USDA FOREST SERVICE

VALUE ANALYSIS

STUDY WORKBOOK

REMOTE BARRACKS STANDARD DESIGN

Study Name

Alaska Region, Tongass National Forest

Organizational Unit

December 15 -19 2003

Dates of Study

Value Analysis

Study Workbook

Table of Contents

VALUE ANALYSIS...

An Organized Method For Evaluating
an item, project, process, or system.
to achieve the required function(s) at optimum cost.

INVESTIGATION

Gathering information, finding out what the project is about.

ANALYSIS

Looking for the components that have the highest potential for
significant improvement or cost reduction, or both.

CREATIVITY AND SPECULATION

Brainstorming and developing alternative ways to meet the primary function(s).

EVALUATION

Identifying and choosing the best alternatives.

DEVELOPMENT

Forming complete descriptions of the best alternatives.

PRESENTATION

Presenting findings, alternatives, and recommendations to management.

A VALUE ANALYSIS
OF

REMOTE BARRACKS STANDARD DESIGN
Study Name

Alaska Region, Tongass National Forest
Organizational Unit

December 15 -19 2003
Dates of Study

THE TEAM

	NAME	DISCIPLINE	UNIT	PHONE & E-MAIL
1.	Brad Cure	contractor	The Perfect Fit Generals	907-586-4200 the_perfect_fit@hotmail.com
2.	Rod Dell'Andrea	structural engineer	R-10	907-586-8717 rdellandrea@fs.fed.us
3.	Oz Kendall	mechanical engineer	R-10	907-743-9592 okendall@fs.fed.us
4.	Jerry Patterson	electrician	Tongass NF	907-225-3101 jjpatterson@fs.fed.us
5.	Eric Larson	building maintenance	Petersburg RD	907-772-5955 elarson@fs.fed.us
6.	Kathie Snodgrass	architect, VA team leader	MTDC	406-329-3922 ksnodgrass@fs.fed.us
7.				
8.				

THE STUDY SUBJECT

(General Description, reason for selection, and requirements)

Design a small prototype/standard administrative site that will serve as a base anywhere in remote SE Alaska. The core building would stay put, but the sattelite bunkhouses will be reasonably portable, so they can be moved as work shifts, w/2-week move and set-up if possible. Has to be cost effective. Design core buildings to resist freeze-up – bunk buildings to be "dry" except Kake. Charge to the team: find the most high-functioning, easy to maintain, durable, economical solution. Life span 25 yrs for the core building. For portables, 25 years divided by number of moves.

Budget goal: $?????

Question: how important are bathrooms in sattelite bunkhouses?

Question: how important are looks, durability – minimum quality of product we're willing to accept?

Previous camp types have various disadvantages. barges & "Hiltons" are way more costly than funding available. Also, barges don't transport too well in adverse weather and are costly to operate. Camps are in field use March to October. Early spring weather makes it difficult to set up traditional portable camps in timely manner.

(Use additional sheets as needed)

PHASE I: INVESTIGATION

OBJECTIVE

To gather information about the project that will be needed for the analysis; answers the question "What is the nature of the project?"

STEPS

1. Collect information needed for analysis (plans, reports, studies, maps, etc.).
2. Each team member reads, studies, interviews and explores.
3. The team identifies the project, its scope and limits.
4. Identify all performance criteria.
5. Determine the approximate total cost and total worth.

KEY QUESTIONS

What is the project?

What are the major costs?

How much is it worth?

KEY TECHNIQUE

Seeing what is really there.

Hearing what is really being said.

PHASE I: INVESTIGATION

Step 1: Collect information needed for the analysis.

LIST OF PLANS, REPORTS, STUDIES, AND DOCUMENTS USED FOR THE STUDY.

Title	Prepared By	Date
Remote Administrative Facility Standard Design	USKH	11/7/03
Remote Administrative Facility, Kake, Alaska Site and Foundation Design	USKH	11/7/03
USFS Remote Admin Facility and Cabins Prototype Construction Cost Estimate	USKH	11/10/03
USFS Remote Admin Facility and Cabins Kake Site Construction Cost Estimate	USKH	11/10/03
Design Prospectus & Conceptual Design	USDA FS	February, 2003
Built Environment Image Guide	USDA FS	2001
Means Facilities Construction Cost Data	RS Means Co.	2003
Web site with background info: http://fsweb.stikine.r10.fs.fed.us/tongass/engineering/facility_master_planning/12_1_03_VA_Standard%20Design/	USDA FS	2003

(Use additional sheets as needed)

PHASE I: INVESTIGATION

Step 2: Read, study, explore, and interview.

LIST OF PEOPLE INTERVIEWED FOR THE STUDY.

Name/Title	Notes
Team members Oz, Jerry, Eric	Discussed history of project, current situation for remote facilities, problems w/current
Evelyn F. Rousso, project architect, USKH	Presented current design, reasoning behind choices that were made
Jerry Herbrandson	Discussed team objective, budget, important issues from design prospective

(Use additional sheets as needed)

PHASE I: INVESTIGATION

Step 3: Identify the project, its scope, and limits.

Design a small prototype/standard administrative site that will serve as a base anywhere in remote SE Alaska. The core building would stay put, but the sattelite bunkhouses will be reasonably portable, so they can be moved as work shifts, w/2-week move and set-up if possible. Has to be cost effective. Design core buildings to resist freeze-up – bunk buildings to be "dry" except Kake. Charge to the team: find the most high-functioning, easy to maintain, durable, economical solution. Life span 25 yrs for the core building. For portables, 25 years with remaining life halved at each move.

Project doesn't include foundation

Figure out what's practical about moving these things

Assumption: salt water accessible (barges), but costs based on road access

Not looking beyond 10 years for repeat construction of this standard design

8-person crew is "standard" (2 satellite bunkhouses), but could also have 0, 1, 3, or more bunkhouses at any site.

(Use additional sheets as needed)

PHASE I: INVESTIGATION

Step 4: Identify the performance criteria.

Core: 25 yrs

Portables: 25 yrs, but remaining building life is halved with each move

Core: restrooms, cooking, some sleeping/office, meeting/living, laundry, drying/mud room, heat

Portables (each): sleeping for 4, 60 s.f./person, heat

ACCESSIBILITY, including between buildings

Getting everybody fed & showered in a timely manner to get the crew going in the morning

Seismic, wind, snow, live load (floor)

Most cost-effective materials, life cycle

Energy efficiency – 3 seasons

Unheated, unattended winters

BEIG North Pacific Province

(Use additional sheets as needed)

PHASE I: INVESTIGATION

Step 5: Determine the approximate total.

a. Cost of the project — $535,700 - $338/SF
Core plus 2 sattelites, road access

b. Worth of the project — $316,800 - $200/SF
Core plus 2 sattelites, road access

With no road access, multiply project cost by 1.25 for public transportation by water ($396,000)

For further transport by private barge, riverboat, or helicopter, multiply project cost by additional

1.2 to 3.75

Difference between designer's estimate and worth indicates we have something to work on

(Use additional sheets as needed)

PHASE II: ANALYSIS

OBJECTIVE

To find the parts of the project that have the highest potential to reduce the cost or increase benefit, or both.

