

## Workshop W3

*Wednesday, October 11, 9 a.m.-noon*

# ***ANALYZING CONSTRUCTION DEFECT CLAIMS***

Presented by



**Ronald T. Kozlowski**  
**Managing Actuary**  
**Towers Perrin**

A construction defect claim is like a living organism that changes over its life cycle. This session takes a two-sided approach to analyzing construction defect claims. First, a qualitative approach examines how claims are born and how they grow and change over time. An actuarial approach reveals insight into the most common types of claims and ultimate cost estimates.

- Examines insurance industry data and claim trends on defective work claims.
- Demonstrates stages of claim development and how to identify opportunities to minimize the ultimate cost of the claim.
- Provides tools for evaluating various coverage options, including retention levels and wrap-up insurance programs.

THE CONSTRUCTION EXPERTS®

*"We rely on the experts at Aon to provide Flatiron with comprehensive protection at all times."*

Garry Crabtree  
President and Chief Executive  
Flatiron Construction Corporation

Built by Flatiron Construction Corporation.  
Protected by Aon Construction Services Group.  
Protect Your Business From The Ground Up.

built by Flatiron Construction Corporation

COOPER RIVER BRIDGE



For more information contact  
Aon Construction Services Group  
at 888.678.7310 or [www.aon.com/construction](http://www.aon.com/construction).

protected by

**AON**  
Construction Services Group

**Ronald T. Kozlowski**  
**Managing Actuary**  
**Towers Perrin**

Mr. Kozlowski, one of the presenters for Workshop W3, "Analyzing Construction Defect Claims," on Wednesday morning, is a principal of Towers Perrin. He is a consulting actuary with the Tillinghast business of Towers Perrin and is the leader of Tillinghast's insurance and risk management practice for the San Francisco office. He holds a bachelor's degree in actuarial science from the University of Illinois at Champaign-Urbana.

Mr. Kozlowski is a Fellow of the Casualty Actuarial Society and a Member of the American Academy of Actuaries. He participates on the AAA's Actuarial Standards Board Casualty Committee and is the Chairperson for the CAS's Committee on Special Interest Seminars.

Since joining Tillinghast in 1992, Mr. Kozlowski has been involved with both ratemaking and reserving for most lines of business including workers compensation, general liability, commercial multi-peril, medical professional liability, surety, auto, homeowners, extended warranties, and construction defect claims. Mr. Kozlowski's clients include insurance companies, corporations, and public entities. Mr. Kozlowski has worked with self-insureds, captives, and pools.

Prior to joining Tillinghast, Mr. Kozlowski spent 6 years with Aetna Life & Casualty. During this time, Mr. Kozlowski worked in various ratemaking and reserving positions covering personal and commercial auto, homeowners, and workers compensation. He also worked in the Corporate Actuarial Department and worked on issues such as planning, financial modeling, rate-of-return modeling, and reinsurer solvency issues.

Mr. Kozlowski has also coauthored a professional paper on the impacts of layoffs, plant closures, and downsizing in reserving workers compensation liabilities.

Mr. Kozlowski has worked extensively with the catastrophe exposure management issues and has both developed and reviewed catastrophe exposure models. Mr. Kozlowski coauthored a Casualty Actuarial Society paper titled "Measuring and Managing Catastrophe Risk" and helped develop the Actuarial Standard of Practice titled "Using Models Outside the Actuary's Area of Expertise (Property/Casualty)" that was developed in response to the increased use of catastrophe models.

Mr. Kozlowski is a frequent speaker on various insurance issues. He often talks about actuarial reserving practices and trends for construction defect claims.

## ***Notes***

This file is set up for duplexed printing. Therefore, there are pages that are intentionally left blank. If you print this file, we suggest that you set your printer to duplex.

# **ANALYZING CONSTRUCTION DEFECT CLAIMS**

---

**Ronald T. Kozlowski**  
**Towers Perrin**

1. What is a construction defect claim?
  - a. Warranty vs. construction defect
  - b. Defining what is and isn't a construction defect claim
2. Why is analyzing construction defect claims so difficult?
  - a. Influence of court decisions (e.g., *Montrose*, *Stonewall*, *Presley*, *Lantzy*, *Aas*)
  - b. Statute of repose and limitations
  - c. Notice and opportunity to repair legislation
  - d. Changing coverage and endorsements
  - e. Additional insured endorsements
  - f. Insolvencies/California Insurance Guarantee Associations
  - g. Construction quality
  - h. Bad faith and punitive damages
  - i. Mold
  - j. Emerging problem states
  - k. Claims-made policies
3. Data requirements
  - a. Exposures
    - i. State
      1. California
      2. The next tier
      3. All other

- ii. Commercial vs residential
    - iii. Multi-family vs single family
  - b. Loss data
    - i. Settlement and Fees
    - ii. Dates (reporting, occurrence, settlement)
    - iii. Third-party recoveries (e.g., subcontractors, insurers)
    - iv. Claim level detail vs. triangles
    - v. Report year data
    - vi. Accident year data
    - vii. Accident year by report year data
    - viii. Large claims
  - c. Claim counts
    - i. Open vs. closed
    - ii. Closed with pay vs. closed with no pay
  - d. Your analysis is only as good as your data!
- 4. Analyzing net or gross losses
  - a. Increased limit factors
  - b. Size of loss analysis
- 5. Actuarial methodology
  - a. Analyzing reported claims
    - i. Reported loss development patterns
    - ii. Supplemental reserves (on open claims)
    - iii. Severities
  - b. Analyzing Incurred But Not Reported (IBNR) Claims
    - i. Claim reporting patterns
    - ii. Frequency assumptions

