Whole of Life Asset Management

Facilities → Equipment

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How Should Owners Think About Engineerin

Engineering Influences Every Phase of the Equipment Lifecycle

- Master Planning →
- Design →
- Procurement →
- Manufacturing →
- Operations →
- Inspections →
- Maintenance →
- Rehabilitation/Upgrades →
- Replacement

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Engineering Influence

Master Planning →

Design →

Procurement →

Manufacturing →

Majority of Influence

Operations →

Inspections →

Maintenance →

Majority of Life Cycle

Rehabilitation/Upgrades →

Replacement

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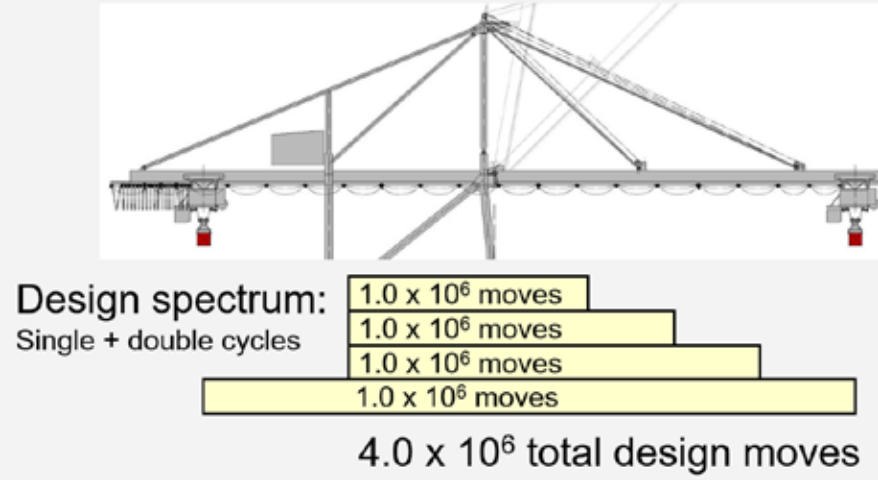
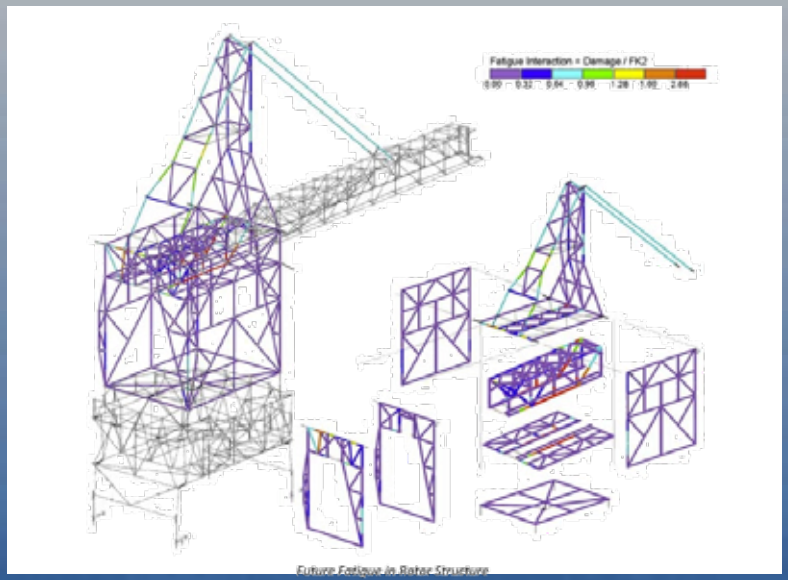
Example of Influencing Design: Structural Fatigue

est Practices:

- Use Load Spectrums



- Use FEA



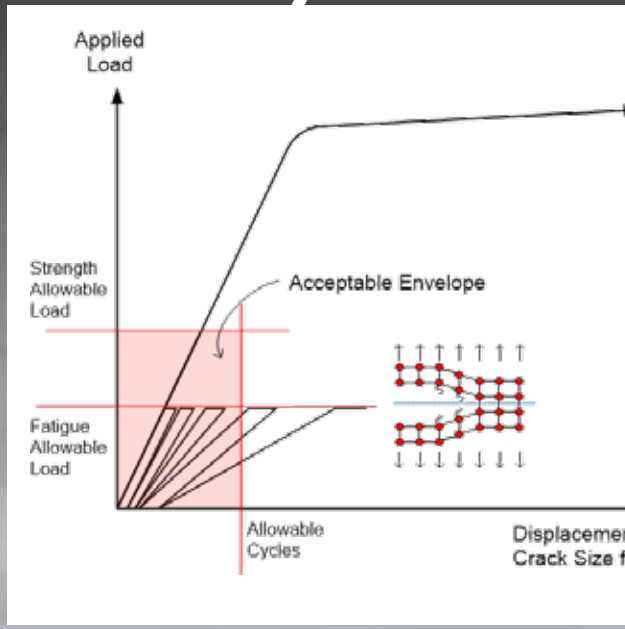
Designing for Fatigue - The (Structural) Details