STEPS

1. Establish the function of the entire project.
2. Divide the project into its major components
3. Determine the costs and worth of each component.
4. Determine the functions of each component.
5. Select a component on which to concentrate.

KEY QUESTIONS

What does it do?

What must it do?

What does it cost?

What is it worth?

KEY TECHNIQUE

Functionalizing: Verb + Noun format

FAST Diagram (optional)

PHASE II: ANALYSIS

Step 1: Establish the function(s) of the entire project.

(verb)	(noun)	
provide	shelter	(some good verbs: amplify, apply, conduct, control, create, emit, enclose, filter, hold, impede, transmit, transport, interrupt, insulate, modulate, prevent, protect, provide, repel, shield, support)
allow	flexibility	
be	economical	
sleep	eight	
provide	accessibility	
speed	set-up	

Step 2: Divide the project into its major components.

1a. building structure - core	1b. building structure - satellites
2. bathrooms/toilet rooms - core	
3. kitchen - core	
4. living/dining - core	
5. office/bedroom - core	5b. bedrooms - satellites
6. mechanical - core	6b. mechanical - satellites
7. electrical - core	7b. electrical - satellites
8. boardwalks	
9. building egress/windows - core	9b. egress/windows - satellites
10. flooring - core	10b. flooring - satellites
11. interior finishes - core	11b. interior finishes - satellite
12. exterior finishes/details - core	12b. exterior finishes/details - satellite
13. roofing system - core	13b. roofing system - satellite
14. insulation - core	14b. insulation - satellite
15. overall building floor plan - core	

PHASE II: ANALYSIS

Discussion on floor plan of core building:

Retain present building design size – no inherent additional construction cost for re-arranging

Focus on the bathrooms –
8 people in the crew – do we have the right number of fixtures?
Most chair users prefer roll-in showers to tubs
Important – specify shower head that restricts flow but has good pressure
- 1 accessible bathroom, complete w/roll-in shower, not tub – no need for 2 accessible bathrooms
- 2 shower stalls/dressing rooms
- 1 toilet/lav room

Bathrooms should not open to outside of building (weather, energy efficiency, laundry)
Doors to all bath/toilet facilities should be inside bldg.
Entry thru or adjacent to mud room/laundry

Focus on living/dining/kitchen -
Living/dining needs to be as large as can fit in
Eliminate island in kitchen in favor of peninsula. Counter height and knee space are important for accessibility.
Add a second freezer
Provide for 2 microwaves
Allow space for Frost King or other highly insulated propane refrigerators & freezers

SEE ATTACHED SUGGESTION DRAWINGS for an example of how this can be done

Propane tanks do not go inside buildings (drawing is mis-labeled)
The pressure tank for water (shown in mud room) should be in the water building, not the core building, and not part of this project.

Need drain for heat exchange unit

PHASE II: ANALYSIS

Step 3a: Determine the costs of each component.

The expected life span is 25 years.

COST COMPUTATIONS – core building, road access

Component # 1a : building structure - core

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Posts & Beams				6000
2. Frame walls/roof purlins				19000
3. Floor joists				9000
4. Heavy equipment for installation				3000
5. Roof trusses				46000

Total Initial Cost	**$83,000**
Salvage Value at year 50: (no salvage in bush)	0
Operation/Mtce (Yearly Cost)	300
Replacement at year ___ - NA	
Other	
ESTIMATED LIFE CYCLE COST:	**$90,500**

Component # 2 : bathrooms/toilet rooms

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Fixtures	ea	2600	9	24000
2. Doors/windows	ea	1300	5	6500
3. walls	LS	2500	1	2500
4. etc	LS	1600	1	1600

Total Initial Cost	**$34,600**
Salvage Value at year 50: (no salvage in bush)	
Operation/Mtce (Yearly Cost)	1700
Replacement at year _____: NA	
Other	
ESTIMATED LIFE CYCLE COST:	**$77,100**

PHASE II: ANALYSIS

Step 3a: Determine the costs of each component.

The expected life span is 25 years.

COST COMPUTATIONS

Component # 3 : kitchen

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Cabinetry/countertops				8000
2. appliances				3500
3. Plumbing/sink				2600
4.				

Total Initial Cost	**$14,100**
Salvage Value at year: (no salvage in bush)	
Operation/Mtce (Yearly Cost)	300
Replacement at year 5: (appliances)	3500
Other	
ESTIMATED LIFE CYCLE COST:	**$35,600**

Component # 4 : living/dining

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. benches				1100
2.				
3.				
4.				

Total Initial Cost	$1,100
Salvage Value at year: (no salvage in bush)	
Operation/Mtce (Yearly Cost)	100
Replacement at year _____:	
Other	
ESTIMATED LIFE CYCLE COST:	**$3,600**

Component # 5 : office/bedroom, mudroom

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Empty space – nothing to say				
2. Interior doors	ea	1300	2	2600
3.				

Total Initial Cost	2600
Salvage Value at year : (no salvage in bush)	
Operation/Mtce (Yearly Cost)	25
Replacement at year _____:	
Other	
ESTIMATED LIFE CYCLE COST:	**$5,225**

PHASE II: ANALYSIS

Step 3a: Determine the costs of each component.

The expected life span is 25 years.

COST COMPUTATIONS

Component # 6 : mechanical

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. HVAC				19600
2. Water Heater				1500
3.				
4.				

Total Initial Cost	**$21,100**
Salvage Value at year : (no salvage in bush)	
Operation/Mtce (Yearly Cost)	150
Replacement at year 7: (water heater)	1500
Other	
ESTIMATED LIFE CYCLE COST:	**$28,350**

Component # 7 : electrical

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. fixtures				9216
2. System (no ductwork detectors)				52866
3. Generator & tank should be part of site development				0
4.				

Total Initial Cost	**$62,082**
Salvage Value at year : (no salvage in bush)	
Operation/Mtce (Yearly Cost)	150
Replacement at year 10/15: (switches/lights)	9916
Other	
ESTIMATED LIFE CYCLE COST:	**$77,248**

Component # 8 : boardwalks

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. boardwalk	LF	463	20	9260
2. Lights/sensors	ea	750	2	1500
4.				

Total Initial Cost	**$10,760**
Salvage Value at year : (no salvage in bush)	
Operation/Mtce (Yearly Cost)	10
Replacement at year 10/5: (fixture/sensor)	900
Replacement of decking at year 25:	0
ESTIMATED LIFE CYCLE COST:	**$17,010**

PHASE II: ANALYSIS

Step 3a: Determine the costs of each component.