- iii. Severity
    - iv. Closed with pay assumptions
  - c. Estimating ultimate losses (for prior program years)
  - d. Estimating outstanding liabilities
  - e. Estimating pure premiums/future funding
    - i. Cost per claim
    - ii. Cost per home
    - iii. Average number of homes involved in a claim
  - f. Evaluating different self-insurance/insurance options
    - i. Wraps vs. non-wraps
    - ii. Different retentions
    - iii. Trailing or maintenance deductibles
    - iv. Aggregate retentions
    - v. Confidence levels
- 6. Insurance Industry and home builder trends
  - a. Claim counts
    - i. Additional insured endorsement
    - ii. Shotgun approach
  - b. Severity
  - c. Loss vs ALAE
- 7. What the insurance markets are doing
  - a. Underwriting
  - b. Pricing
  - c. Wraps
  - d. Captives

## ***Notes***

This file is set up for duplexed printing. Therefore, there are pages that are intentionally left blank. If you print this file, we suggest that you set your printer to duplex.

## **Construction Defects**

*2006 IRMI Construction Risk Conference*

*Ronald T. Kozlowski, FCAS, MAAA*

*October 11, 2006*

©2006 Towers Perrin

# **CONSTRUCTION DEFECTS**



## Why is analyzing CD claims so complicated?

- Definition
- Reporting lag/statute of limitation
- Effects of court decisions
- Changes in policy form and introduction of exclusions
- Additional insured endorsements
- Coding to an accident year
- Specific states developing into problematic states
- Case reserving practices
- Insolvencies/possible impact of captives
- “Right to repair laws”

## Why is analyzing CD claims so complicated? (cont'd.)

- Multiple claimants/defendants/insurance companies
- Increased use of SIRs/deductibles
- Wrap policies
- Quality of construction
- Arbitration clauses
- Continuously changing environment
- Overall concern that past may not be predictive of the future

## Definition of a Construction Defect

- There is no industry standard definition of what constitutes a construction defect
- According to California State Jury Instructions, a construction defect is the

*Failure of a building or any building component*

- a) to be erected in a reasonably workmanlike manner  
or b) to perform in a manner intended by the manufacturer or reasonably expected by the buyer which causes proximate damage to the structure*

## Types of Defects

Many courts have recognized two primary categories of defects for which damages are recoverable:

- Defects in design, workmanship and materials
  - Faulty drainage
  - Inadequate environmental controls
  - Improper landscaping and irrigation
  - Faulty electrical wiring
  - Improper materials
  - Insufficient insulation
  - Structural failure or collapse
  - Defective plumbing
- Landslide and earth settlement problems
  - Expansive soils
  - Land sliding
  - Underground water or streams
  - Surface failures
  - Vertical settlement
  - Improper compaction
  - Horizontal movement
  - Inadequate grading and drainage

## Types of Defects (cont'd.)

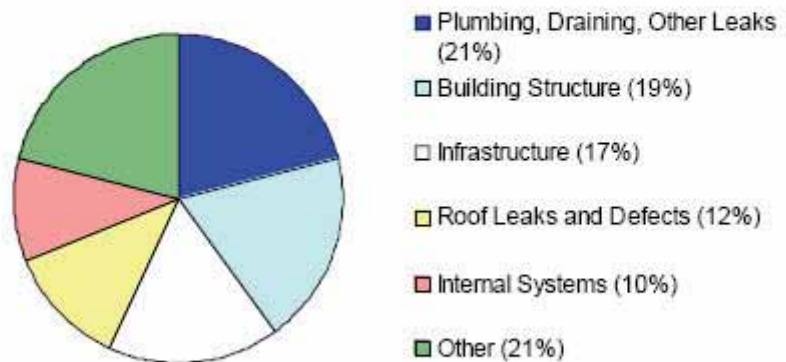
- Types of defects
  - Patent defects
    - apparent with reasonable inspection
    - statute of limitations requires claim to be submitted within 2 to 3 years of discovery
  - Latent defects
    - defect is not apparent by reasonable inspection
    - more time is allowed to submit a claim, in some cases 10 years after completion (CA). For comparison purposes, AZ is 8 years, and WA is 6 years (confirmed by WA supreme court in September 2001)

©2006 Towers Perrin

7

## Type of Defects (cont'd.)

Most Common Types of Construction Defects



Source: California Department of Real Estate/IRMI Conference

©2006 Towers Perrin

8

## Type of Defects (cont'd.)

- According to the 2005 Quality Built Data Survey, the most common corrected construction defect risks in single family homes
  - Building envelope issues (41%)
  - Framing/structural issues (34%)
  - Plumbing/electrical (8%)
  - Foundations (6%)
  - Other (11%) - decking/roofing, life safety, HVAC, thermal and acoustic issues.

