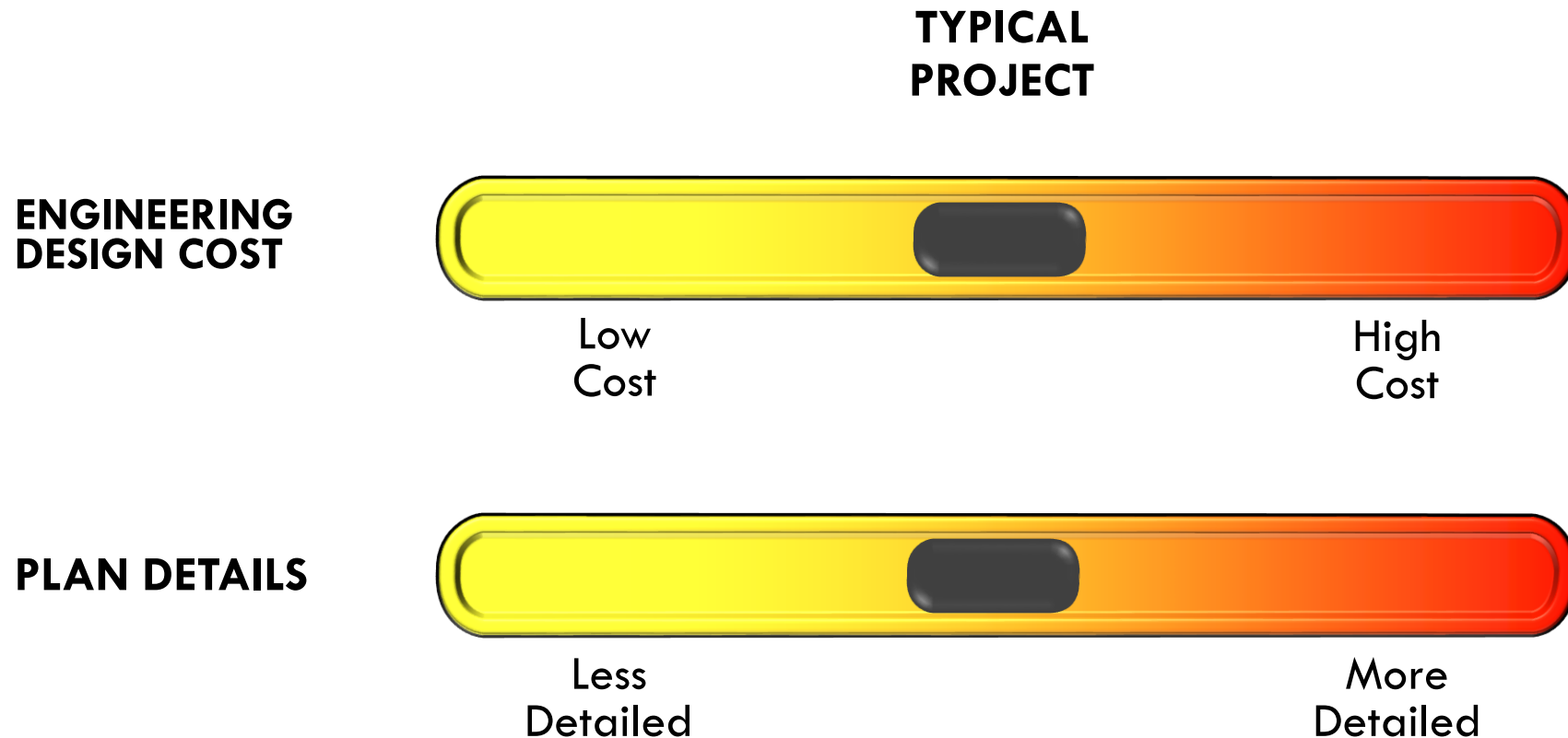
LESS DETAILED
DESIGN

EXAMPLES:

