

TECHNICAL ASSURANCE, INC.

SERVICES OVERVIEW



Building System Asset Management

Technical Assurance's ON-PNT® allows facility owners the ability to manage building system inventory, condition assessments and ongoing building system data within one central location. This technology provides for robust GIS mapping and automated reporting metrics for simple data consumption.



Roof Consulting

We are your partner for total roof management. With a team of highly trained roofing specialists, we deliver comprehensive solutions for the assessment, design and implementation of roofing projects of any scope and size. Our programmatic approach to roof management ensures that your roofing investment is optimized to extend the service life of the roof system and to reduce the total cost of ownership.



Façade Consulting

We offer vertical façade management services including masonry and concrete exterior walls, curtain walls, balconies, exterior insulation finishes, fenestrations (doors, windows and skylights) and structural consulting to diagnose the cause of structural distress. We design repairs and restorative solutions that protect the structural integrity and aesthetic design of the building enclosure.



Parking Garage Consulting

Technical Assurance provides comprehensive consulting services for both the restoration of existing parking areas and the construction of new structures. Our deep understand of the requirements for keeping your parking areas highly maintained and safe will help you operate with a low cost of ownership and extend the life of these necessary and valuable assets.



Exterior Hardscapes Consulting

Your exterior hardscapes serve as a first impression and welcome visitors to your facility. Regular maintenance of these areas will increase perceived value of your facility and improve safety. Technical Assurance provides functional design consulting, durability recommendations and due diligence studies, as well as including your exterior hardscapes into your building system asset management program.



Building Enclosure Commissioning

The Technical Assurance full-service Building Enclosure Commissioning Group specializes in providing data-driven, quality improvement suggestions to new construction building design and performs functional testing during construction. Building enclosures directly affect the longevity and energy efficiency of a building. With a systematic approach to quality assurance, our Commissioning process improves the performance, safety and efficiency of a building and ensures that a project meets specific quality requirements outlined by the Owner.

TECHNICAL ASSURANCE, INC.



Technical Assurance, Inc. is a Cleveland-based, nationally-recognized building consulting firm founded in 1993. Technical Assurance, Inc.'s current staff of professionals manages building enclosure consulting and design for assignments of any size or scope. We are frequently asked to provide expert testimony and legal counsel consulting following forensic investigation. To-date, we have successfully delivered program solutions across 45 different states.



Our practice includes a considerable focus on solving a variety of building system deficiencies. Areas of expertise include roofs, façades, fenestrations (doors, windows and skylights), below-grade structures, parking areas and multi-level parking structures. In addition, a number of Technical Assurance clients engage the company to comprehensively manage their physical assets programmatically. These kinds of assignments generally include predictive and preventative maintenance, capital budget integration and even client staff training. We also have a full-service Commissioning Group to improve new construction building design and perform functional testing of the system during construction. Our Commissioning Group also provides Building Retro-Commissioning to improve existing building enclosure performance and energy loss.



Technical Assurance's success is due to our ability to lead the planning, design and implementation process for projects of any type, with a history of delivering projects on time and within budget. Our staff is committed to design excellence and client service with a team approach. Each program is approached individually, without preconceptions, and designed to serve the needs of the particular client – always with the goal of achieving excellence in delivery.



The professionals at Technical Assurance, Inc. have substantial critical facility industry experience. We have an extensive staff of consultants, engineers, field technicians, project and construction managers, database managers, GIS consultants, technical staff and office support. We maintain in-house capabilities to provide asset management and produce design drawings and project specs with complete cost estimating and budget preparation. Additionally, we continue to serve our clients with bidding services and construction administration during the entire course of the task, project or program. Our services are sought primarily by those clients who value their building assets as “critical” in running their daily operations.

5 STEPS TO SUSTAINABILITY

Technical Assurance's unique 5 Steps to Sustainability process ensures thorough, superior results in program assessment, planning, design and management. Our process-driven approach allows our team to systematically lead all phases of building envelope programs – providing a framework for collaboration and creative solutions.



Discover

Development of Owners Facilities Requirement (OFR), inspect, test, explore, excavate, evaluate and observe existing facilities and parking structures to develop an accurate condition assessment. This step frequently involves forensic investigation for facilities problems.



Plan

Prepare and develop repair programs and capital plans along with work schedule priorities based on discovery phase findings.