Source: California Department of Real Estate/IRMI Conference

©2006 Towers Perrin

9

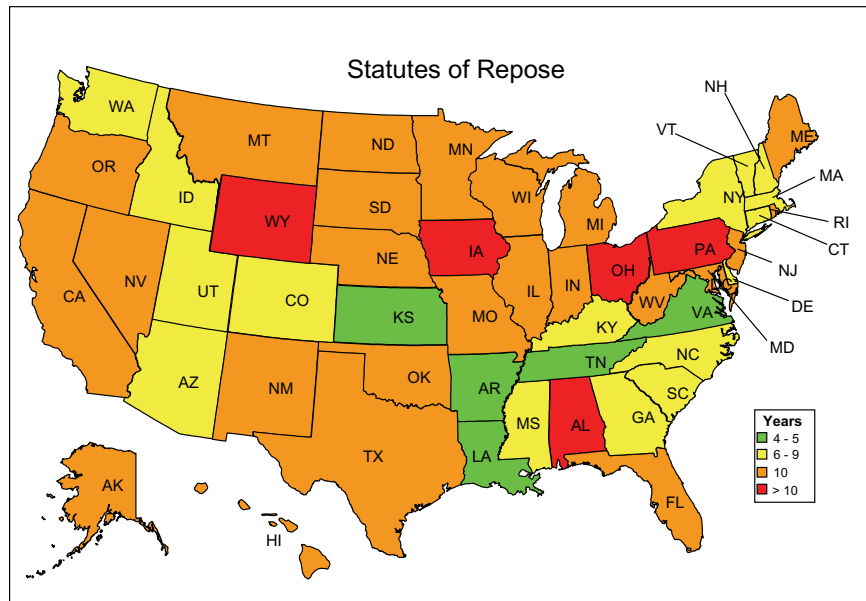
## Statutes of Limitation and Repose

- Statute of Limitation – A law which sets the maximum period which one can wait before filing a lawsuit, depending on the type of case or claim. The periods vary by state. If the lawsuit or claim is not filed before the statutory deadline, the right to sue or make a claim is forever barred.
- Statutes of Repose - Statutes of repose terminate a manufacturer's liability for defective products after a statutorily specified number of years. A person injured after the cut-off date has no recourse to hold the manufacturer of the defective product accountable.

©2006 Towers Perrin

10

## Statutes of Repose



©2006 Towers Perrin

11

## Important Legal Cases

- I - Montrose Chemical Corp v. Superior Court (Canadian Universal Insurance Co) - 1993
- II - Montrose Chemical Corp v. Admiral Insurance – 1995
- Stonewall Insurance Co. v. City of Palos Verdes Estates – 1996
- Aas v. William Lyon Company – 2000
- Presley Homes v. American States Insurance Co. – 2001
- Lantzy v. Centex Homes – 2003
- L-J v. Bituminous Fire and Marine Ins. Co. – 2004

©2006 Towers Perrin

12

## Changes in Policies

- Some policy changes/endorsements shift coverage whereas others eliminate coverage
  - Montrose endorsement
  - Known loss provisions
  - “Damage to Your Work” exclusion
  - Additional insured endorsements
  - EIFS exclusion
  - Mold exclusions
  - Earth movement exclusions
  - Residential construction exclusions

©2006 Towers Perrin

13

## Additional Insured Endorsement

- Issues
  - Coverage for “ongoing operations” vs. “completed operations”?
    - Is policy silent, “includes” or “excludes”
  - Does coverage specify that liability must “arise out of the named insured’s ‘act or omissions’ ”?
  - Does coverage terminate for the additional insured when the named insured’s work is completed?
  - Does language limit coverage to the AI’s vicarious liability for acts of the named insured?
- Cost sharing arrangements
  - Decided early in the suit
  - Pro-rata, tiered, percentage

\*Source: American Re Construction Defect: Resource Guide, 2005

©2006 Towers Perrin

14

## Claim Coding - What is the Accident Date?

- Due to Montrose, the claim can trigger any policy between the date of project completion or the date of third-party damage and the date of remediation
- Insurers may not code claims consistently
  - Record entire claim in policy period where project was completed or first effective policy thereafter. As policy limits are extinguished open up new claim on next policy.
  - Record a claim in every policy effective between completion and remediation.
  - Record in only one accident year

## Coding of CD Claims to Accident Year

- Home built in 1998
- Claim reported in 2005
- Company A sold contractor policy from 1996 through 2005

**Maturity**

		12	24	36	48	60	72	84	96
Accident Date	1998								1
	1999								
	2000								
	2001								
	2002								
	2003								
	2004								
	2005								

## Coding of CD Claims to Accident Year (cont'd.)

- Home built in 1998
- Claim reported in 2005
- Company A sold contractor policy from 1996 through 2001
- Company B sold contractor policy from 2002 through 2005

	12	24	36	48	60	72	84	96
1998								1
1999								
2000								
2001								
2002				1				
2003								
2004								
2005								

©2006 Towers Perrin

17

## Coding of CD Claims to Accident Year (cont'd.)

- Solution: Code claim count to each year for which a policy is exposed

### Maturity

	12	24	36	48	60	72	84	96
1998								1
1999							1	
2000						1		
2001					1			
2002				1				
2003			1					
2004		1						
2005	1							

©2006 Towers Perrin

18

## Coding of CD Claims to Accident Year (cont'd.)

- Assume Montrose Endorsement added in 2000, then.....

