

Quantity - Estimate - Assemble Sub-bids - Bid

Begin with quantities

- How many linear feet
- How many square feet
- How many items

LxWxT

- Component approach
 - Unit A
 - Footers
 - Column pads
 - Piers
 - SOG (slab on grade)
 - SOD (slab on deck)

QUANTITY SHEET									
LOCATION	ESTIMATOR	ESTIMATE NO.							
SCHMIDT SHEETS	EXTENSIONS	SHEET NO. 1							
	CHECKED	DATE							
CLASSIFICATION									
DESCRIPTION	NO.	DIMENSIONS	Length	Width	Thickness				
<i>L 8'</i>									
<i>Footers :</i>	F2	189.0	2'6"	12"	4" 73	3.82	87.8		
	F1	59.0	3'0"	12"	177	11.8			
	F.W	71.0	3'6"	12"	249	16.9			
	F-3	41.0	2'0"	12"	82	8.2			
					380	750			
<i>Column Pads :</i>									
	2.2A.	5'8"	5'8"	12"	72				
	2.2A.	3'4"	3'4"	12"	25				
					424				
<i>Slabs :</i>									
	4'8A.	16"	16"	5'0"					
<i>T.G.:</i>									
<i>Structural Edge Slab</i>		32.0	22.0	4"	506	722	1067	1067	110.0
<i>Structural Edge Slab</i>		168.0	15.4	1.0	82	0	0	0	0
<i>Concrete</i>		58.0	17.2	4"	1158	2326	2371	2371	270.7
		48.0	33.0	4"	602	1854	2498	2498	170.13
		57.0	17.0	4"	273	873	1027	1027	62.50
		36.0	36.0	4"	404	1244	1908	1908	144.75
		103.0	1.0	4"	34	0	0	0	0
					9604	7125	8171*	8171*	78.53
<i>15% LIP & MASTR</i>									
<i>Rein. wire Edge Rein. Tension</i>									

Mark . Measure . Record .
Calculate .

CLASSIFICATION						
DESCRIPTION	NO.	DIMENSIONS	Length	Width	Thickness	
<i>Unit '8'</i>						
<i>Footers :</i>	F1	191.0	3'0"	1'0"	573	3.82
	F2	250.0	2'6"	1'0"	625	5.00
	F3	238.0	2'0"	1'0"	976	4.76
					65.04	1400
<i>S.O.G.</i>						
	49.0	164.0	4"	2652	8.936	
	41.0	29.0	4"	392	11.89	
	169.0	15.4	1.0	225	0	
				130.04	9225	
<i>*15% LIP & MASTR</i>						
<i>Rein. wire Edge Rein. Tension</i>						

Dealing with bid alternates

CLASSIFICATION		Concrete Site:			CHECKED	DATE
DESCRIPTION	NO.	DIMENSIONS				
Leading Dock:						
Footer:	57'0	8'8	1'0	concr. forms.		
Deck Slab:	38'0	14'0	6"	concr. base 6'8 bars, 1/2 conc. exp. 1/4 C.C. 1/4 ft. 1/4 form.	532	52
Manual Slope:	38'0	1'0	1'0	38	850	0
Entry to Dock Slab:	32'0	40'0	6"	640	1920	1280
	29'0	29'0+2	6"	210	633	421
	23'0	23'0+2	6"	133	414	263
	14'0	5'0	4"	23	0	70
Stairs:	16'6	4'0 w.	1'6	30	0	40
Manual Slope:	8'0	3'6	8"	19	0	0
Set Galv. Angle:	51'0	✓	3'822'	26031	30331	✓ 205 108 ✓
	78'4	✓				
Set Galv. Angle:	38'6	✓				
Set Galv. Angle:	10'8	✓				
Set Galv. Angle:	11'8	✓				
Trench Drain:	32'6	ft.		Mash	Rise from	Runn. cap.
				81	16.1	16.1 ✓
				40		
Curb @ Dock areas:	282'0	8"	1'6"		121	✓
				concr. base forms. Fin. Beams		
				11'0	846	570 282
				20 ft.		