The expected life span is 25 years.

COST COMPUTATIONS

Component # 9 : Building egress/windows

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. doors	ea	1900	5	9500
2. Windows	ea	672	6	4042
3. screen doors	ea	500	5	2500
4. Window security shutters	ea	1000	6	6000

Total Initial Cost	$26,062
Operation/Mtce (Yearly Cost)	750
Replacement at year 5: (screen doors)	2500
Other	
ESTIMATED LIFE CYCLE COST:	**$54,800**

Component # 10 : flooring

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. linoleum	sf		1064	5000
2.				
3.				
4.				

Total Initial Cost	5000
Operation/Mtce (Yearly Cost)	200
Replacement at year 15:	7500
Other	
ESTIMATED LIFE CYCLE COST:	**$17,500**

Component # 11 : Interior finishes

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Plywood walls, ceiling				3100
2. stain				2100
3.				
4.				

Total Initial Cost	$5,200
Operation/Mtce (Yearly Cost) (1 restain)	80
Replacement at year _____:	
Other	
ESTIMATED LIFE CYCLE COST:	**$7,250**

(Use additional sheets as needed)

PHASE II: ANALYSIS

Step 3a: Determine the costs of each component.

The expected life span is 25 years.

COST COMPUTATIONS

Component # 12 : Exterior finishes/details

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. siding				12,000
2. trim				1000
3. Sheathing, felt, furring				6600
4.				
Total Initial Cost				**$19,600**
Operation/Mtce (Yearly Cost)				1500
Replacement at year _____:				
Other				
ESTIMATED LIFE CYCLE COST:				**$57,100**

Component # 13 : Roofing system

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Sheathing/soffit/interior sheathing				6700
2. Ice&water shield/vapor barrier				2200
3. Asphalt shingles, ridge vent				4600
4. fascia				2000
5. Rafters @ 24” oc (not in designer est)				5200
Total Initial Cost				**$20,700**
Salvage Value at year _____:				
Replacement at year _____:				
Other				
ESTIMATED LIFE CYCLE COST:				**$24,450**

Component # 14 : insulation

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Roof, R-30 (10 inches thick)	sf	1.05	1700	1800
2. Walls, R-19	sf	.78	1512	1180
3. Floor, R-30	sf	1.50	1064	1600
Total Initial Cost				**$4,580**
Operation/Mtce (Yearly Cost)				200
Replacement at year _____:				
Other				
ESTIMATED LIFE CYCLE COST:				**$9,580**

Step 3a: Determine the costs of each component.

The expected life span is 25 years.
remaining life span halved each time moved

COST COMPUTATIONS – per each satellite building

Component # 1b : Structure & moving - sattelites

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. structure				12500
2. Moving costs x 4 moves				52,000

Total Initial Cost	**$64,500**
Salvage Value at year 25: (no salvage in bush)	0
Operation/Mtce (Yearly Cost)	300
Supposed to move @ 5 yrs	
Can't move as designed - disposable	
ESTIMATED LIFE CYCLE COST:	**$72,000**

Note: it's about $25,600 to move 2 satellite buildings. It's way more per each if you only move one at a time.

Component # 5b : bedroom

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
Empty space – nothing to say				
Interior wall	LF		13	450

Total Initial Cost	
Operation/Mtce (Yearly Cost)	
Replacement at year _____:	
Other	
ESTIMATED LIFE CYCLE COST:	**$**

Component # 6b : mechanical

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Wall Heater	ea		2	1450
2.				

Total Initial Cost	**$1450**
Operation/Mtce (Yearly Cost)	150
Replacement at year 7: (water heater)	
Other	
ESTIMATED LIFE CYCLE COST:	**$5150**

Step 3a: Determine the costs of each component.

The expected life span is 25 divided by number of moves years.

COST COMPUTATIONS

Component # 7b : electrical

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. fixtures				2000
2. System incl. sensors, smoke detect				12600
Total Initial Cost				**$14,600**
Operation/Mtce (Yearly Cost)				100
Replacement at year 10/15: (switches/lights)				2400
Other				
ESTIMATED LIFE CYCLE COST:				**$19,900**

Component # 9b : Building egress/windows

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. doors	ea	1900	2	3800
2. Windows	ea	672	4	2700
3. screen doors	ea	500	2	1000
4. Window security shutters	ea	1000	4	4000
Total Initial Cost				**$11,500**
Operation/Mtce (Yearly Cost)				300
Replacement at year 5: (screen doors)				1000
Other				
ESTIMATED LIFE CYCLE COST:				**$23,000**

Component # 10b : flooring

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. linoleum	sf	5	340	1700
2.				
Total Initial Cost				1700
Operation/Mtce (Yearly Cost)				75
Replacement at year 15:				1700
Other				
ESTIMATED LIFE CYCLE COST:				**$5275**

Step 3a: Determine the costs of each component.

The expected life span is 25 divided by number of moves years.

COST COMPUTATIONS

Component # 11b : Interior finishes

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Plywood walls, ceiling				1600
2. stain				700

Total Initial Cost	**$2,300**
Operation/Mtce (Yearly Cost) (1 restain)	700
Replacement at year _____:	
Other	
ESTIMATED LIFE CYCLE COST:	**$3,000**

(Use additional sheets as needed)

Component # 12b : Exterior finishes/details

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. siding				7100
2. trim				600
3. Sheathing, felt, furring				3900
4.				

Total Initial Cost	**$11,600**
Operation/Mtce (Yearly Cost)	900
Replacement at year _____:	
Other	
ESTIMATED LIFE CYCLE COST:	**$34,100**

Component # 13b : Roofing system

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Sheathing/soffit/interior sheathing				
2. Ice&water shield/vapor barrier				
3. Asphalt shingles, ridge vent		Proportional	To Core	building
4. fascia				
5. Rafters @ 16” oc (not in designer est)				

Total Initial Cost	**$**
Operation/Mtce (Yearly Cost)	
Replacement at year _____:	
Other	
ESTIMATED LIFE CYCLE COST:	**$8560**

Step 3a: Determine the costs of each component.

The expected life span is 25 divided by number of moves years.

COST COMPUTATIONS

Component # 14b : insulation

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Roof, R-30 (10 inches thick)	sf	1.05	400	420
2. Walls, R-12	sf	.50	700	350
3. Floor, R-30	sf	1.50	338	500
	Total Initial Cost			**$1,270**
	Operation/Mtce (Yearly Cost)			100
	Replacement at year _____:			
	Other			
(Use additional sheets as needed)	**ESTIMATED LIFE CYCLE COST:**			**$3,770**

PHASE II: ANALYSIS

Step 3b and 4: Determine the cost/worth and functions (in verb + noun format) of each component.