### Maturity

Accident Date	Maturity								
	12	24	36	48	60	72	84	96	
1998									1
1999							1		
2000						1			
2001					1				
2002				1					
2003									
2004									
2005									

©2006 Towers Perrin

19

## States where insurance companies have concerns over construction defects

- 1<sup>st</sup> tier – California
- 2<sup>nd</sup> tier – AK, AZ, CO, FL, HI, MN, NJ, NV, NM, NC, OR, SC, TX, WA
- 3<sup>rd</sup> tier – all other states
- Katrina, Rita, and Wilma affected states - LA, MS, AL, FL
- What to watch out for
  - Rapid growth in population
  - Rapid growth in construction
  - Unskilled labor
  - Legal environments
  - Theories of liability
  - Judicial environment

©2006 Towers Perrin

20

## Changes in Case Reserving Practices

- Actuaries look at the past to predict the future
- Significant changes in case reserving by insurers
  - Movement from “generalist” claims staff to specialized units
  - Less loss development due to higher initial case reserves
  - Attention to reducing legal costs
    - vendors (e.g., lawyers, expert witnesses)
      - insurance companies want more control
      - fixed fee arrangements
    - Arbitration/mediation
- Why don't some home builders estimate case reserves?
  - Gross estimates versus net estimates

©2006 Towers Perrin

21

## Insolvencies

- Reliance, Legion, Frontier (United Capital)
- California Insurance Guarantee Association
  - denies indemnity coverage if other insurance is available; may provide some defense
  - remaining solvent companies to share loss
- Residual impact on loss development and severities
- Future concerns
  - Insurance companies and risk retention groups with low retentions
  - Deductibles/SIRs
  - Claims-made policies

©2006 Towers Perrin

22

## “Notice and Opportunity to Repair” Legislation

- Generally provide builder with written notice and description of alleged defects - 90 days before filing lawsuit
- California - Calderon Act - 1997
  - homeowners association must provide notice of a claim to the developer and to the members of its association before filing a lawsuit
- California - Steinberg Mandatory Negotiation Bill (7/2002)
  - builders, subcontractors, insurers and suing homeowners will be required to negotiate a solution to specific alleged defects in a timely manner before a lawsuit can be filed
- California Senate Bill 800 (“Fix It” Law) – 2003
  - established building standards to govern claims against builders
  - mandatory pre-lawsuit process

## “Notice and Opportunity to Repair” Legislation (cont’d.)



\*Source: National Association of Home Builders (NAHB); if more than one NOR – chart shows year of latest reform

## “Notice and Opportunity to Repair” Legislation (cont’d.)

- NERA/NAHB study “*Construction Defect Disputes: Getting to Yes without Going to Court*”
  - Based on data from three most active construction defect law firms in Colorado
    - Average monthly # of lawsuits filed by these law firms decreased from 6 to 2.5 claims (but some cases could be delayed)

## “Notice and Opportunity to Repair” Legislation (cont’d.)

- NERA/NAHB study “*Construction Defect Disputes: Getting to Yes without Going to Court*”
  - Based on information from the 13 most active builders in Colorado
    - “20% more homeowners filed NOR notices during the first year after the NOR law took effect compared with the number named in the suits filed in the prior year”
    - Notice changed mix of cases – more brought by individual homeowners
    - 2 out of 3 cases resolved without cash awards
    - “...builders estimated costs of repairs are typically half the average settlement amounts for litigated cases.”
    - “...liability costs should decline even after accounting for the observed increase in formal claims.”

## Other Issues

- Multiple claimants/defendants/insurance companies
- Increased use of SIRs/deductibles
- Wrap policies
- Quality of construction
- Arbitration clauses
- Greater use of warranties
- Continuously changing environment
- Overall concern that past may not be predictive of the future

## Actuarial Analysis – Exposures/Underwriting

- Premiums and exposures by policy year
  - exposures – revenue, payroll or close of escrow
- California and other states
- Residential vs. commercial
- Single family vs. multi-family
- Developer/contractor vs. subs/artisans
- Changes in mix by SIC codes, class, etc.
- Primary or excess
- Endorsements/coverage restrictions
- Other mitigation efforts
- Wrap policies

## Actuarial Analysis - Issues to Address (cont'd.)

### Coding/Availability of Loss Data

- California and other states
- Residential vs. commercial
- Single family vs. multi-family
- Developer/contractor vs. subs/artisans
- Definition & mix of CD/non CD claims
- Report year triangles
- Accident/COE triangles
- Individual claim listing
- Sub-classes (EIFS, mold, AI)
- Case reserves
  - Insurers – ALAE
  - Homebuilders – loss or ALAE
- Claim counts
  - Reported, closed
  - CWP, CWNP
  - CWIP, CWEP
- Limits/reinsurance/wrap
- ALAE - inside or outside of limits
- Homebuilders (HOA Claims, Units)

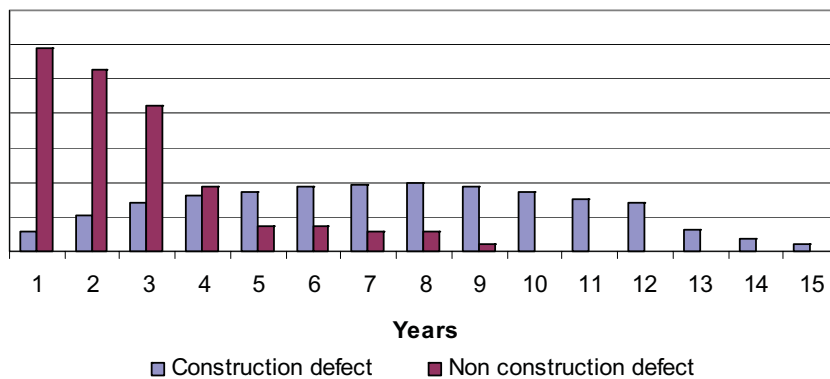
©2006 Towers Perrin

29

## Construction defect and non construction defect claims have significantly different reporting patterns

- The majority of non construction defect losses are reported as of four years, whereas construction defect claims have a significantly slower reporting pattern.