Alternates

- Separate takeoff
- Adds or deducts
- Separate place on the bid form

CLASSIFICATION		DIMENSIONS				
DESCRIPTION	NO.					
Alt No. 2.						
Southeast Play Area:	254'0	8"	1'6	concr. base forms. Easy/late Review.		
Deep curb:						
Alt No. 3.						
Southeast Play Area:	272'0	8"	1'6			
Deep curb:						
L No. 3:						
Column Footers (4ea)	5'8	5'8	1'0	568		
Piers:	(4ea)	20"	x 20"	3'0		
S.O.G.: (Semicircles)	6'0	x 6'0	4"	12	36	
	6'0	x 6'0	4"	12	36	
	3'0	x 7'0	4"	7	21	
	3'0	x 7'0	4"	7	21	
				204	114	SP.
Patches - 1/2						
Excav. Semicircles						
@ 12 cu. yds.						

40 cubic yards x \$65.00 = \$2,600.00 material

40 cubic yards x \$ 25.00/cu.yd = \$1,000.00 labor

NELLO CONSTRUCTION		ALTERNATE NO. 1			PAGE 4		
Project:	DEDUCT DISTRICT ADM.	OFFICES INC.			54,678		
Bid No:	032CONC						
DESCRIPTION	BREAK DOWN	QTY, UNIT	UNIT PRICE	MATERIAL	UNIT PRICE	LABOR	TOTAL
WALL FOOTERS: concrete		40 CY	65.00	2,600	25.00	1,000	3,600
Unit C Type II forms		722 SF	1.30	939	2.25	1,625	2,564
SLAB ON GRADE: Type I concrete	base	58 CY	65.00	3,770	25.00	1,450	5,220
Unit C	mesh	87 TN	11.00	957	12.00	1,044	2,001
	finish	5,300 SF	0.12	636	0.14	742	1,378
	cure	4,600 SF	0.00		0.57	2,622	2,622
	v.barrier	4,600 SF	0.04	184	0.09	414	598
	perim. insul	5,300 SF	0.10	530	0.15	795	1,325
	edge form	840 SF	0.50	420	0.40	336	756
	exp. joints	100 LF	1.00	100	2.00	200	300
	ent'l joints	575 LF	0.60	345	0.50	288	633
	dowels	300 LF	0.15	45	0.75	225	270
	pumping	50 EA	1.50	75	8.00	400	475
SLAB ON DECK: Type I concrete		45 CY	65.00	2,925	30.00	1,350	4,275
	mesh	5,500 SF	0.12	660	0.14	770	1,430
	finish	4,800 SF	0.00		0.75	3,600	3,600
	cure	4,800 SF	0.04	192	0.09	432	624
	edge form	100 LF	1.00	100	2.00	200	300
	exp. joints	300 LF	0.60	180	0.50	150	330
	ent'l joints	140 LF	0.15	21	0.75	105	126
	pumping	45 CY	0.00		35.00	1,575	1,575
METAL PAN Type I stair fill		75 SF	1.00	75	1.50	113	188
STAIRS: landings		40 SF	1.50	60	1.75	70	130

Labor based on experience
X crew size (crew cost) places Y yards of footer conc per day.

Convert back to unit cost
to calculate alternates.

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	exp. joints	300 LF	0.60	180	0.50	150	330
	ent'l joints	140 LF	0.15	21	0.75	105	126
	pumping	45 CY	0.00		35.00	1,575	1,575
METAL PAN Type I stair fill		75 SF	1.00	75	1.50	113	188
STAIRS: landings		40 SF	1.50	60	1.75	70	130