DESIGN / BUILD
PROJECTS

STREAMBANK
STABILIZATION

BALANCE DESIGN NEEDS AND BUDGET



TYPICAL
DESIGN



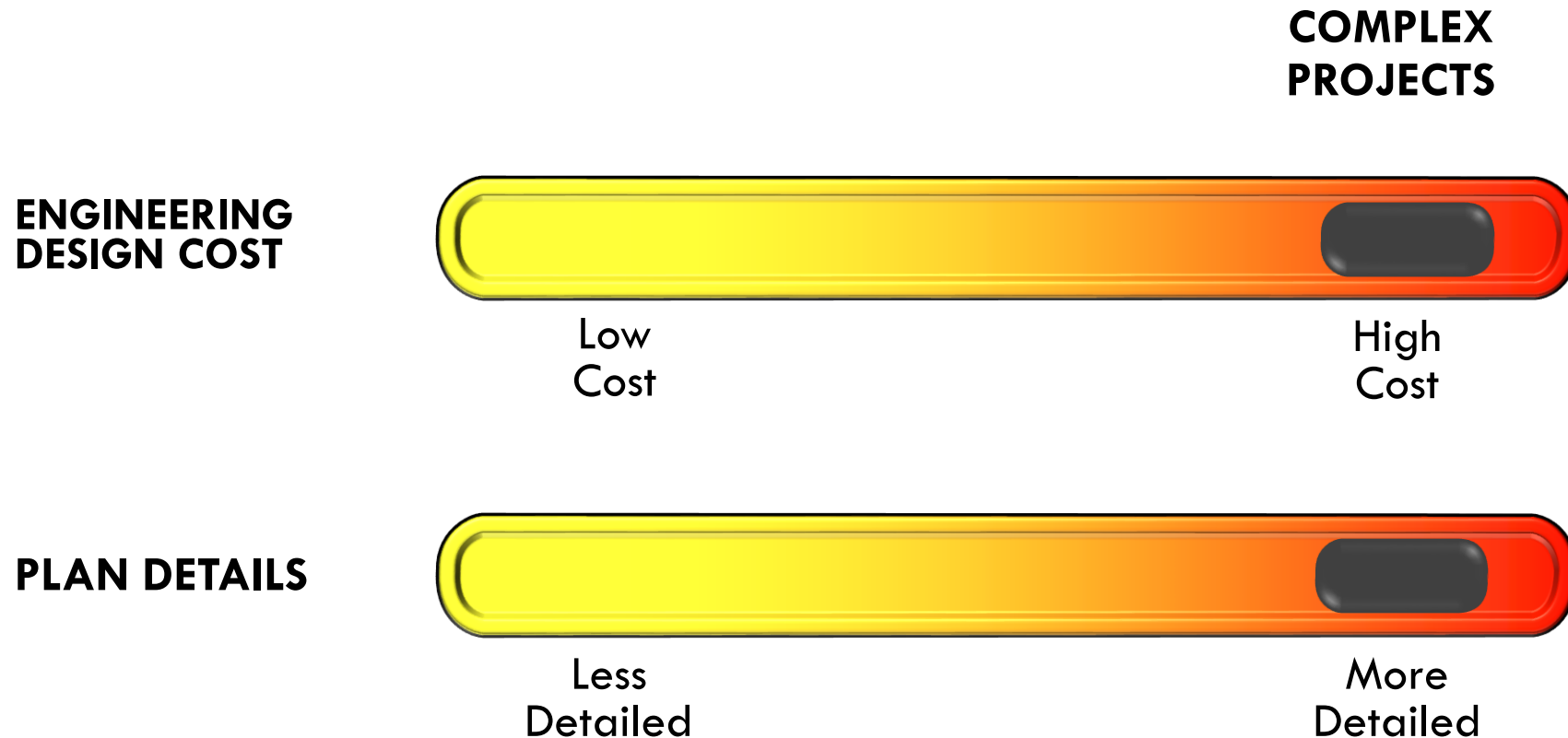
AVERAGE
ENGINEERING
COST

SOME
CONSTRUCTION
ISSUES

EXAMPLE:

SINGLE – LOT
PROJECT SITE

BALANCE DESIGN NEEDS AND BUDGET



COMPLEX PROJECTS



HIGHER
ENGINEERING
COST

FEWER
CONSTRUCTION
ISSUES

EXAMPLE:

CONSTRUCTION
IN DEVELOPED
AREAS

BALANCE DESIGN NEEDS AND BUDGET

KEYSTONE / CHARTRES PROJECT

**ENGINEERING
DESIGN COST**



PLAN DETAILS



MORE DETAILED
DESIGN



HIGHER
ENGINEERING
COST

FEWER
CONSTRUCTION
ISSUES

SAVINGS DURING
CONSTRUCTION
OUTWEIGHED
HIGHER
ENGINEERING
COSTS

SUMMARY OF LESSONS LEARNED

1. **DISCUSS PROJECT GOALS UPFRONT**
2. **INVOLVE KEY STAKHOLDERS EARLY**
3. **RELOCATE UTILITIES IN ADVANCE**
4. **COORDINATE CONSTRUCTION PROJECTS WITH OTHER AGENCIES**
5. **PROVIDE SUFFICIENT DETAIL FOR THE TYPE OF PROJECT**

CONTACT INFORMATION

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