Solve

Meet with the Owner's Team and develop design (construction documents, plans and specifications) solutions for all building and parking conditions requiring repair, restoration and/or remediation.



Manage

Manage and administer the construction process to ensure cost control, energy savings, quality assurance requirements and compliance with construction documents.



Sustain

Implement and monitor preventive maintenance programs based on long-range component life-cycle forecast to reduce total cost of ownership.

PROJECT EXPERIENCE

PACKAGING CORP OF AMERICA (PCA)

Client: Packaging Corp of America

Assignment: Building Enclosure and Pavement Assessments

Size: 95 sites – 18 million sf roofs; 5.4 million sf walls; 13.7 million sf pavement

Packaging Corp of America (PCA) has grown rapidly in the last decade through acquisition and expansion. As a result, they have inherited a facility portfolio that required a consistent national assessment program so that management could prioritize facility related repair and replacement needs.

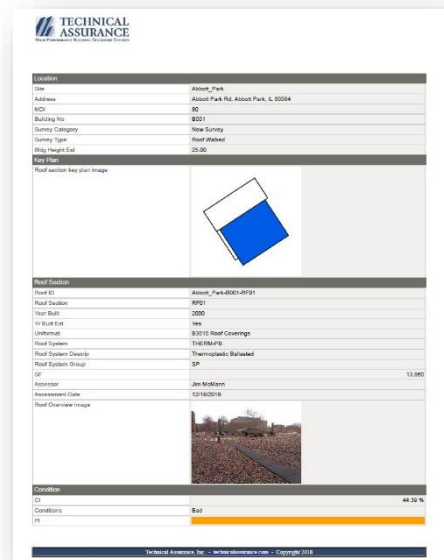
In 2018, Technical Assurance began the assessment of the roofs, walls and pavements for 95 sites across the country for PCA. Our multi-men teams completed the assessments of 95 sites within a 7-month timespan.

The collected data was put into ON-PNT® along with historical data, deficiencies, leaks, as-built information and other relevant system data. The goal of the assessment is to establish a condition index baseline of their exterior building systems in order to understand how to prioritize repair and replacement projects over the next 1, 3, 5 and 10 years.

Technical Assurance's roof assessors, outfitted with GIS-enabled iPad tablets, gather available roof system data and observed roof defect data for import into the ON-PNT® GIS and portal database Enterprise Solution. The assessment roof data, once imported into the ON-PNT® database, automatically sets roof estimated replacement costs, other costs associated with construction and consulting fees, and the costs of defect repairs listed and current maintenance costs. A condition index (CI), remaining service life (RSL) and total cost of ownership (TCO) value was calculated for each facility site and across the portfolio.

As a result of the assessment, Technical Assurance was able to provide PCA with both site-specific and portfolio reports on their leased buildings. These reports supported PCA with ongoing lease negotiations with building owners.

During the assessment, our team identified a few critical roof replacements that needed immediate attention as well as some structural wall issues that posed life safety risk. We provided PCA with corrective action plans in order to avoid catastrophic issues and future hazardous conditions.



ABBOTT LABS

Client: Abbott Laboratories
(Nutrition Division)

Assignment: Roof Asset
Management Program Pilot

Size: 668,740 square feet

In December 2018, Technical Assurance performed an assessment on 11 buildings in Abbott Park as part of a Roof Asset Management Program Pilot. The assessment included a mixture of manufacturing, distribution and administration buildings totaling approximately 668,740 square feet of roof assets

The scope of work included:

- A customized Abbott ON-PNT enterprise asset management web portal, including GIS poly line drawings of each building roof section.
- The inventory and assessment of each roof building, included photo overview of the section and observed deficiencies. All deficiency type, location and quantities were input into the ON-PNT database.
- Data collected included condition indices, total and remaining service life, replacement cost estimates, effect cost estimates, total cost of ownership savings associated with repair and maintenance programs, ad repair and ongoing preventative maintenance programs.
- Final condition assessment report

During the assessment, our team discovered that the roof sections were in varying conditions – Excellent, Good, Fair, Poor, Bad, Very Bad and Failed – on a scale of 0-100%. The Pilot Program assessment was completed successfully and the relationship with Abbott Labs Nutrition Division is still developing.