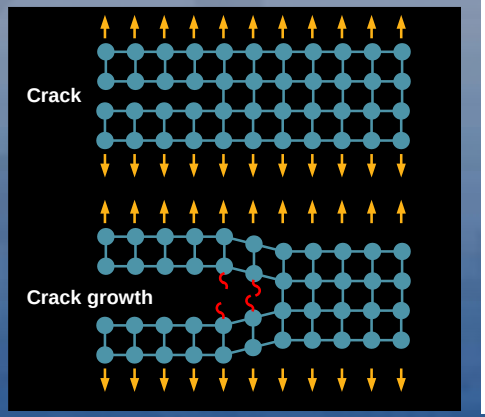
ll steel structures have micro-cracks

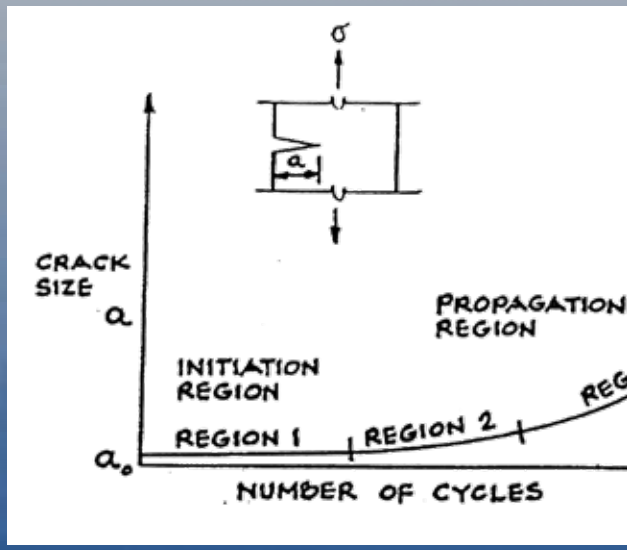
licro-cracks can grow with loads and ycles (Fatigue) if you are 'out of bounds'