### Incremental Reporting Patterns



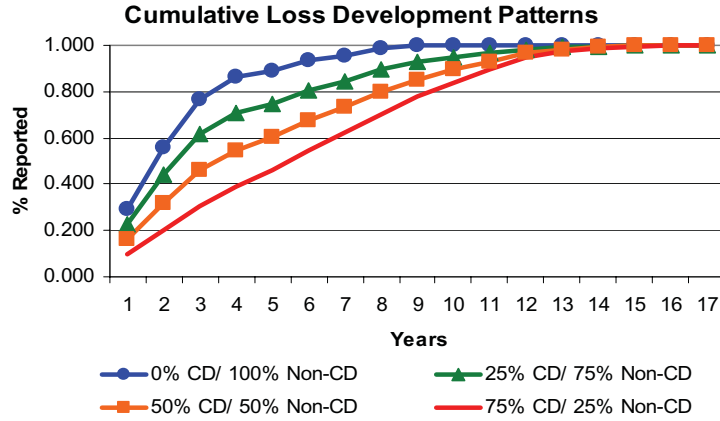
Based on California reporting patterns

©2006 Towers Perrin

30

## The mix of construction defect to non construction defect claims is important

- The mix of construction defect losses and non construction defect losses is important to understanding the potential reporting pattern.



Based on California reporting patterns

©2006 Towers Perrin

31

## Loss Development Triangle

	Age							
	2 Years	4 Years	6 Years	8 Years	10 Years	12 Years	14 Years	16 Years
1998	24	36	48	55	61	66	70	72
1999	24	36	48	55	61	66	70	
2000	24	36	48	55	61	66		
2001	24	36	48	55	61			
2002	24	36	48	55				
2003	24	36	48					
2004	24	36						
2005	24							

©2006 Towers Perrin

32

## Loss Development Triangle (cont'd.)

	Age							
	2 Years	4 Years	6 Years	8 Years	10 Years	12 Years	14 Years	16 Years
1998	24	36	48	55	61	66	70	72
1999	24	36	48	55	61	66	70	
2000	24	36	48	55	61	66		
2001	24	36	48	55	61			
2002	24	36	48	55				
2003	24	36	48					
2004	24	36						
2005	24							

	Age						
	2-4	4-6	6-8	8-10	10-12	12-14	14-16
1998	1.50	1.33	1.15	1.11	1.08	1.06	1.03
1999	1.50	1.33	1.15	1.11	1.08	1.06	
2000	1.50	1.33	1.15	1.11	1.08		
2001	1.50	1.33	1.15	1.11			
2002	1.50	1.33	1.15				
2003	1.50	1.33					
2004	1.50						
2005							

©2006 Towers Perrin

33

## Loss Development Triangle (cont'd.)

	Age							
	2 Years	4 Years	6 Years	8 Years	10 Years	12 Years	14 Years	16 Years
1998	24	36	48	55	61	66	70	72
1999	24	36	48	55	61	66	70	72
2000	24	36	48	55	61	66	70	72
2001	24	36	48	55	61	66	70	72
2002	24	36	48	55	61	66	70	72
2003	24	36	48	55	61	66	70	72
2004	24	36	48	55	61	66	70	72
2005	24	36	48	55	61	66	70	72

	Age						
	2-4	4-6	6-8	8-10	10-12	12-14	14-16
1998	1.50	1.33	1.15	1.11	1.08	1.06	1.03
1999	1.50	1.33	1.15	1.11	1.08	1.06	
2000	1.50	1.33	1.15	1.11	1.08		
2001	1.50	1.33	1.15	1.11			
2002	1.50	1.33	1.15				
2003	1.50	1.33					
2004	1.50						
2005							

©2006 Towers Perrin

34

## Loss Development Triangle – Accident Year Change

		Age							
		2 Years	4 Years	6 Years	8 Years	10 Years	12 Years	14 Years	16 Years
1998	24	36	48	55	61	66	70	72	
1999	24	36	48	55	61	66	70		
2000	24	36	48	55	61	66			
2001	24	36	48	55	61				
2002	26	42	57	66					
2003	26	42	57						
2004	26	42							
2005	26								

		2-4	4-6	6-8	8-10	10-12	12-14	14-16
1998	1.50	1.33	1.15	1.11	1.08	1.06	1.03	
1999	1.50	1.33	1.15	1.11	1.08	1.06		
2000	1.50	1.33	1.15	1.11	1.08			
2001	1.50	1.33	1.15	1.11				
2002	1.62	1.36	1.16					
2003	1.62	1.36						
2004	1.62							
2005								