Location	
Site	Abbott_Park
Address	Abbott Park Rd, Abbott Park, IL 60004
NCS	00
Building No	8021
Survey Category	New Survey
Survey Type	Roof Related
Blg Height End	25.00

Roof Section	
Roof Section ID	Abbott_Park-8021-RF01
Roof Section	RF01
Year Built	2000
Yr Built End	999
Location	802111 Roof Coverings
Roof System	1161RMA-B
Roof System Details	Thermoplastic Ballasted
Roof System Group	134
SF	13,880
Assessor	Jim McElroy
Assessment Date	12/18/2018

Roof Overview Image

Condition

CI	Bad	44.26 %
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CONFIDENTIAL FORTUNE 500

Client: Fortune 500 – Manufacturer of Tissue Consumer Products, Packaging, Building Products and Related Chemicals

Assignment: Roof Consulting

A Fortune 500 Company had plans to replace \$5 million in roof systems at one of their western US plant sites. They had been operating on a run-to-failure program model and were prepared for a full replacement.

Given the costs, the client engaged us to help them fully understand their investment options before moving forward with a complete replacement. After performing an initial assessment at their site, we found that only a portion of their roof sections required a complete replacement, while other sections still had useful life opportunities – provided a complete roof repair and restoration program was implemented immediately, along with annual roof maintenance. We pivoted to think about what could be done to extend the life of their assets while saving them money. The savings captured were substantial.

As a new partner, we serve as an objective third-party to financially analyze the building assets, ultimately helping our client view their buildings as a business investment. As part of our roof life cycle management program, we have established life cycle metrics for their roof assets to create accountability and set goals for savings—all while accounting for regular proactive maintenance during the life of the assets.

While this is still a fairly new partnership, we have already saved them a considerable amount of money in roof repairs and replacement projects alone. As we progress in our relationship with this company, our goals are to:

- Continue to assess and monitor opportunities for savings
- Keep roof systems on track with regular maintenance
- Lower cost of ownership by 15-20%



Savings & Successful Results with Life Cycle Management

The company was planning on a capital roof replacement spend of \$6.4 million over 10 years at the one site with no preventative maintenance included – \$4.5 million was to be spent to replace most roofs in the first year. Our professionals determined that they actually needed to spend only \$1.4 million on immediate roof replacements and \$1.7 million in restoration maintenance/life cycle investment in the first year, and then \$30k annually on preventative maintenance for the full alternate 10-year plan.

Not only did we help them avoid unnecessary replacements and save more than \$3 million over 10 years, but we also helped extend their roof assets for another 10 years.

U.S. DEPARTMENT OF ENERGY RAMP PROGRAM

Client: U.S. Department of Energy – National Nuclear Security Administration

Assignment: Roof Asset Management Program (RAMP)

Size: 25 million total roof square feet

Technical Assurance, Inc. was contracted by Honeywell FM&T to provide the implementation of a comprehensive Roof Asset Management Program (RAMP) for the U.S. Department of Energy – National Nuclear Security Administration at nine (9) different sites in ten (10) locations throughout the U.S.

Sandia National Laboratory – Livermore, CA
Lawrence Livermore National Laboratory – Livermore, CA
Nevada National Security Site – Las Vegas & Mercury, NV
Y-12 National Security Complex – Oak Ridge, TN
Sandia National Laboratory – Albuquerque, NM
Los Alamos National Laboratory – Los Alamos, NM
Pantex Plant – Amarillo, TX
Idaho National Laboratory – Idaho Falls, ID
Savannah River National Labs – Savannah, GA

The overall purpose of the RAMP is to provide high performance, energy efficient capital renewals and the implementation and management of roof sustainability repair and maintenance programs that can extend roof system life cycles and lower total cost of roof asset ownership. The scope of work called for Technical Assurance to provide complete roof condition evaluation, asset assessment, financial and budgetary modeling (both constrained and unconstrained) and management of roof life extension efforts by sub-contractors. The scope also involved the performance of professional design services and contracting for construction services, including normal civil, structural, mechanical, electrical and architectural services related to roofing replacement and repair, along with the selected demolition of abandoned roof top equipment.

In 2015, 21 million square feet of roofs were assessed in an expedited manner of 10 months. In 2021 and 2022, Technical Assurance is re-assessing the roof assets.

In 2019, the annual capital roof renewals reached \$60 million and 1 million square feet of roofs were either replaced or coated, and \$58.6 million was completed in 2020. Since 2015, Technical Assurance has managed over \$273.5 million of design-bid-build projects through the program.