- **WORTH** is the lowest cost of doing the Primary Function
- The **COST/WORTH** ratio may help in choosing the components worthy of further study.

Step 5: Select a component (or components) on which to concentrate.

	COMPONENT	COST	PRIMARY FUNCTION (VERB, NOUN)	WORTH		COST/WORTH RATIO	
1.	Core building structure	$90,500	provide shelter	$60,000		1.5	
2.	Core building bathroom/toilet rooms	$77,100	satisfies codes	$50,000		1.5	
3.	Core building mechanical	$28,350	provide comfort	$10,000		2.8	
4.	Sleeping cabin portability/ disposability	$62,300*	provide flexibility	80000	30000	0.78	2.1
5.	Boardwalk	$17,010	provide accessibility	$3050		5.7	

PHASE III: SPECULATION

OBJECTIVE

To find alternative ways of meeting the primary function(s).

STEPS

1. As a team, focus on the primary function(s) of the selected components.
2. Brainstorm other ways to meet the primary function.
3. Record each idea.

KEY QUESTIONS

What else will perform the primary function?

How else may the function be performed?

How else can it be done?

KEY TECHNIQUE

Brainstorming!

PHASE III: SPECULATION

Step 1: As a team, focus on the primary function of the selected component(s).

Step 2: Brainstorm other ways to meet the primary function.

Step 3: Record each idea.

Component Core building structure Primary Function Provide shelter

Other ways to meet the primary function.

Tent	Stress-skin
Standard frame construction	Yurts
mix of std & large timber	Trailers
aluminum	modular
Stacked containers	steel
Fly people in & out every day	masonry
Barges	Con-ex boxes
More “Hiltons”	Boat people in & out
Contract all the field work out	Ranger boats

PHASE III: SPECULATION

Step 1: As a team, focus on the primary function of the selected component(s).

Step 2: Brainstorm other ways to meet the primary function.

Step 3: Record each idea.

Component	Core buildings bathroom / toilet rooms	Primary Function	Satisfies codes

Other ways to meet the primary function.

Porta pots	Vault toilets
Composting	Pit toilets
Sun showers	Doors inside building
Separate gang shower rooms w/instant gas fired water heaters	1 full accessible bath, 2 shower rooms, 1 toilet/lav room

PHASE III: SPECULATION

Step 1: As a team, focus on the primary function of the selected component(s).

Step 2: Brainstorm other ways to meet the primary function.

Step 3: Record each idea.

Component Core building mechanical Primary Function Provide comfort

Other ways to meet the primary function.

Pellett stoves	2 monitors & mech venting
Coal	Wood stoves
Nuclear power	Direct vent oil fired heaters
Recover heat from generator	Heat pump
Electric heaters	Geothermal
Infra red	Propane
Extra blankets/coats	Super-insulate building
Braziers	Passive solar
Harvest heat from appliances	Wind power for electric
Radient floors	Frisky friends

PHASE III: SPECULATION

Step 1: As a team, focus on the primary function of the selected component(s).

Step 2: Brainstorm other ways to meet the primary function.

Step 3: Record each idea.

Component: Sleeping cabin portability/ disposability

Primary Function: Provide flexibility

Other ways to meet the primary function.

Yurts	Cheap bldg, burn when done
Tents	Put chasis & wheels under
Shipping containers	Panelized knock-downs
Traditional native cedar & log	Manufactured mobiles
Stress-skin	Travel trailers
Barges	Pan-abode homes
Contract field work out	Fly ‘em in & out
Convert to recreation when done	Ranger boats

PHASE III: SPECULATION

Step 1: As a team, focus on the primary function of the selected component(s).

Step 2: Brainstorm other ways to meet the primary function.

Step 3: Record each idea.

Component boardwalk Primary Function Provide accessibility

Other ways to meet the primary function.

Concrete paths	Remove roofs, lights, railings
Drop accessibility requirements	Asphalt paths
Puncheon / corduroy	Dirt paths / gravel paths
Make porches / boardwalks permanent to site	Build ramps only when needed
Use recycled palletts	Chunkwood or piles
Combine cement w/gravel	Chair lifts
Geotextiles	Native large rock paths
gabions	Soil stabilizer
Mini railroad	Reinforced turf / grass pave
Fiberglass grate	

(Use additional sheets as needed)

PHASE IV: EVALUATION

OBJECTIVE

To identify the best alternative(s).

STEPS

1. Rate the feasibility of each idea from Phase III.
2. Summarize the attributes and list the advantages of the most feasible ideas.
3. Decide the importance of each advantage.
4. Select the best alternative(s) for further development.

KEY QUESTIONS

Is the idea feasible?

Is the cost too high?

Can it be made to work?

Is it acceptable?

KEY TECHNIQUE

Choosing by Advantages

PHASE IV: EVALUATION

Step 1: Rate the feasibility of each idea from Phase III.

FEASIBILITY RATING

Component: Core building structure Primary Function: Provide shelter

	Rank each idea from 0-3. A "0" in any column eliminates that idea. CONSIDER ALL IDEAS	Can it be made to work? 3 = Excellent Chance 0 = No chance	Cost to develop 3 = No Cost 0 = Prohibitive	Probability of acceptance 3 = Excellent Chance 0 = No Chance	Timely Implementation 3 = Excellent Chance 0 = No Chance	TOTAL
1.	Yurts / boonie barns	2	3	1	3	9
2.	Stress-skin	3	2	2	3	10
3.	Tent	1	3	0		0
4.	Trailers	2	3	1	3	9
5.	Standard frame construction	3	2	2	3	10
6.	modular	3	2	2	3	10
7.	**mix of std & large timber**	**3**	**2**	**3**	**3**	**11**
8.	steel	3	1	1	3	8
9.	aluminum	3	1	1	3	8
10.	masonry	3	1	1	3	8
11.	Stacked shipping containers	2	1	0		0
13.	Fly people in & out every day	1	3	0		0
14.	Boat people in & out	1	2	2	3	8
15.	Barges	3	2	3	3 or 1	9.5
16.	Ranger boats	2	2	2	1	7
17.	More “Hiltons”	3	2	1	2	8
18.	Contract all the field work out	3	1	1	3	8

PHASE IV: EVALUATION

Step 1: Rate the feasibility of each idea from Phase III.

