



# The New Project Delivery Model

Presentation to the  
British Columbia Expropriation Association

October 29, 2005

Tim Stevens, P.Eng, Stevens Engineering Ltd.

David Aberdeen, AACI, P.App, D.A. Aberdeen & Associates Ltd.

# Introduction

- Most projects follow a pre-subscribed process
- Highway 15 followed an interest based business approach
- We are here to describe the Highway 15 design approach which emphasizes the financial and stakeholder benefits



# Topics Covered

- “Traditional” design approach
- Highway 15 design approach
- Schedule benefits
- Business benefits
- Stakeholder benefits
- Case studies
- Question period



# “Traditional” Design Approach

- Most designs follow a “textbook” approach
  - Conceptual design – little or no property input
  - Functional design – focused on the “function” of the facility
  - Preliminary design – property considered but no “deals”
  - Detailed design – property plans produced – first time social, environmental and business issues addressed
  - Pre-tender period – protracted property acquisition process
  - Tender – after all property acquired
  - Award and construction

# “Traditional” Design Approach<sub>cont’d.</sub>

- Significant rework often required to accommodate real property impacts
- Property impacts not fully considered at time of initial project design decisions
- Opportunities to improve properties or realize value not always considered
- Property impacts are addressed later in the process through compensation to property owners

# “Traditional” Design Approach<sub>cont’d.</sub>

## ■ Schedule Impacts

- Acquisition process (knock on the door) doesn’t start until PA drawings are produced
- Property Acquisition (PA) plans are not provided until near end of design process when all design decisions are made





# “Traditional” Design Approach<sub>cont’d.</sub>

## ■ Other Impacts

- Late consultation with individual property owners often results in difficult negotiations
- Late negotiations can sabotage consensual agreement
- Expropriation files have higher cost



# Highway 15 Approach

- Property acquisition experts involved at the conceptual stage and throughout the design process
- Pragmatic business / public acceptability approach very early in design
- Collaborative approach brings proponents and opponents to the table early





# Schedule

- PA plans were prepared well before detailed design
- Design took risks to prepare plans early
- Early decision necessary to improve schedule
- Designers had to “squeeze” work into agreed property envelope
- After initial PA plans issued, property take was never increased throughout the project



# Schedule continued

- PA plans & design sometimes changed after initial input from property owners
- Key property owners were consulted informally and individually vis-à-vis key design (road location) decisions before all public open houses
- Issues identified and defused in advance of open house
- Design shown in open house was “best” compromise and was never significantly changed

# Financial

- Virtually all decisions were made using the following criteria
  - Financial
  - Environmental impacts (DFO)
  - ALR impacts
  - Schedule
  - Public policy





# The Benefits

- Improved schedule
- Reduced property impacts = reduced opposition and reduced cost
- Consultation early in the process improved cooperation and resulted in financial and other benefits to both parties
- Better acceptance from City, AAC, LRC and property owners

# Schedule Benefits

- Highway 15 approach reduced delivery time by at least 6 months
- Accumulated benefits increase to 1 year for consecutive projects
- At a 6% discount rate 1 year is worth \$6 million on a \$100 million project
- Reduced risk of rework
- Reduced risk of delay claims

# Highway 15 Schedule Benefits

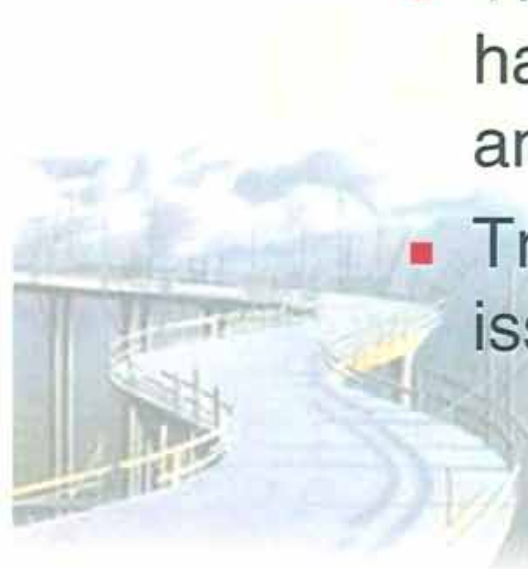
## Traditional Approach vs. Highway 15 Approach

		2004	2005	2006	2007
Traditional	Design				
	Property Acquisition				
	Construction				
Highway 15	Design				
	Property Acquisition				
	Construction				



# Case Study No.1

- Rural Alignment – East, West or Both?
  - Highway 15 is straight; north-south 2 lanes
  - Widening to 4 lanes from 32<sup>nd</sup> Ave to 96<sup>th</sup> Ave
  - Traditional model, widening to both sides would have significantly increased property requirements and costs
  - Traffic management and other constructability issues would make traditional approach difficult