Technical Assurance serves as the single prime contract holder for the design-build projects at all locations – serving as the Program Manager, Asset Manager, Database Manager, Designer and Construction Manager. The program is implemented through Technical Assurance’s unique 5 Step Process: Discover-Plan, Solve-Manage and Sustain.

UNITED STATES POSTAL SERVICE

Client: USPS

Assignment: Roof Asset Management System

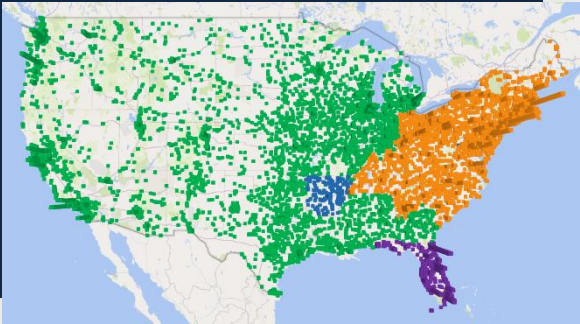
Size: 116+ million square feet

In 2018, Technical Assurance, in partnership with Wood® Environment & Infrastructure Solutions, Inc. and RoofConnect, was awarded the federal United States Postal Service (USPS) Roof Asset Management Systems (RAMS) program.

The USPS currently owns 8,215 facilities across the United States, totaling approximately 186 million square feet of roof assets valued over \$3 billion. The purpose of the RAMS program was to maintain an accurate inventory of the roofing infrastructure, to accurately and consistently assess its condition, and to develop and implement a long-term plan for maximizing its life expectancy and the associated costs for doing so.

The scope of the RAMS program includes:

- condition assessments
- biannual preventative maintenance
- repair and alterations
- emergency leak response
- roof design services
- roof restoration projects
- construction management
- quality observation
- building envelope systems (below-grade, exterior wall and fenestration systems)



In the first year of the program (2018-2019), **Technical Assurance assessed 3,170 facilities, totaling approximately 69.4 million sf of roof assets.** Geographical coverage included the Great Lakes, Pacific, Southern and Western regions of United States. **Additionally, the Technical Assurance team mobilized to 1,230 sites for preventative maintenance (PM) visits.**

Additionally, we provide design services for upcoming roof replacement projects and performing construction administration and quality observation on active projects.

ON-PNT®

ENTERPRISE BUILDING SYSTEM MANAGEMENT SYSTEM

OVERVIEW



Building System Asset Management Made Simple.

Enable a More Efficient Field Crew | Data Collection

- GIS HTML5 mobile app
- Increases efficiency and effectiveness
- App syncs with web portal every night

Brings Database to the Field & the Field to the Database | Dynamic Mapping

- GIS integrated database
- Easily visualize the condition of roof assets
- Analyze effects of repairs and maintenance

Analysis & Reporting: Performance, Metrics & Goals | Data Consumption

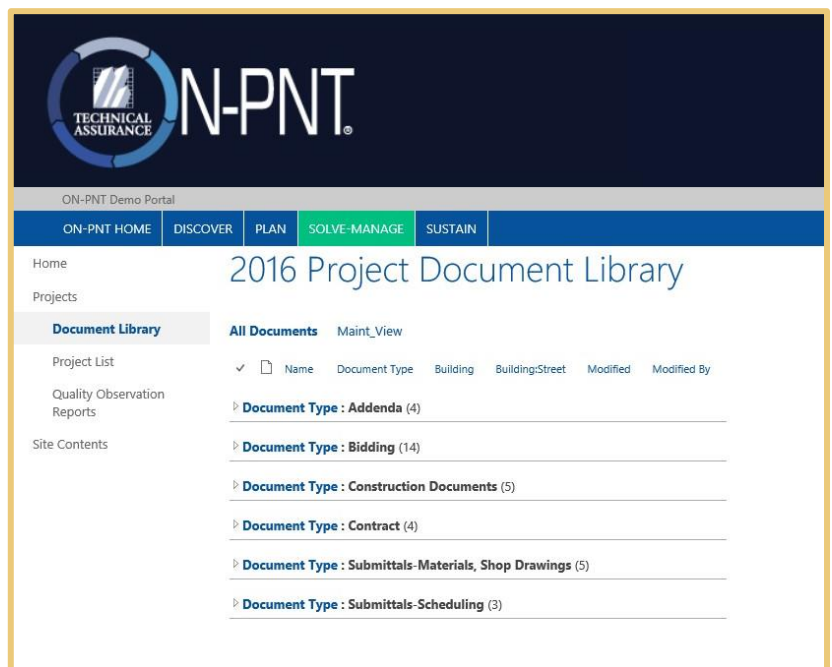
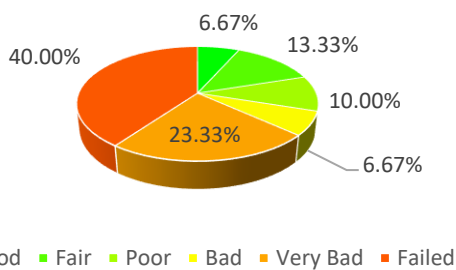
- High level executive summary metrics (KPIs)
- Scorecard review of building conditions
- Custom reports & charts
- Triage scores
- Constrained budget analysis tool
- GIS mapping