rack growth is predictable through nalyses

OAL: Stay within atigue Limit

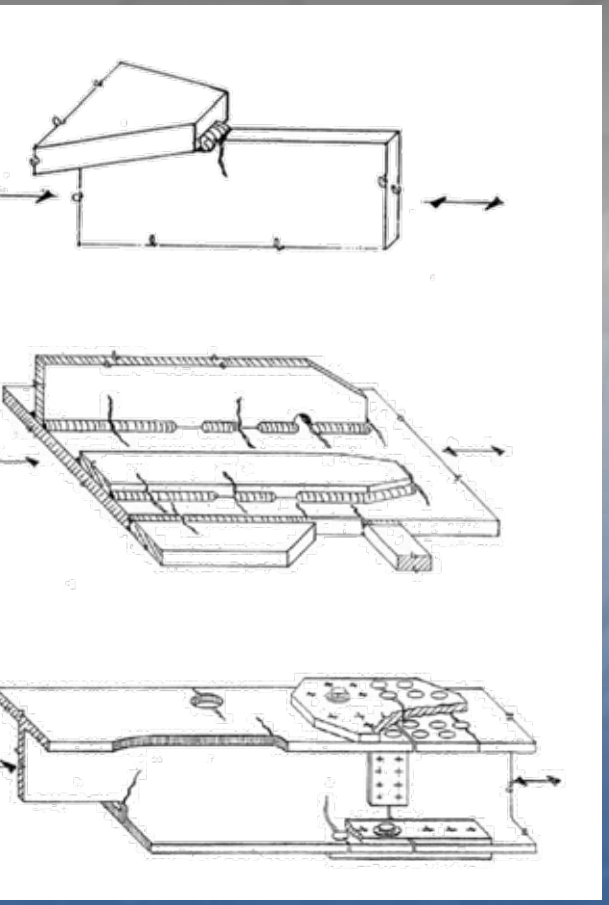




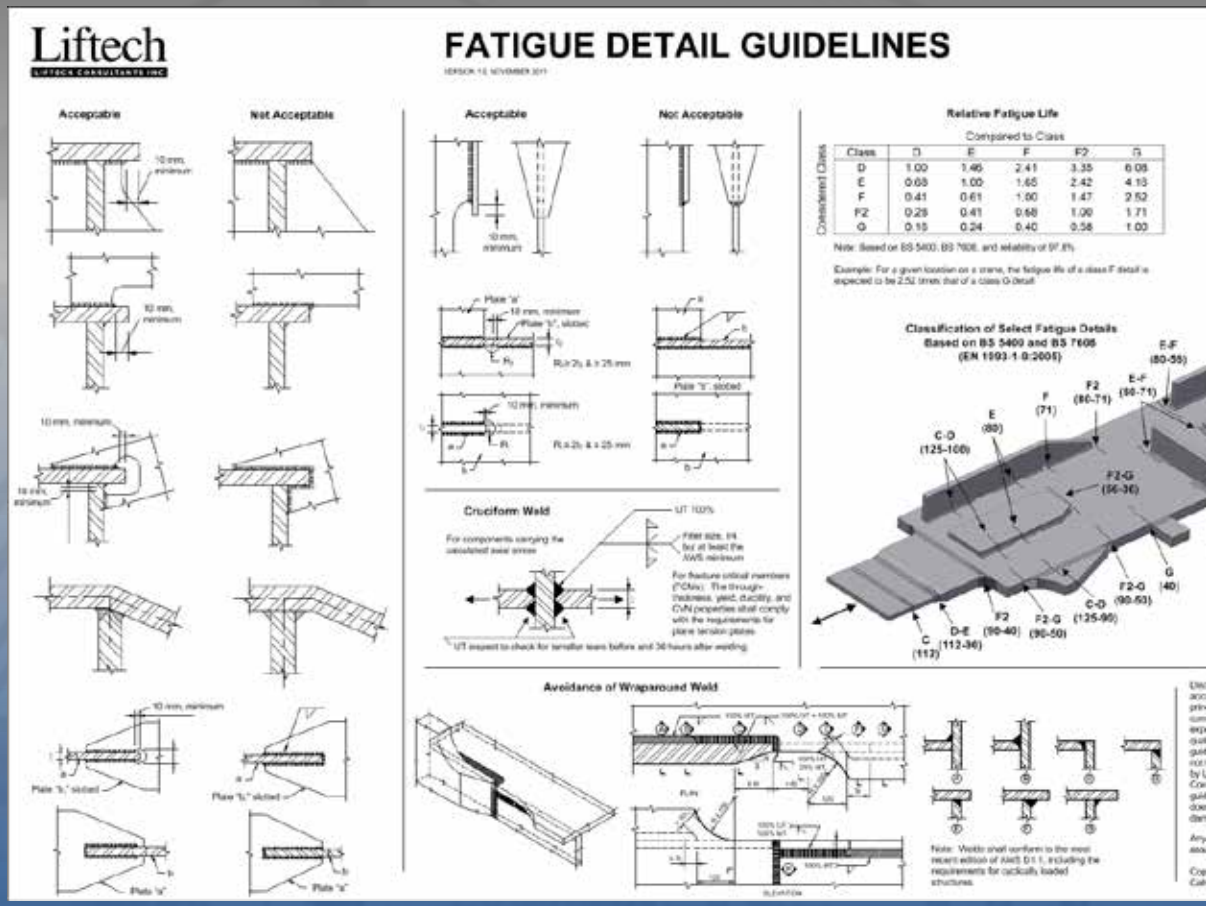


Examples of Fatigue Details

Poor details promote cracking



Better details = Higher reliability at r additional cost



Manufacturing for Fatigue

- Valuing Execution of the Design
- Robust QC and QA inspections
- Collaborate w/ OEM
- Qualified Welding Inspectors (NDT)
- Proper Testing Equipment
- Record Keeping