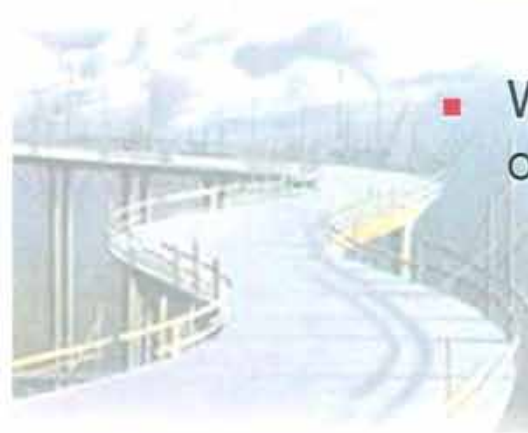
# Case Study No.1 continued

- Points of Restriction – 32<sup>nd</sup> to 52<sup>nd</sup> Ave.
  - Farm Drainage
  - Environmental Impacts
  - Houses and Other Improvements
  - Roger Pierlet Bridge alignment
  - Mohawk Gas Station at Highway 10 Intersection



# Case Study No.1 continued

- 32<sup>nd</sup> to 52<sup>nd</sup> Ave Section
- Intersection and bridge locations fixed
  - Deeper ditches on east side (3 metre)
  - East side had more individual parcels with better improvements located closer to the existing road
    - Higher average price per acre values
    - Significantly higher improvement costs
  - Widening to east of Roger Pierlet Bridge would result in the taking of 2 established businesses





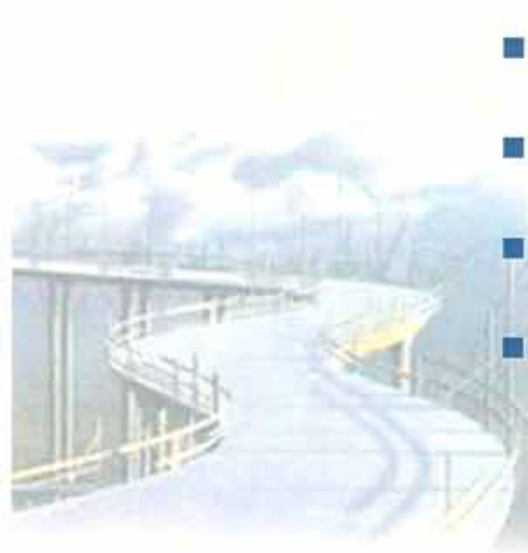
# Case Study No.1 continued

- Fairly easy decision to select a widening to the west side
- Benefits – 32<sup>nd</sup> to 52<sup>nd</sup> Ave Section
  - Less impact to farms and houses
  - Less impact to businesses
  - Better alignment with Roger Pierlet Bridge and Hwy.10 Intersection
  - Significantly lower financial cost



# Case Study No.1 continued

- Points of Restriction – 68A Ave. North
  - Agricultural vs. Environmental Issues
  - Fraser Highway Intersection and future works
  - South Serpentine Pumping Station
  - New City of Surrey west side ditches
  - Large greenhouse operation
  - Large, high efficiency dairy farm & houses
  - 88<sup>th</sup> Avenue intersection



# Case Study No.1 continued

- 68A Ave. North Section
- Intersections and bridge locations fixed
  - South of Fraser Hwy. an old railway right of way on the east side provided opportunity to avoid takings
  - The City's recent ditch and pump station works on the west side presented both cost and public perception issues
  - 1.8 million sq.ft. greenhouse operation on west side appeared to be a "poor target"
  - East side widening would result in 4 dwellings and numerous farm buildings being impacted





# Case Study No.1 continued

- Decision made to pursue east side widening in North section
  - 1 farm would have all buildings removed so the owner was offered and accepted a total purchase
  - 3 other farm owners were approached for feedback on design
  - Agreement made with these 3 farm owners to work together to restore function of farm operations



# Case Study No.1 continued

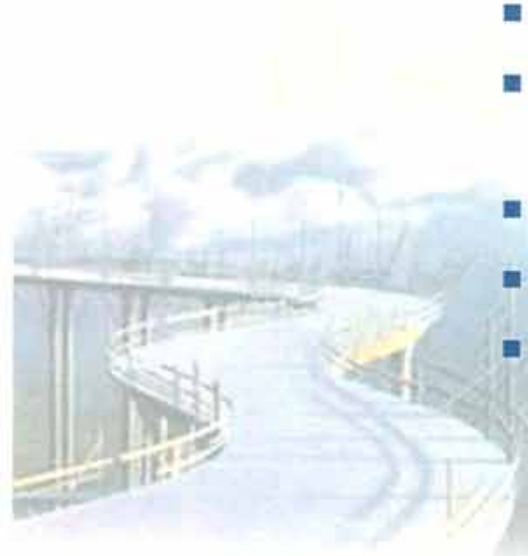
## ■ Benefits – 68A Ave. North Section

- Impacts to fewer properties
- Avoidance of recent City public works
- Maintained alignment with existing intersections
- Better constructability of bridges
- Improved house and farm building quality and efficiency
- Reduced risk and increased cost certainty
- Opportunity to “profit” from total acquisition in rising real estate market