Simplified Management

- Robust project management tool
- Document & task management
- Schedule & cost management
- Data repository
- Warranty management & reminders



Portfolio Conditions (Current)



OVERVIEW

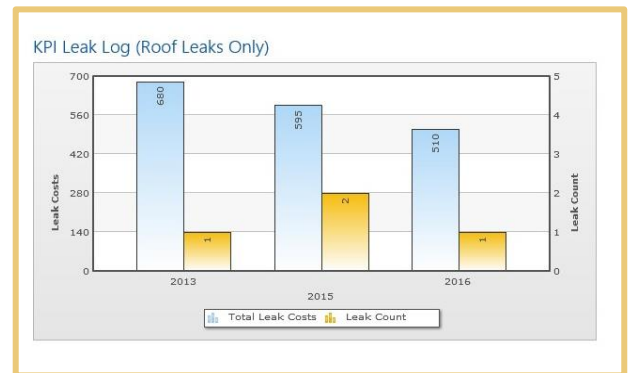


The ON-PNT® Enterprise Solution is a GIS (Geographic Information System) enabled database and web portal technology solution for **Building System Management, Design Services and Bid Management, Construction Management and Sustainable Maintenance Management**. ON-PNT® allows facility owners the ability to manage building system inventory, condition assessments, repairs and ongoing building system data within one central location. This cutting edge technology provides robust GIS mapping and automated reporting metrics for simplified data consumption.

ON-PNT® is fully customizable per client. In fact, we build a unique ON-PNT® Portal for each client program. This means we incorporate each client’s unique program nomenclature, ID system, special acronyms, custom metrics, etc.

ON-PNT® is based on two open market platform solutions, ESRI ArcGIS Server and Microsoft SharePoint Portal. Technical Assurance has greatly customized and enhanced these open market platforms and has developed a unique 5 Steps to Sustainability™ Process to drive and manage this solution, which is trademarked as ON-PNT®. Deploying ESRI and Microsoft platforms ensures that our solution meets the most current security, browsing and up-to-date software enhancements on the market today.

A critical feature of ON-PNT® is the Score Card or Key Performance Indicators (KPIs). If definable goals, benchmarks and objectives cannot be met or tracked within an asset management program, how can we determine if and when adjustments and improvements are needed? The point of the KPIs is not to hit specific numbers, but rather to track trending goals and metrics. Done properly, **the asset management program should reduce emergency roof leak expenditures and the quantity of work orders, improve average building system life cycle and lower total cost of asset ownership**. These goals are measurable and therefore should be used for program accountability. ON-PNT® maintains these KPIs as our Score Card.