FEASIBILITY RATING

Component: Core building bathroom / toilet rooms

Primary Function: Satisfies codes

	Rank each idea from 0-3. A "0" in any column eliminates that idea. CONSIDER ALL IDEAS	Can it be made to work? 3 = Excellent Chance 0 = No chance	Cost to develop 3 = No Cost 0 = Prohibitive	Probability of acceptance 3 = Excellent Chance 0 = No Chance	Timely Implementation 3 = Excellent Chance 0 = No Chance	TOTAL
1.	Vault toilets	2	2	2	3	9
2.	Pit toilets	1	3	1	3	8
3.	Porta pots	2	3	2	3	10
4.	Doors inside building	3	2	3	3	11
5.	Composting	2	2	2	3	9
6.	1 full accessible bath, 2 shower rms, 1 toilet/lav rm	3	2	3	3	11
7.	Sun showers	1	3	0		0
8.	Separate gang shower rooms w/instant gas fired water heaters	3	2	2	3	10
9.	Incinolets	3	2	1	3	9
10.						
11.						
12.						
13.						
14.						
15.						

PHASE IV: EVALUATION

Step 1: Rate the feasibility of each idea from Phase III.

FEASIBILITY RATING

Component: Core building mechanical Primary Function: Provide comfort

Rank each idea from 0-3. A "0" in any column eliminates that idea. CONSIDER ALL IDEAS	Can it be made to work? 3 = Excellent Chance 0 = No chance	Cost to develop 3 = No Cost 0 = Prohibitive	Probability of acceptance 3 = Excellent Chance 0 = No Chance	Timely Implementation 3 = Excellent Chance 0 = No Chance	TOTAL
1. 2 propane monitors & mech venting	3	2.5	3	3	11.5
2. Wood stoves	3	2.5	0		
3. Pellett stoves	2	2.5	1	3	8.5
4. Direct vent oil fired furnace	3	2.5	2	3	10.5
5. Coal	0				
6. Heat pump	0				
7. Nuclear power	0				
8. Geothermal	0				
9. Recover heat from generator	2	1	1	3	7
11. Electric heaters (**limited use**)	3	2	3	3	11
12. Super-insulate building	3	1	2	3	9
13. Infra red (**BATHROOMS**)	3	2	3	3	11
14. Passive solar	1	1	1	0	
15. Extra blankets/coats	3	2.5	0		
16. Wind power for electric	2	1	1	2	6
17. Braziers	0				
18. Frisky friends	0				
19. Harvest heat from appliances	2	2	0		
20. Radient floors	3	1	1	3	8

PHASE IV: EVALUATION

Step 1: Rate the feasibility of each idea from Phase III.

FEASIBILITY RATING

Component: Sleeping cabin portability / disposability

Primary Function: Provide flexibility

Rank each idea from 0-3. A "0" in any column eliminates that idea. CONSIDER ALL IDEAS	Can it be made to work? 3 = Excellent Chance 0 = No chance	Cost to develop 3 = No Cost 0 = Prohibitive	Probability of acceptance 3 = Excellent Chance 0 = No Chance	Timely Implementation 3 = Excellent Chance 0 = No Chance	TOTAL
1. Cheap bldg, burn wnen done	3	2	2	3	10
2. Put chasis & wheels under	3	2	3	3	11
3. Yurts	3	3	1	3	10
4. Panelized knock-downs	3	2.5	2	3	10.5
5. Tents	3	3	1	3	10
6. Manufactured mobiles	3	2.5	2	3	10.5
7. Shipping containers	3	1	1	3	8
8. Travel trailers	3	2.5	2	3	10.5
9. Traditional native cedar & log	3	1	2.5	3	9.5
10. Pan-abode homes	2	2.5	3	3	10.5
11. Stress-skin	3	2.5	2	3	10.5
12. Fly 'em in & out	2	3	0		
13. Barges	3	3	1	3 or 1	9
14. Ranger boats	2	3	2	1	8
15. Contract field work out	3	2	1	3	9
16. Convert to recreation when done	3	3	3	3	12

PHASE IV: EVALUATION

Step 1: Rate the feasibility of each idea from Phase III.

FEASIBILITY RATING

Component: boardwalks Primary Function: Provide accessibility

Rank each idea from 0-3. A "0" in any column eliminates that idea. CONSIDER ALL IDEAS	Can it be made to work? 3 = Excellent Chance 0 = No chance	Cost to develop 3 = No Cost 0 = Prohibitive	Probability of acceptance 3 = Excellent Chance 0 = No Chance	Timely Implementation 3 = Excellent Chance 0 = No Chance	TOTAL
1. Remove roofs, lights, railings	3	2.5	2	3	10.5
2. Asphalt paths	0				
3. Concrete paths	3	2	2	3	10
4. gravel paths	3	2	2	3	10
5. Drop accessibility requirements	0				
6. Build ramps only when needed for accessibility	3	3	2.5	3	11.5
7. Puncheon / corduroy Chunkwood or piles	3	3	1	3	10
9. Make porches / boardwalks permanent to site	3	2	1	3	9
10. Chair lifts	3	1	0		
11. Use recycled palletts	3	3	.5	3	9.5
12. Native large rock paths	0				
13. Combine cement w/gravel	3	3	2	3	11
14. Soil stabilizer	3	3	2	3	11
15. Geotextiles	1	2	2	3	8
16. Reinforced turf / grass pave	3	2	2	3	10
17. gabions	2	3	1	3	9
18. Fiberglass grate	3	2	2.5	3	10.5
19. Mini railroad	0				

PHASE IV: EVALUATION

Step 2. Select the best alternative(s) for further development.

LIST OF SELECTED BEST ALTERNATIVES

Alternative:	Core Building Structure: utilize a combined structure of partly standard truss framing, partly heavy timber
Notes:	Use heavy timbers for exterior, scissor trusses in living/kitchen area, and standard trusses in rest of building
Alternative:	Core building bathroom & toilet rooms: switch to 1 full accessible, 2 shower rooms, 1 lav/toilet room
Notes:	All bathrooms to open into interior of core building. No bathtubs
Alternative:	Core building mechanical: switch to propane unit heaters supplemented with limited infrared/electric resistance heat
Notes:	Infrared/electric resistance to be used only as necessary in office/bedroom and/or bathrooms
Alternative:	Sleeping cabin portability/disposability: cheap cabin, burn when done
Notes:	
Alternative:	Sleeping cabin portability/disposability: put chasis & wheels under
Notes:	
Alternative:	Sleeping cabin portability/disposability: stiffen structure, use trailer
Notes:	
Alternative:	Sleeping cabin portability/disposability: panelized knock-downs
Notes:	
Alternative:	Boardwalks/porches: do not include lights, rails, and roofs as standard.
Notes:	Design a porch unit that can be attached to the sleeping units, and a between-building boardwalk. Roofs, lights, and rails should be options for porches & boardwalks. Fiberglass grating should be used for decking.
Alternative:	Boardwalks: don't construct unless necessary for accessibility
Notes:	

PHASE V: DEVELOPMENT

OBJECTIVE

To develop the alternatives so they can be compared with each other and the original.

STEPS

1. Describe the selected alternative(s).
2. Show a map, drawing, or diagram.
3. Consider major components.
4. Determine costs.