©2006 Towers Perrin

35

## Loss Development Triangle – Calendar Year Change

		Age							
		2 Years	4 Years	6 Years	8 Years	10 Years	12 Years	14 Years	16 Years
1998	24	36	48	55	61	66	77	80	
1999	24	36	48	55	61	72	79		
2000	24	36	48	55	65	72			
2001	24	36	48	59	68				
2002	24	36	52	63					
2003	24	39	54						
2004	26	40							
2005	26								

		2-4	4-6	6-8	8-10	10-12	12-14	14-16
1998	1.50	1.33	1.15	1.11	1.08	1.17	1.04	
1999	1.50	1.33	1.15	1.11	1.18	1.10		
2000	1.50	1.33	1.15	1.18	1.11			
2001	1.50	1.33	1.23	1.15				
2002	1.50	1.44	1.21					
2003	1.63	1.38						
2004	1.54							
2005								

©2006 Towers Perrin

36

## Traditional actuarial methods may not be good predictor

- Loss development methodologies assume that past is a good predictor of the future
- Construction losses have been affected by a constantly changing environment
- Better to use frequency and severity methodologies
  - Management can understand results
  - Monitoring of results is easier

## Tillinghast's "Best Practice" Method

- Combination of
  - Report Year Loss Development
  - Frequency/Severity Method for "Pure" IBNR

$$\text{Ultimate Loss \& ALAE} = \left( \text{Reported Loss \& ALAE} \right) + \left( \text{RY Supplemental Reserve} \right) + \left( \text{IBNR Reserve} \right)$$

$$\text{Where } \text{IBNR Reserve} = \left( \text{IBNR Claim Counts} \right) \times \left( \text{CWP Ratio} \right) \times \left( \text{CWP Severity} \right)$$

## Tillinghast's "Best Practice" Method (cont'd.)

- Combination of Report Year Loss Development and Frequency/Severity Method for "Pure" IBNR
  - once claim is reported, it is settled relatively quickly
  - less uncertainty for the reported loss emergence
  - ability to isolate changes in claims handling
  - allows scenario testing of pure IBNR
    - varying claim counts, CWP ratio, and severity
- For reasonability check, compare results against other methods used
- Can allocate costs back to accident year

©2006 Towers Perrin

39

## Tillinghast's "Best Practice" Method (cont'd.)

- Analyze accident year and report year data
  - cumulative, incremental, loss development factor basis
  - loss development - paid and reported, loss & ALAE separately
  - claim count development - reported, CWP, CWNP
  - severities - paid, paid-on-closed, reported
  - count ratios - closed/reported, CWP/closed, CWNP/closed
  - large loss data (# and \$)
  - net/gross ratios
- For starters, obtain a claim download to facilitate detailed claim analysis

©2006 Towers Perrin

40

## Estimating Future Development on Known Claims; Report Year Loss Development

- Use loss development methodology on report year loss development triangle
- If case reserves exist – estimate IBNR using reported loss development triangle
- If case reserves don't exist – estimate IBNR using paid loss development
- Good method for considering calendar impacts; not good for accident year impacts
- Good method when significant changes in claims handling

## Claim Count Methods for “Pure” IBNR

- Estimate future claim counts
  - Claim count accident year development
  - Claim count accident year development with tempered LDFs
  - For insurers
    - exposure based methods using premium and claim frequency as initial expected claim count
    - exposure based methods using premium, risk factor, and claim frequency as initial expected claim count
  - For homebuilders
    - exposure based methods using deliveries and claim frequency as initial expected claim count
    - exposure based methods using deliveries, risk factor, and claim frequency as initial expected claim count

## Homebuilder Example – Reported Claim Counts

(1) Claim Count as of December 31, 2005

COE Year	Report Year Lag									Total
	1	2	3	4	5	6	7	8	9	
1997	-	-	-	1	1	2	2	3	1	10
1998	1	1	2	1	1	1	2	2		11
1999	-	1	2	2	2	3	1			11
2000	1	1	-	3	2	2				9
2001	-	1	1	2	1					5
2002	1	-	2	2						5
2003	1	1	3							5
2004	1	1								2
2005	2									2

©2006 Towers Perrin

43

## Homebuilder Example – Reported Claim Count Frequency

(1) Claim Count as of December 31, 2005

COE Year	Report Year Lag									Total
	1	2	3	4	5	6	7	8	9	
1997	-	-	-	1	1	2	2	3	1	10
1998	1	1	2	1	1	1	2	2		11
1999	-	1	2	2	2	3	1			11
2000	1	1	-	3	2	2				9
2001	-	1	1	2	1					5
2002	1	-	2	2						5
2003	1	1	3							5
2004	1	1								2
2005	2									2

(2) Frequency Per 1,000 Deliveries

COE Year	Report Year Lag									Total
	1	2	3	4	5	6	7	8	9	
1997	-	-	-	0.71	0.71	1.43	1.43	2.14	0.71	7.14
1998	0.59	0.59	1.18	0.59	0.59	0.59	1.18	1.18		6.47
1999	-	0.43	0.87	0.87	0.87	1.30	0.43			4.78
2000	0.42	0.42	-	1.25	0.83	0.83				3.75
2001	-	0.38	0.38	0.77	0.38					1.92
2002	0.40	-	0.80	0.80						2.00
2003	0.33	0.33	1.00							1.67
2004	0.31	0.28								0.59
2005	0.50									0.50