Assemble the team's prices

NO.	ITEM	MATERIAL	LABOR	TOTAL	SUB
01	=Bldg Demolition =	=	=	12,260=	NELLO
02	=Asbestos Abatement/Air Monitoring	= in no. 25=	=	PA ROOFING	
03	=Excavation/Storms=	=	= 210,000=	COMBINATION	
04	= Bitum. Paving =	=	= 102,340=	RUSSELL	
05	=Chain Link Fences=	=	= 489=	F AND T	
06	= Site Signage =	=	= 3,500=	NELLO	
11	= Landscaping =	=	= 42,927=	KIMS	
12	= Concrete =	=	= 217,346=	NELLO	
13	= Reinforcing =	=	= 12,191=	ZOTIOLA	
14	= Masonry =	=	= 363,000=	MARINI	
15	=Slate Window Stools	= in ceramic=	=	SANITARY	
16	=Structural Steel=	=	= 150,713=	FORREST	
17	= Joist/Deck =	=	=	VULCRAFT	
18	= Steel Erection =	=	=	ALPHA	
19	= Misc. Steel =	=	=	FORREST	
20	= Expansion Jnts =	=	= 7,199=	ARCH. ART	
21	= Carpentry =	=	= 42,271=	NELLO	
22	= Wood Trusses =	=	= Alt.5 only=	NELLO	
23	= Waterproofing =	=	= 2,650=	TOM BROWN	
24	=Composite Metal Bldg Panels	=	= 128,911=	SPECIALTY	
25	=Carlisle sheet roof	=	= 178,800=	PA ROOFING	
26	=Preformed Metal Soffit Panel	=	= in no. 25=	PA ROOFING	
27	=Custom Sheet Metal Roofing	=	= Alt.5 only=	PA ROOFING	
28	= Roof Hatch =	=	= in no.25=	PA ROOFING	
29	= Caulking =	=	= 7,000=	NELLO	
30	=H.M./W.D. Doors =	=	= 55,014=	AG MAURO	
31	=Plas.Lam.Faced Doors	=	= in no. 30=	AG MAURO	
32	=O.H.Cooling Grilles	=	= 5,135=	VO GEORGE	
33	= Overhead Doors =	=	= in no. 32=	VO GEORGE	
34	=Alum. Entrances =	=	= 87,350=	FOX	
35	= Glass/Glazing =	=	= in no.34=	FOX	
36	= Alum. Windows =	=	= 62,080=	WINDOW SYSTEMS	
37	=M.Stud/Drywall/Etc	=	= 180,000=	E & R	
38	=Acoust.Wall Panels	=	= in no. 37=	E & R	
39	=Ceramic/Quarry Tile	=	= 51,022=	SANITARY	

Compose Alternates

Demolish existing canopy repair sidewalk at canopy columns remove steel tube supports to behind brick veneer and repair brick veneer. provide alum. panel infill at bottom of existing porcela provide new canopy and soffits provide two flagpoles and concrete paving					
= Demolition =	=	add=	6,600=	NELLO	
= Excavation =	=	=	3,000=	MACSON	
= Concrete =	=	add=	4,500=	NELLO	
= Reinforcing =	=	=	in conc=	NELLO	
= Caulking =	=	=	250=	NELLO	
= Masonry =	=	=	4,000=	MIF	
= Steel =	=	=	10,859=	COMBINATION	
= Carpentry =	=	=	13,765=	NELLO	
= Wood Trusses =	=	= in carp.=	NELLO		
= E.I.F.S. =	=	=	6,864=	NELLO	
=Preformed Metal Soffit Panel	=	= in below=	PA ROOFING		
=Custom Sheet Metal Roofing	=	= -14,000=	PA ROOFING		
= Flagpoles =	=	=	1,942=	OLSZEWSKI	
= Paint =	=	=	-1,500=	CUGINI	
<hr/>					
	cost	36,280			
	o.h./profit	4,354	0.12%		
<hr/>					
Total		40,634			
BID AT					
<hr/>					
ALT. NO. 6 - REFINISH WOOD FLOOR (Refinish existing wood gymnasium floor.) See Dwg A050.					
= Refinishing =	= cost=	13,300=	EFS		
	o.h./profit	1,596	0.12%		
<hr/>					
Total		14,896			
BID AT					
<hr/>					
ALT. NO. 7 - PROVIDE ADDITIONAL TACKBOARDS (Provide additional tackable acoustical wall panel tackboards as listed in the alternate - see visual display brd sheet.)					
=Visual Display Brds	= cost=	6,445=	PENINSULAR		
	o.h./profit	773	0.12%		
<hr/>					
Total		7,218			
BID AT					