Fatigue Engineering - Drudgery Phase

Master Planning →

Design →

Procurement →

Manufacturing→

Majority of Influence

Operations →

Inspections →

Maintenance →

Majority of Life Cycle

Rehabilitation/Upgrades →

Replacement

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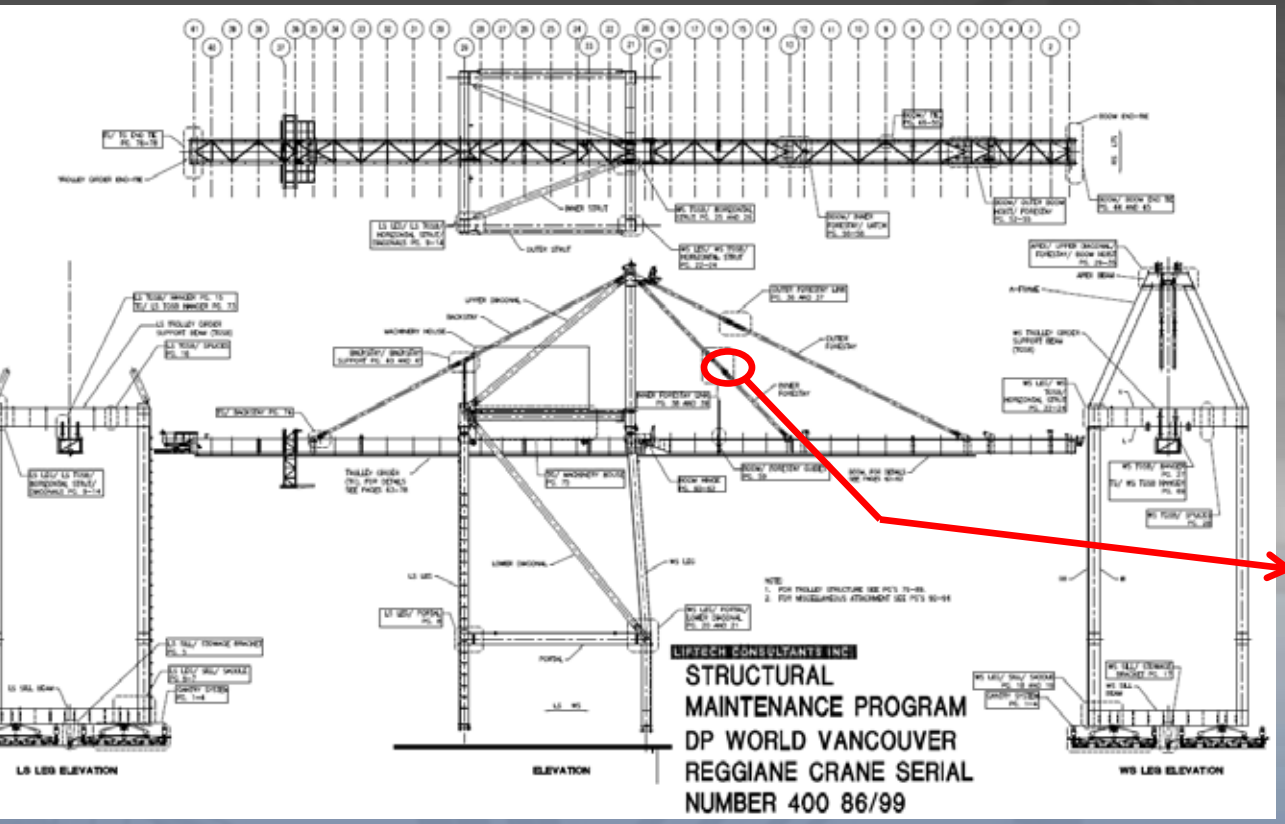
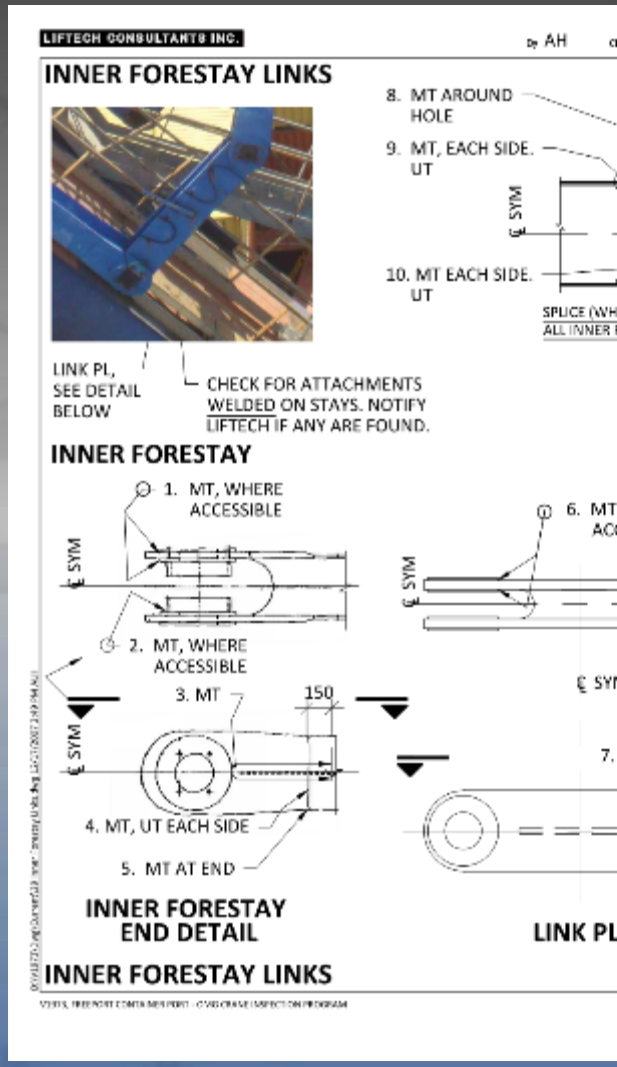
tructural Maintenance Program