KEY QUESTIONS

How will the new idea work?

How can disadvantages be overcome?

What will be the total cost?

What will be the life cycle cost?

Why is the new way better?

Will it meet all performance requirements?

Other Questions

Are quality requirements met?
Are reliability and operational requirements met?
Is the alternative compativble with the overall design?
Are seafety requirements met?
What is the group's recommended priority for implementing the alternatives?

PHASE V: DEVELOPMENT

Step 1: Describe the selected alternatives.

NARRATIVE DESCRIPTION OF ALTERNATIVE # 1 - Core Building Structure:

Utilize a combined structure of partly standard truss framing, partly heavy timber. Use heavy timbers for exterior, scissor trusses in living/kitchen area, and standard trusses in rest of building. Stick with the feature trusses where they show outside, to stay with the North Pacific "look" as Discussed in the BEIG, shown on the conceptual drawings. Post & beam architectural effect on the exterior, less expensive standard trusses inside on less expensive standard stud wall system. No insulation needed over porch, so adjust roof structure. Possibly 2x6 or 3x6 T&G roof decking. Keep exterior walls 9' high due to eave overhang. Consider raised heel trusses.

Note: top of exterior porch deck must be flush with interior floor (or within ½ inch) – will need to adjust design. Cutting the pressure treat off the joists to shape them down to get the right elevation isn't a good idea. Frame separately (lower) for decks with spacers from rim joists to match drain plane on siding.

If VA recommendation on mechanical system is accepted, can use standard trusses over most of Interior, scissor over living/kitchen. If stay with original HVAC system, will need scissor trusses throughout. If scissor trusses used, put plywood deck over bathroom & office ceiling joists and rate & post for light storage that will inevitably occur.

Utilize interior wall/ceiling structure as structural tie for exterior walls against spreading.

PHASE V: DEVELOPMENT

Step 2: Show a map, drawing, or diagram.

NARRATIVE DESCRIPTION OF ALTERNATIVE # 1 - Core Building Structure:

See sketch done by Rod

PHASE V: DEVELOPMENT

Step 3: Consider the major components, and...

Step 4a: Determine initial costs.

COST COMPUTATIONS

Alternative # 1 : Core bldg structure

	COMPONENT	UNIT	UNIT COST	QUANTITY	TOTAL
1.	Posts/Beams/Feature Trusses				13000
2.	Frame Walls				7900
3.	Roof Trusses				7000
4.	Floor joists (same as original)				9000
5.	Forklift on wheels				2000

Step 4b: Estimate life cycle costs.

COMPONENT	1:	2:	3:	4:	5:	TOTAL
Initial Cost	13000	7900	7000	9000	2000	**$38,900**
Salvage Value at year _____:	()	()	()	()	()	**()**
Operation/Mtce (Yearly Cost)						**150**
Replacement at year _____:						
Other						
			Total Life Cycle Cost of Alternative:			**$42,650**

PHASE V: DEVELOPMENT

Step 1: Describe the selected alternatives.

NARRATIVE DESCRIPTION OF ALTERNATIVE # 2 – Core building bathroom & toilet rooms

Switch to 1 full accessible bathroom, 2 shower rooms, and 1 toilet/lavatory room.

All bathrooms to open into interior of core building.

Reduces construction costs some by eliminating exterior doors, reducing walls.

Access on inside is more economical, lower costs for heating, people don't have to deal with stuff blowing in thru outside doors, no getting rain down their necks immediately on exiting, the bathroom.

Reduces 2 fixtures. Time using toilet/lav rooms is low enough that 2 is sufficient for 8-10 people.

Reorganization of restrooms saves space that can be used to increase kitchen and living area space.

Most people using wheelchairs prefer roll-in showers rather than bathtubs. Change to all showers.

Step 2: Show a map, drawing, or diagram.

See drawings by Brad

PHASE V: DEVELOPMENT

Step 3: Consider the major components, and...

Step 4a: Determine initial costs.

COST COMPUTATIONS

Alternative # 2 : Core building bathrooms/toilet rooms/shower rooms

	COMPONENT	UNIT	UNIT COST	QUANTITY	TOTAL
1.	fixtures	ea	2400	7	16800
2.	Doors/windows	ea	800	4	3200
3.	walls	LS			1750
4.	etc				1400
5.					

Step 4b: Estimate life cycle costs.

COMPONENT	1:	2:	3:	4:	5:	TOTAL
Initial Cost	16800	3200	1750	1400		**$23,150**
Salvage Value at year _____:	()	()	()	()	()	**()**
Operation/Mtce (Yearly Cost)						**$1,300**
Replacement at year _____:						
Other						
			Total Life Cycle Cost of Alternative:			**$55,650**

PHASE V: DEVELOPMENT

Step 1: Describe the selected alternatives.

NARRATIVE DESCRIPTION OF ALTERNATIVE # 3 – Core Building Mechanical

Core building mechanical: switch to propane unit heaters supplemented with limited infrared and/or electric resistance heat. Use fans for venting, or if more uniform heat preferred, use HRVs.

Infrared / electric resistance to be used only as necessary in office/bedroom and/or bathrooms

Proposed system will work just fine, but should be possible to get the job done more economically.

To provide heat without having to run generator:

Unit heater in kitchen/living – 80% efficient, direct vent, no blower

Unit heater in mud room – 80% efficient, direct vent, no blower

For bathrooms: install low & high wall vents so heat will circulate. Also, put infrared/vent fan in each to provide heat and exhaust hot, moist air.

Office/bedroom: electric unit heater or consider small propane heater

This whole issue is juggling trade-offs among convenience and cost. How important is it to have heat when there's no electricity? How important is it to have absolutely even heat all the time? The VA team defers those choices to the Rangers/Supervisor. Cost estimates and options follow. Energy costs are also significant, and $/BTU or $/kW will be higher the less total energy is used, and the more sporadic the demand. Can do heat recovery from generators, or other innovative, ultra-energy efficient systems, but equipment is expensive per BTU for small installations like this.

Step 2: Show a map, drawing, or diagram.

(no drawings)

PHASE V: DEVELOPMENT

Step 3: Consider the major components, and...

Step 4a: Determine initial costs.

COST COMPUTATIONS

Alternative # 3 : Core building mechanical

A	COMPONENT	UNIT	UNIT COST	QUANTITY	TOTAL
1.	Unit heaters	ea	1000	2	2000
2.	Bathroom exhaust fans	ea	300	4	1200
3.	Electric resistance htr	ea	500	1	500
4.	**Wall vents**	ea	100	8	800
5.	Water Heater	ea	1500	1	1500

B	COMPONENT	UNIT	UNIT COST	QUANTITY	TOTAL
1.	Unit heaters	ea	1000	2	2000
2.	Bathroom exhaust fans	ea	300	4	1200
3.	Electric resistance htr	ea	500	1	500
4.	**HRV incl. ductwork**	ea	100	8	6000
5.	Water Heater	ea	1500	1	1500

Step 4b: Estimate life cycle costs.