©2006 Towers Perrin

44

## Homebuilder Example – Estimate Ultimate Frequency

### (2) Frequency Per 1,000 Deliveries

COE Year	Report Year Lag									Total
	1	2	3	4	5	6	7	8	9	
1997	-	-	-	0.71	0.71	1.43	1.43	2.14	0.71	7.14
1998	0.59	0.59	1.18	0.59	0.59	0.59	1.18	1.18		6.47
1999	-	0.43	0.87	0.87	0.87	1.30	0.43			4.78
2000	0.42	0.42	-	1.25	0.83	0.83				3.75
2001	-	0.38	0.38	0.77	0.38					1.92
2002	0.40	-	0.80	0.80						2.00
2003	0.33	0.33	1.00							1.67
2004	0.31	0.28								0.59
2005	0.50									0.50
Average	0.28	0.30	0.60	0.83	0.68	1.04	1.01	1.66	0.71	7.13

©2006 Towers Perrin

45

## Homebuilder Example – Claim Count Reporting Pattern

### (2) Frequency Per 1,000 Deliveries

COE Year	Report Year Lag									Total
	1	2	3	4	5	6	7	8	9	
1997	-	-	-	0.71	0.71	1.43	1.43	2.14	0.71	7.14
1998	0.59	0.59	1.18	0.59	0.59	0.59	1.18	1.18		6.47
1999	-	0.43	0.87	0.87	0.87	1.30	0.43			4.78
2000	0.42	0.42	-	1.25	0.83	0.83				3.75
2001	-	0.38	0.38	0.77	0.38					1.92
2002	0.40	-	0.80	0.80						2.00
2003	0.33	0.33	1.00							1.67
2004	0.31	0.28								0.59
2005	0.50									0.50
Average	0.28	0.30	0.60	0.83	0.68	1.04	1.01	1.66	0.71	7.13
Selected Pattern	0.05	0.05	0.08	0.11	0.11	0.14	0.14	0.22	0.10	1.00

©2006 Towers Perrin

46

## Homebuilder Example – Projecting Ultimate Claim Counts

### (1) Claim Count as of December 31, 2005

COE Year	Report Year Lag									Total	Ultimate
	1	2	3	4	5	6	7	8	9		
1997	-	-	-	-	-	-	-	-	-	10	10
1998	1	1	2	1	1	2	2	2	2	11	12
1999	-	1	2	2	2	3	1	-	-	11	16
2000	1	1	-	3	2	2	-	-	-	9	17
2001	-	1	1	2	1	-	-	-	-	5	16
2002	1	-	2	2	-	-	-	-	-	5	18
2003	1	1	3	-	-	-	-	-	-	5	23
2004	1	1	-	-	-	-	-	-	-	2	25
2005	2	-	-	-	-	-	-	-	-	2	29

### (2) Frequency Per 1,000 Deliveries

COE Year	Report Year Lag									Total	Ultimate
	1	2	3	4	5	6	7	8	9		
1997	-	-	-	0.71	0.71	1.43	1.43	2.14	0.71	7.14	7.14
1998	0.59	0.59	1.18	0.59	0.59	0.59	1.18	1.18	-	6.47	7.18
1999	-	0.43	0.87	0.87	0.87	1.30	0.43	-	-	4.78	7.06
2000	0.42	0.42	-	1.25	0.83	0.83	-	-	-	3.75	7.03
2001	-	0.38	0.38	0.77	0.38	-	-	-	-	1.92	6.20
2002	0.40	-	0.80	0.80	-	-	-	-	-	2.00	7.06
2003	0.33	0.33	1.00	-	-	-	-	-	-	1.67	7.51
2004	0.31	0.28	-	-	-	-	-	-	-	0.59	7.01
2005	0.50	-	-	-	-	-	-	-	-	0.50	7.27
Average	0.28	0.30	0.60	0.83	0.68	1.04	1.01	1.66	0.71	7.13	
Selected Pattern	0.05	0.05	0.08	0.11	0.11	0.14	0.14	0.22	0.10	1.00	

©2006 Towers Perrin

47

## Products and Completed Operations Loss Costs for Specific Contractors Classes 2000-2006

Class	2000-2006 Loss Cost Change	Annual Loss Cost Change
Siding Installation	411.9%	31.3%
Ceiling or Wall Installation - Metal	356.0%	28.8%
Painting - Exterior Bldgs. - > 3 stories	347.8%	28.4%
Sign Painting or Lettering - Inside Bldgs.	335.4%	27.8%
Plastering or Stucco Work	315.9%	26.8%
Insulation Work - Plastic	300.0%	26.0%
Painting - Steel Structures or Bridges	267.4%	24.2%
Dry Wall or Wallboard Installation	266.1%	24.1%
Plumbing - Commercial and Industrial	243.1%	22.8%
Roofing - Residential	222.7%	21.6%
Concrete Construction	203.5%	20.3%
Plumbing - Residential or Domestic	186.6%	19.2%
Masonry	155.5%	16.9%
Electrical Work - Within Bldgs.	136.5%	15.4%
Roofing - Commercial	98.7%	12.1%
Driveway, Parking Area, or Sidewalk	76.3%	9.9%
Floor Covering Installation	65.1%	8.7%
Fence Erection Contractors	62.3%	8.4%
Heating and Air Conditioning Systems	55.5%	7.6%
Tile, Stone, Marble, Mosaic, or Terrazzo Work	51.6%	7.2%
Sheet Metal Work - Shop and Outside	26.0%	3.9%
Electrical Apparatus - Installation, Service, & Repair	12.9%	2.0%