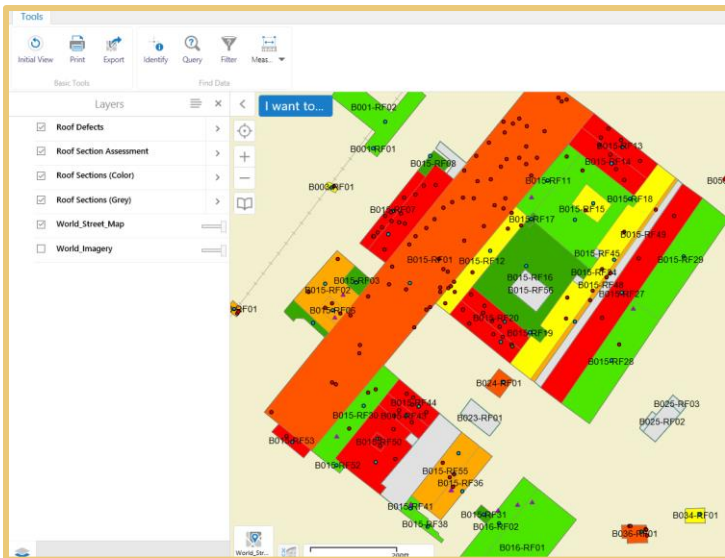
OVERVIEW



The ON-PNT® system provides **repeatable and objective analysis** using established facilities asset management (FAM) standards. The database is modeled using the following engineering standards:

- “Asset Lifecycle Model for Total Cost of Ownership”, IFMA/APPA
- ASTM E917-05 Measuring Life-Cycle Costs of Buildings and Building Systems
- ASTM E1057-06 Measuring Internal Rate of Return and Adjusted Internal Rate of Return for Investments in Buildings and Building Systems
- ASTM E1121-12 Measuring Payback for Investments in Buildings and Building Systems
- ASTM E1765-11 Standard Practice for Applying Analytical Hierarchy Process (AHP) to Multi-Attribute Decision Analysis of investments related to Buildings and Building Systems

Using these standards to work within the structure of our database, we ensure consistent findings and reporting with our Asset Management solution. The standards also allow us to bring in unique characteristics and attributes important to our clients from a non-monetary perspective.



Defect Pt: GF-Bruce_Mansfield... I want to...

Defect Code
BU-OL-M-1

Roof System Group
BU

Defect Type
Open Laps

Defect Acronym
OL

Defect Definition
Partially open - no water penetrating system

Specifications/Repair
Prepare surface, 1-ply MBR

Quantity
154

Comments
N/A

Legacy Data?
No

Legacy Name
N/A

Defect Status
Incomplete Manuf Warranty Defect

Print Map

Select Layout
Landscape ON-PNT Report

Output Format
Pdf

Map Scale
Current Scale - 1: 2257

Print

OVERVIEW



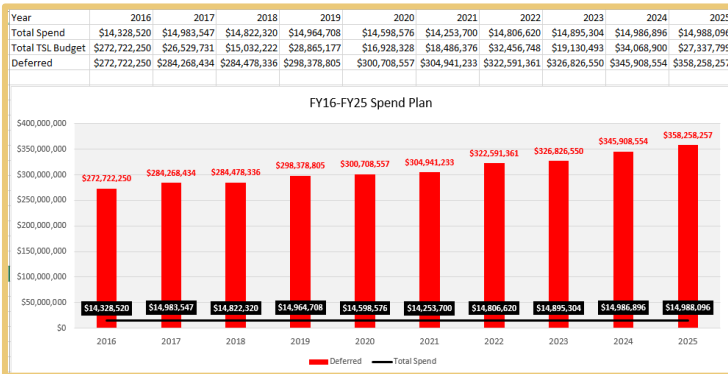
RECOMMENDATIONS & BUDGETING

ON-PNT® includes a built-in Business Intelligence for Capital and O&M budgeting and planning, along with work schedule priorities based on discovery phase findings. The automated budgeting reports include scientific methodology for ranking capital replacements and repair projects. The ON-PNT® Triage budget report and project analyzer tool is based upon the building or building system Condition Index (CI), Mission Dependency Index (MDI), System Component Index (SCI) and Total Cost of Ownership (TCO).

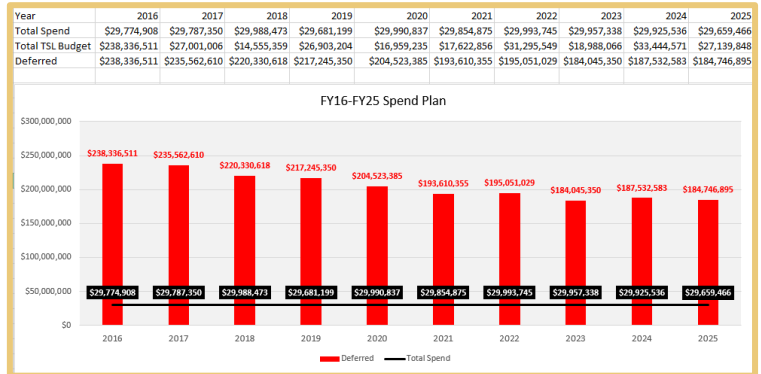


ON-PNT® lets you generate ad-hoc Triage Budget Plans based upon set budget constraints. You can also set your organization's inflationary rate and/or cost of capital or value of cash percentage rate. Once constraints and other rates are set, you can easily generate Triage Budget Plan and/or special Spend Plan and Deferred Maintenance Reports.