COMPONENT	1:	2:	3:	4:	5:	TOTAL
Initial Cost **A**						**$6,000**
Initial Cost **B**						**$11,200**
Salvage Value at year _____:	()	()	()	()	()	**()**
Operation/Mtce (Yearly Cost)						**230**
Replacement at year 10/7 :	2000				1500	**3500**
Other						
			Total Life Cycle Cost of Alternative A:			**$20,250**
			Total Life Cycle Cost of Alternative B:			**$25,450**

PHASE V: DEVELOPMENT

Step 1: Describe the selected alternatives.

NARRATIVE DESCRIPTION OF ALTERNATIVE # 4 – sleeping cabin portability

Assumption is that cabins will be utilized about **5 years in any one location**.

We see four possibilities for the sleeping cabins:

4a. Build a cheap cabin & dispose it when you no longer want it at the original site

4b. Put permanent chasis and wheels under the cabin as designed so it can actually be moved

4c. Change the cabin design to panelized, knockdown construction

4d. Modify foundation & floor framing to make it transportable by trailer

We don't think that the proposed cabins can be moved economically, because there's no way of getting something under the cabins (given the foundation design) to pick it up & move it.

In any option involving relocating the buildings, the porches need to be made so they can be detached and moved separately.

Step 2: Show a map, drawing, or diagram.

(no drawings)

PHASE V: DEVELOPMENT

Step 3: Consider the major components, and...

Step 4a: Determine initial costs.

COST COMPUTATIONS

Component # 4a : Disposable sleeping cabins

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. Super structure x 5				16500
2. Other cabin costs x 4				54,400
Total Initial Cost				**$70,900**
Salvage Value at year 25: (no salvage in bush)				0
Operation/Mtce (Yearly Cost)				300
Supposed to move @ 5 yrs				
Can't move as designed - disposable				
ESTIMATED LIFE CYCLE COST:				**$78,400**

Other savings may be realized by using more economical materials on other parts of the cabin (windows, siding)

Component # 4b : Add chasis & wheels

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. structure				32500
2. Moving costs x 4 moves				14,600
Total Initial Cost				**$47,100**
Salvage Value at year 25: (no salvage in bush)				0
Operation/Mtce (Yearly Cost)				300
Supposed to move @ 5 yrs				
ESTIMATED LIFE CYCLE COST:				**$54,600**

Component # 4c : Knock-down construction

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. structure				10000
2. Moving costs x 4 moves				24,000
Total Initial Cost				**$34,000**
Salvage Value at year 25: (no salvage in bush)				0
Operation/Mtce (Yearly Cost)				300
Supposed to move @ 5 yrs				
ESTIMATED LIFE CYCLE COST:				**$41,500**

This will be 2x2 walls with foam insulation, standard trusses, T1-11 or rough sawn plywood siding, metal roofing

Component # 4d : Modify cabin floor framing

ITEM	UNIT	UNIT COST	QUANTITY	TOTAL
1. structure				21000
2. Moving costs x 4 moves				32,800

Total Initial Cost	**$53,800**
Salvage Value at year 25: (no salvage in bush)	0
Operation/Mtce (Yearly Cost)	300
Supposed to move @ 5 yrs	
ESTIMATED LIFE CYCLE COST:	**$61,300**

This includes adding framing connections, additional bracing, etc. so foundation supports can be further apart, purchase a custom-made trailer that can slide under. Envision a fleet of 2 or 3 trailers for the whole batch of moveable cabins. This cost includes half a trailer and modifications to one sleeping cabin.

PHASE V: DEVELOPMENT

Step 1: Describe the selected alternatives.

NARRATIVE DESCRIPTION OF ALTERNATIVE # 5 - Boardwalks

The roof structure on the boardwalks makes for some serious transportability problems.

The VA team recommends that in any case, the roofs, lights, and railings not be included as standard to the boardwalks. They can be added at those sites where they are absolutely necessary. If night time lighting is a problem, add lights to the building, aimed carefully.

Fiberglass decking will be lighter and make the boardwalk sections easy to move, plus will not require any maintenance. It comes in many colors and is slip resistant.

The VA team also recommends that boardwalk not be used except where it is necessary for accessibility.

Step 2: Show a map, drawing, or diagram.

(no drawings)

PHASE V: DEVELOPMENT

Step 3: Consider the major components, and...

Step 4a: Determine initial costs.

COST COMPUTATIONS

Alternative # 5 : Boardwalks

	COMPONENT	UNIT	UNIT COST	QUANTITY	TOTAL
1.	Fiberglass floor grating	LF	85	20	1700
2.	Framing/foundation	LF	150	20	3000
3.	(no lights, roof, rail)				
4.	curb	LF	1.2	20	240
5.					

Step 4b: Estimate life cycle costs.

COMPONENT	1:	2:	3:	4:	5:	TOTAL
Initial Cost						**$4,940**
Salvage Value at year _____:	()	()	()	()	()	**()**
Operation/Mtce (Yearly Cost)						**5**
Replacement at year _____:						
Other						
			Total Life Cycle Cost of Alternative:			**$5,065**

(Use additional sheets as needed)

Other Recommendations

Siding: consider using a dark colored corrugated zinc alum siding “wainscot” around the lower portion of the walls of the core building. Detailing would include wainscot top at height of bottom of window frame, flashing at top of wainscot that takes winter shutters into account, use covering wood corner trim over bituthane and 1x4 at corners, similar at door trim, no furring behind metal (corrugations provide built-in spacing. Durability of lower walls is improved, cost of siding is lowered about $6/s.f. for about a third of the siding area (about $3600). The look of the metal siding on the lower part of the building picks up on the image of the historic mining/industrial structures.

Electric system: consider changing to 100 amp load center, and locate inside the building (200 amp panel board may be overkill and outside is impractical). Locate the load center on an inside hallway wall so it isn’t likely to have the free floor space blocked. Eliminate metal conduit & go to non-metalic cable. Add outlet for another freezer in the kitchen. Provide outlets for 2 microwaves.

Allow enough space for super-efficient propane refrigerators/freezers. Don’t forget knee space at sink & a section of lowered counter for accessibility. Consider an FRP splash around the kitchen counters.

Space saved by re-configuring the bathroom area should be added to kitchen/living area.

If a heat exchange unit is used, don’t forget to provide for the drain.

Take a look at the foundation framing for the sleeping unit – don’t oversize framing members just to keep same sizes as used on core building.

Bathroom & shower room walls: consider using FRP for cleanability, light reflectance, & water resistance.