©2006 Towers Perrin

Rob Walling of Pinnacle/CCTF Testimony

48

## Estimating Severities for “Pure” IBNR

- For severities, consider using
  - Report year loss severity
    - derive using report year loss development and report year claims
  - Closed claim severity
  - Accident year by report year severity
- Consider CWP ratios
  - Analyze on both report year and accident year basis
  - Insurers experiencing decreasing ratios but depend upon mix

## Estimating Severities for “Pure” IBNR (cont’d.)

- Considerations
  - Large losses
  - Large number of claim counts
  - Trend
  - Limits/deductibles/SIRs
  - Wraps
  - Quality of construction
  - “Notice and opportunity to repair” laws

## Calculating Ultimate Losses

1) Estimated Ultimate Construction Defect Claims	5,000
2) Reported Claims incl. Closed Without Any Payment	3,750
3) IBNR Claims [= (1) - (2)]	1,250
4) Factor to Estimate Claims Closed with Any Payment	20.0%
5) IBNR Claims Estimated to Close with Any Payment [= (3) x (4)]	250
6) Average Loss per Claim Closed with Any Payment	\$30,000
7) Total Loss on IBNR Claims [= (5) x (6)]	\$7,500,000
8) Reported Loss	\$29,500,000
9) Paid Loss	\$13,500,000
10) Loss Case Reserves [= (8) - (9)]	\$16,000,000
11) Supplemental Loss Development on Open Claims	\$3,000,000
12) Estimated Unpaid Loss [= (7) + (10) + (11)]	\$26,500,000
13) Estimated Ultimate Loss [= (7) + (8) + (11)]	\$40,000,000

©2006 Towers Perrin

51

## Loss Projection Calculations

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>■ Insurance Companies                             <ul style="list-style-type: none"> <li>■ loss development on reported claims</li> <li>■ claim reporting pattern</li> <li>■ future # of claims</li> <li>■ closed w/payment statistics</li> <li>■ severity per claim</li> <li>■ pure premium per payroll/revenue</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>■ National Home Builders                             <ul style="list-style-type: none"> <li>■ loss development on reported claims</li> <li>■ claim reporting pattern</li> <li>■ future # of claims</li> <li>■ claim frequency per 1000 deliveries</li> <li>■ # of homes per claim</li> <li>■ # of homes involved in a claim per 1000 deliveries</li> <li>■ severity per claim</li> <li>■ pure premium per home</li> </ul> </li> </ul> |
|--|--|

©2006 Towers Perrin

52

## Homebuilder statistics

- NERA/NAHB study "*Construction Defect Disputes: Getting to Yes without Going to Court*"
  - Statistics from 261 home builders surveyed as part of NAHB monthly and quarterly Housing Market Index – 2004 survey
    - Estimated per unit cost of homebuilder general liability and umbrella/excess insurance costs - \$2,700
      - Some homebuilders as high as \$15,000
    - AZ, CA, and NV costs are 87% higher than states with low liability costs (GA, IL, MN, MO, PA, SC)
    - Average cost of insurance per \$1,000 of revenue for single-family builders
      - in litigation intensive states - \$9.32
      - in states with low liability costs - \$3.76
      - Average difference in costs is equivalent to \$3,000 per unit

©2006 Towers Perrin

53

## Trends

- Speed up in reporting of claims
- Impact of increased use of warranties
- CWP/reported ratios
  - Decreasing
  - Quick coverage denials/"shot gun" approach

©2006 Towers Perrin

54

## Trends (cont'd.)

- Severity
  - Depends upon the type of business
    - National homebuilder – decreasing
    - General contractor – decreasing, increasing
    - Subcontractors/artisans – decreasing
    - Developer used to pay 50% - 60%; now pays 20% - 30%; but % increasing again
      - additional insured endorsement
  - Higher retentions
  - Fewer larger claims
  - Impacted by # of defendants
  - Other factors

©2006 Towers Perrin

55

## Trends (cont'd.)

- ALAE/Loss
  - Historical ranges from 80% to 110% of loss
  - Affected by
    - additional insured endorsements
    - number of defendants
- Reinsurance
  - lower severities leading to smaller recoveries

©2006 Towers Perrin

56

## What are the markets doing?

- Underwriting rather than rating
- Exclusions
- Mandatory dispute resolution processes
- Warranty packaging
- Claims-made type policies
- CCIPs (contractor-controlled insurance programs)
- Wraps
- Captives
- SIRs/deductibles/maintenance deductibles
- New insurers/risk retention groups
- Plateauing of rates

## Contact Information

Ronald T. Kozlowski, FCAS, MAAA  
Towers Perrin  
525 Market St., Suite 2900  
San Francisco, CA 94105-2708  
Phone: (415) 836-1025  
Email: [ron.kozlowski@towersperrin.com](mailto:ron.kozlowski@towersperrin.com)