# Case Study No.2

- Soft soils and geotechnical design
  - Very soft soils throughout ALR areas
  - Up to 2.0 m of peat overlaying at least 100 metres of soft silty clay
  - Soils extremely weak and susceptible to failure
  - Due to soil instability, preload must be placed on land for 12 to 18 months
  - Project in low lying flood prone area
  - 2 m deep ditches or pipe required to facilitate drainage
  - Ditch must be located 15 m outside preload to avoid failures





## Case Study No.2 continued

- The additional 15 metres of right of way was only required during the preload period
- Both the City of Surrey's Agricultural Advisory Committee and the farmers objected to the additional land take
- A broader option for drainage was considered, including the City's ultimate drainage model for the area
- City's drainage plan included a future diversion of runoff and improvements to Burrows Ditch



## Case Study No.2 continued

- Project partnered with the City to implement the Burrows Ditch improvements now
  - Province purchased ROW
  - City improved Burrows Ditch
- Benefits
  - Less impact to Agricultural land
  - Less impact to houses and other farm buildings
  - Better drainage and irrigation for farms
  - Less opposition from property owners, AAC and ALC
  - Better constructability
  - Lower financial cost

# Case Study No.3

- SRBC currently passes just south of Highway 10 / 15 intersection
- Widening will put railway into south edge of intersection
- SRBC could be incorporated as is but:
  - Unusual layout may lead to safety concerns
  - Requires substantial hydro plant relocation
  - Requires substantial property take on north side of Highway

10



# Case Study No.3 continued

- Relocation requires:
  - Purchase of ALR
  - Agreement with ALR
  - Agreement with land owners
  - Agreement with SRBC
  - Agreement with BC Hydro



# Case Study No.3 continued

- Relocation implemented resulting in:
  - Significant property cost savings including Mohawk station and numerous businesses fronting Highway 10
  - Greatly improved intersection geometry
  - Removal of at grade crossing for SRBC
  - Rerouting BC Hydro plant away from Highway 10
  - Improved aesthetics at intersection
  - Improved access to businesses in SW quadrant fronting Highway 10



# Case Study No.4

- Urban Area – East, West or Both - Again!
- Through Cloverdale, existing development restricted available design options
- Impossible to avoid existing structures
- Points of restriction
  - Gas Station/Convenience Store
  - 13 Newer Houses
  - Curling Rink and Other Municipal Buildings
  - Vacant Development Site (Third Reading)





# Case Study No.4 continued

## ■ Political Factors

- Poor public “optics” to take out 13 houses on west side instead of using municipal land on east side
- All direct access to/from west residences to Hwy.15 would be closed with new access coming from roads to west
- Cenotaph located on City lands would have to be relocated
- City of Surrey installing new intersection at 58 Ave., resulting in rerouting of traffic on City roads west of Hwy.15
- “The Big Guy”



# Case Study No.4 continued

## ■ Other Factors

- Risk of vibration damage to curling rink from both construction activity and road traffic
- Impact to vacant development property with third reading for large mixed commercial/multi-family residential project
- The Ministry has a well developed “instinctive reaction” to avoid takings from gas stations



# Case Study No.4 continued

## ■ Cost Factors

- Takings from the City lands could not be avoided without severely impacting a further approximately 25 residences
- Licenses required from west side residences for fence and retaining wall construction
- During the initial design phase “D Class” property costs were estimated as:
  - Houses (total takings) - \$275,000 each
  - Gas Station (partial taking and rebuild) - \$2,000,000
- 13 houses = \$3,575,000
- 1 Gas Station = \$2,000,000
- Impact to development land could be mitigated



# Case Study No.4 continued

## ■ Decisions

- Avoid takings from residential properties
- Encourage additional consultation between City of Surrey and residents regarding changes in traffic patterns
- Install decorative concrete fence on west side with pedestrian gates where requested by owners
- Refurbish and relocate cenotaph to alternate site, avoiding Remembrance Day disruptions
- Approach owner of gas station property and propose to work cooperatively to redevelop station during road construction period to avoid business loss claim
- Approach owner of development property and propose to assist with redesign and resubmission of plans to City

# Case Study No.4 continued

## ■ Benefits

- Residents of west side properties are generally supportive of the project
- Appealing streetscape for Cloverdale
- Veterans pleased with treatment of cenotaph
- Older gas station replaced with new, modern facility
- Better access for commercial uses proposed for development site
- Safety of gas station access improved
- Property cost savings of approximately \$1,500,000
- No expropriations

Questions?



**FOCUS**



**Canada**