Maximize insulation R-value in 2x6 walls (use R-21 insulation). Don’t forget air space above insulation for cold roof ventilation.

PHASE VI: PRESENTATION

OBJECTIVE

To present findings, alternatives, and recommendations to management clearly, accurately, and persuasively.

STEPS

1. Prepare a preliminary plan.

2. Develop the outline.

3. Prepare visuals and handouts.

4. Make final arrangements.

KEY QUESTIONS

Who must be sold?

What does the audience need to know?

What is the primary function?

What are the main ideas?
(Original Design)
(Benefits of the proposal)
(Savings)

How should it be presented?

PHASE VI: PRESENTATION

Step 1: Develop a preliminary plan.

A. Clarify the purpose of your prresentation.

to present the results of our VA Study and to make recommendations

B. Identify your audience:

1. Number expected: 5?
2. Organization levels: high
3. Disciplines: Mostly engineers & an LA
4. Special interests: attractive stuff, “green” construction, cost effectiveness
5. Reasons for attending: Interest in project
6. Familiarity with project: Very to not at all

C. Brainstorm and list essential information the audience will need to know:

1. Architecture firm did just what they were supposed to, did good job.
2. A little about the process & the team
3. The recommendations

Step 2: Develop an outline. (The following is a suggested outline, but may not fit all VA presentation situations).

A. Introduction

1. Headline (A phrase or statement that captures the audience's interest and summarizes your results).

Balancing economy and functionality

2. Preview of what your presentation will cover:
   a. A brief review of the original proposal.

   b. Opportunities for improving cost/performance.

By changing core building structure, HVAC, bathrooms, plus satellite structure portability and boardwalks, we found opportunities for saving up to $120,000 and improving function

PHASE VI: PRESENTATION

Step 2: Develop an outline - continued.

3. Introduction of team members:
(include their background, areas of expertise and their home unit)

Brad Cure	contractor	The Perfect Fit Generals
Rod Dell'Andrea	structural engineer	R-10
Oz Kendall	mechanical engineer	R-10
Jerry Patterson	electrician	Tongass NF
Eric Larson	building maintenance	Petersburg RD
Kathie Snodgrass	architect, VA team leader	MTDC

4. Review

a. Name of this study: Remote Barracks Standard Design

b. Purpose of study: Improve performance, reduce cost

c. Brief explanation of what a VA is and how it works: By Kathie

d. Team process:
- Opening briefing by design firm
- Reviewed documents
- Interviewed people
- Conducted standard VA process

B. Body of the presentation

1. **Main idea #1:**

Presenter: Kathie

Core building to stay put, 1 or more satellite sleeping cabins can be moved around as work changes.

Assumptions: road access, 25 year building life, any building moved has its remaining useful life halved each time it's moved, stick with the BEIG, provide for accessibility.

2. **Main idea #2:**

Core building structure changes presented by: Rod

Core building bathroom, toilet room, shower room changes presented by: Brad

Core building mechanical presented by: Oz

Sleeping cabin portability/disposability presented by: Oz & Rod

Boardwalk presented by: Jerry

C. Summary and conclusions (such as highlights of the VA proposal, how it meets primary functions and performance criteria, improvement of the "price tag/performance" ratio, comparison chart of original vs. proposed, etc.).

Kathie do table comparing estimates, discuss

Core Building Component	Cost as designed	Cost as proposed
Core building structure	$90,500	$42,650
Core building bathrooms	$77,100	$55,650
Core building mechanical	$28,350	$20,250 / $25,450
Core building total	$195,950	$118,550
Savings: $77,400		

Satellite building				
As designed	Disposable	Chasis & wheels	Trailer	Knock-down
$72,000	$78,400	$54,600	$61,300	$41,500
Savings this option:	-0-	$17,400	$10,400	$30,500

Boardwalk	Cost as designed	Cost as proposed
	$17,010	$5,065
Savings: $11,945		

D. Punchline: (Phrase or statement that captures the main point of your presentation.)

It costs a lot to build stuff in remote Alaska.

VALUE ANALYSIS PROCESS OUTLINE

PHASE I INVESTIGATION	PHASE II ANALYSIS	PHASE III SPECULATION	PHASE IV EVALUATION	PHASE V DEVELOPMENT	PHASE VI PRESENTATION
"Strangers ask the best questions."	80% of the costs come from 20% of the components." "The function of anything can be described in two words: a verb and a noun."	"Brainstorming yields new ideas."	"80% of the improvement will come from 20% of the ideas."	"The idea is only the first step."	"Support comes from understanding and acceptance."
Objective To gather information about the project that will be needed for the analysis; answers "What is the nature of the project?"	*Objective* To find the parts of the project that have the highest potential to reduce the cost or increase benefit, or both.	*Objective* To find alternative ways of meeting the primary function(s).	*Objective* To identify the best alternative(s).	*Objective* To develop the alternatives so they can be compared with each other and the original.	*Objective* To present findings, alternatives, and recommendations to management.
Steps 1. Collect information needed for analysis (plans, reports, studies, maps, etc.). 2. Team members individually all read, study, interview, and explore. 3. The team identifies the project, its scope and limits. 4. The team identifies all performance criteria. 5. Determine the approximate total cost and total worth of the project.	*Steps* 1. Establish the function of the entire project. 2. Divide the project into its major components. 3. Determine the costs of each component. 4. Determine the functions of each component. 5. Select a component on which to concentrate.	*Steps* 1. As a team, focus on the primary function(s) of the selected components. 2. Brainstorm other ways to meet the primary function. 3. Record each idea.	*Steps* 1. Rate the feasibility of each idea from Phase III. 2. List the advantages and disadvantages of the most feasible ideas. 3. Select the best alternative(s) for further development.	*Steps* 1. Describe the selected alternative(s). 2. Show a map, drawing, or diagram. 3. Consider major components. 4. Determine costs.	*Steps* 1. Prepare a preliminary plan. 2. Develop the outline. 3. Prepare visuals and handouts. 4. Make final arrangements.
Key Questions 1. What is the project? 2. What are the major costs? 3. How much is it worth?	*Key Questions* 1. What does it do? 2. What must it do? 3. What does it cost? 4. What is it worth?	*Key Questions* 1. What else will perform the primary function? 2. Where else may the function be performed? 3. How else can it be done?	*Key Questions* 1. Is the idea feasible? 2. Is the cost too high? 3. Can it be made to work? 4. Is it acceptable?	*Key Questions* 1. How will the new idea work? 2. How can disadvantages be overcome? 3. What will be the total cost? 4. What will be the life cycle costs? 5. Why is the new way better? 6. Will it meet all performance requirements?	*Key Questions* 1. Who must be sold? 2. What does the audience need to know? 3. What is the primary function? 4. What are the main ideas? (Original design, benefits of the proposal, savings) 5. How should it be presented?