Reliability & Resiliency

Proper Inspections + Maintenance

= Extend the structural operating life cycle

<u>Indefinitely.</u>

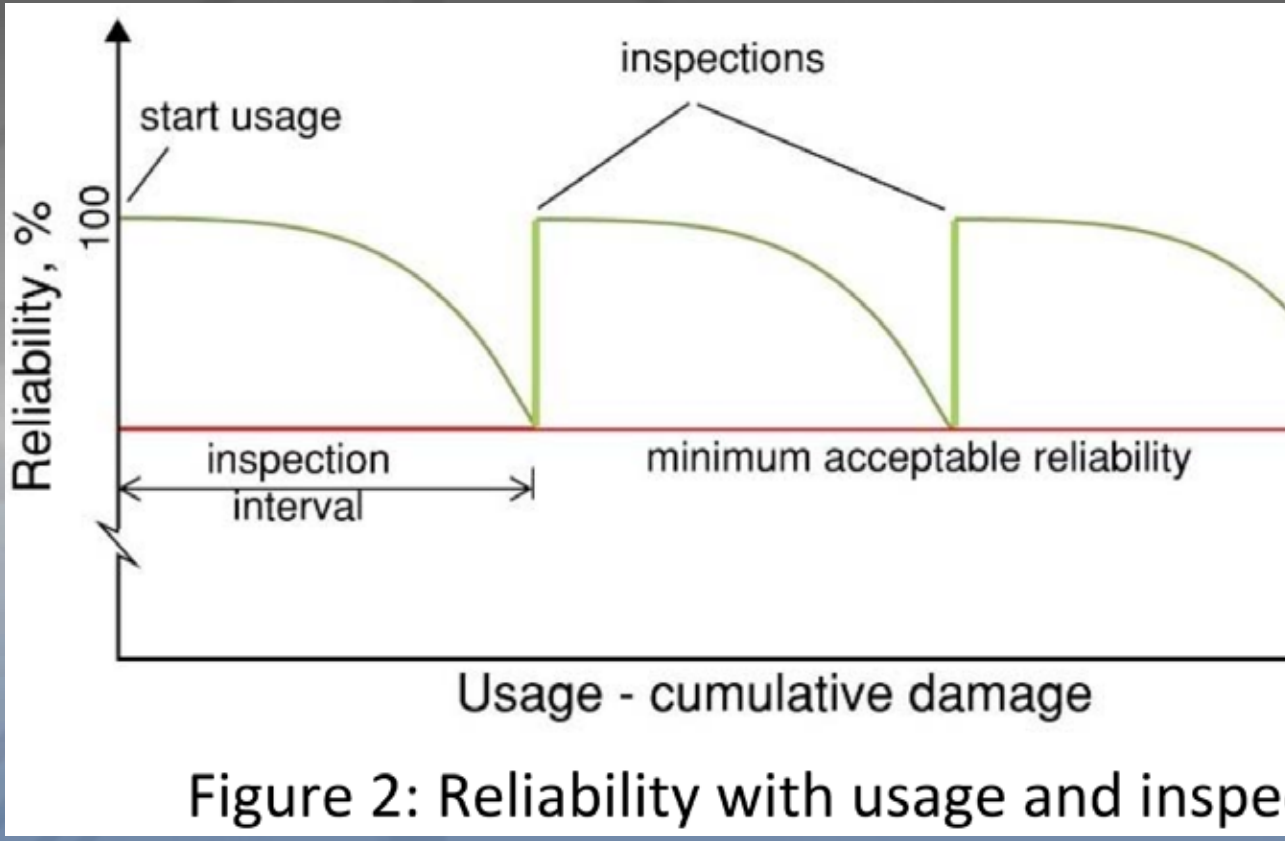


Figure 2: Reliability with usage and inspe

SMP = Prolonged Structural Life

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Engineering Influence

Master Planning →

Design →

Equipment Procurement →

Facility Construction →

Majority of Influence

Operations →

Inspections →

Maintenance →

Majority of Life Cycle

Rehabilitation/Upgrades →

Replacement

Session 3D Discussion

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Thank You

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