10-Year Spend: \$15 million/Year

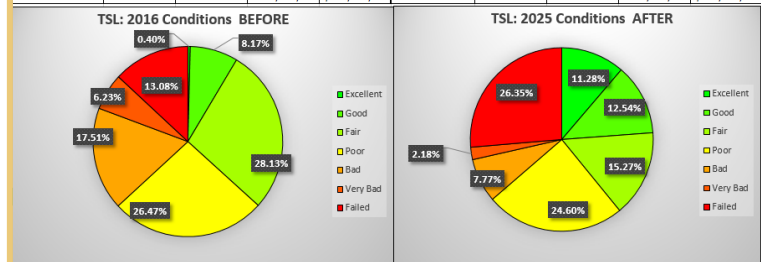
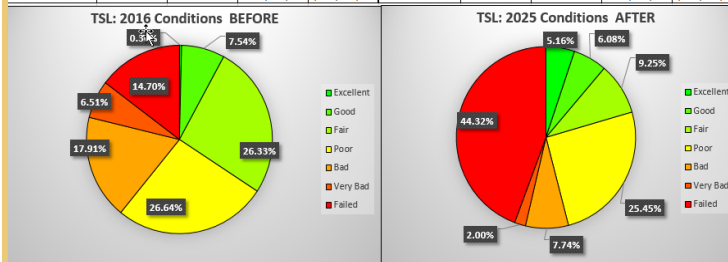


10-Year Spend: \$30 million/Year



Condition-2016	Count	%	SF	CRV	Condition-2025	Count	%	SF	CRV
Excellent	19	0.36%	141,501	\$5,215,598	Excellent	269	5.16%	965,418	\$39,233,204
Good	393	7.54%	1,519,097	\$60,841,379	Good	317	6.08%	1,007,499	\$39,538,526
Fair	1372	26.33%	4,886,007	\$203,565,215	Fair	482	9.25%	2,017,074	\$80,994,536
Poor	1388	26.64%	5,305,070	\$219,412,653	Poor	1326	25.45%	3,787,815	\$169,022,567
Bad	933	17.91%	3,251,802	\$128,076,573	Bad	403	7.74%	1,550,015	\$65,712,988
Very Bad	339	6.51%	1,337,673	\$51,012,639	Very Bad	104	2.00%	496,605	\$19,251,090
Failed	766	14.70%	3,163,517	\$112,813,771	Failed	2309	44.32%	9,780,841	\$367,184,915
	5210	100.00%	19,605,267	\$780,937,828		5210	100.00%	19,605,267	\$780,937,828

Condition-2016	Count	%	SF	CRV	Condition-2025	Count	%	SF	CRV
Excellent	20	0.40%	264,957	\$9,900,754	Excellent	563	11.28%	1,887,177	\$78,736,089
Good	408	8.17%	1,574,667	\$63,700,151	Good	626	12.54%	2,188,687	\$84,679,447
Fair	1404	28.13%	5,106,632	\$210,494,982	Fair	762	15.27%	3,352,259	\$131,195,586
Poor	1321	26.47%	4,972,542	\$205,112,767	Poor	1228	24.60%	3,440,155	\$152,941,882
Bad	874	17.51%	3,203,298	\$125,852,664	Bad	388	7.77%	1,440,571	\$61,339,598
Very Bad	311	6.23%	1,248,197	\$47,475,983	Very Bad	109	2.18%	488,327	\$18,441,678
Failed	653	13.08%	2,327,875	\$85,563,876	Failed	1315	26.35%	5,900,992	\$220,766,897
	4991	100.00%	18,698,168	\$748,101,177		4991	100.00%	18,698,168	\$748,101,177



Request a Consultation

We would love to talk with you about your facility needs.
Connect with us on our [website](#) to request a consultation.

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