Receive Bids from subs/suppliers

PRICE QUOTATION						
JOHN W. THROWER, INC.						
READY-MIX CONCRETE AND BUILDER SUPPLY						
409 SAXONBURG BLVD. • SAXONBURG, PENNSYLVANIA 16056						
412-352-9421						
TO:	Nello Construction		DATE:	11/16/95	Please indicate this number on all orders:	Central Elementary
	3 Glass St. Carnegie, Pa 15106		YOUR INQUIRY DATED:		YEARS:	
		PROPOSED SHIPPING DATE:	1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, 12th, 13th, 14th, 15th, 16th, 17th, 18th, 19th, 20th, 21st, 22nd, 23rd, 24th, 25th, 26th, 27th, 28th, 29th, 30th, 31st			
		AS SHIPPED:	as needed	P.O. NO.:	our truck	
276-0010		FAX:	276-8123	WEBSITE:	John Jr.	PHONE:
HERE IS OUR QUOTATION ON THE GOODS NAMED, SUBJECT TO THE CONDITIONS NOTED:						
CONDITIONS: The prices and terms on this quotation are not subject to verbal changes or other agreements unless agreed to in writing by the Home Office of the Seller. All prices quoted are FOB Saxonburg, Pennsylvania. All delivery charges will be added to the price quoted. Any discounts or allowances will be deducted from the quoted price. Conditions existing on date of quotation and are subject to change by the Seller before final acceptance. Purchaser agrees to pay all taxes, license fees, insurance premiums, and other expenses which may be incurred by the Seller. Any shortage or shortage not in excess of ten percent to be charged for prorata. Purchaser assumes liability for patent and copyright infringement when goods are made to Purchaser's specifications. When quotations specify material to be furnished by the Purchaser, such material must be furnished by Purchaser. Conditions not specifically stated herein shall be governed by established trade customs. Terms inconsistent with those stated herein which may appear on Purchaser's formal order will not be binding on the Seller.						
QUANTITY	DESCRIPTION			PRICE	AMOUNT	
*** Prices effective thru March 31, 1996 ***						
5½ bag 3000# concrete				\$53.80/yd		
6 bag 3500# concrete				55.60/yd		
6½ bag 4000# concrete				56.45/yd		
Winter Concrete: Additional \$1.00/yd Dec 1 thru March 31						
*** Prices effective April 1, 1996 ***						
5½ bag 3000# concrete				\$55.65/yd		
6 bag 3500# concrete				57.55/yd		
6½ bag 4000# concrete				58.45/yd		
All sales are subject to 6% PA sales tax						
QUOTE VALID FOR _____ DAYS.						

- Make a record of every phone bid

Nello Construction Company
Division of Gito Incorporated
This Bid Received by Telephone

...do you feel lucky today?

- Total it up
- Add general conditions
- Add bond
- Add permit
- Add Umbrella policy
- Round to compete

Gen. Cond.	2,139,156
	123,700
<hr/>	
Bond (.0075)	2,262,856
	16,971
<hr/>	
Bldg Permit	2,279,827
	6,914
<hr/>	
Umberella	2,286,741
	1,000
<hr/>	
Total	2,287,741
BID AT	2,280,000

You've won the bid ...part 1

- Need to assemble the subcontracts to compensate for any last-minute “rounding” done to be competitive.
- Owner will ask for a master “Schedule of Values” that you will draw against in each months bills.

	A	B	C	D	E	F	G	H	I	J	K	L	M			
1													Date:			
2																
3																
4																
5																
6																
7																
8																
9																
10																
11																
12	CSI	Means Cost Code	DESCRIPTION	UM	QTY	UNIT MATERIAL	UNIT LABOR	UNIT EQUIP	Total Material	Total Labor	Total Equip.	SCHEDULED VALUE	% of Total			
13	015113	Temporary Facilities										\$ -	0.00%			
14		0305 Temp lighting	CSF	100	\$2.63	\$10.35		263	1,035	0	\$ -	\$ 1,298.00	0.04%			
15		0800 Temp Power	CSF	100	\$47.00			4,700	0	0	\$ -	\$ 4,700.00	0.16%			
16		0020 Jobsite Trailer	EA	1	\$7,975.00	\$610.00		7,975	610	0	\$ -	\$ 8,585.00	0.30%			
17	015433	Storage Boxes	EA	2	\$4,175.00	\$340.00		8,350	680	0	\$ -	\$ 9,030.00	0.31%			
18	022113	Portable Toilets 24 months	EA	4	\$2,400.00			9,600	0	0	\$ -	\$ 9,600.00	0.33%			
19		Boundary and Survey Markers						0	0	0	\$ -	\$ -	0.00%			
20		0320 Contract Limit Line Survey	ACRE	2	\$48.00	\$775.00	\$46.50	99	1,597	96	\$ -	\$ 1,791.17	0.06%			
21								0	0	0	\$ -	\$ -	0.00%			
22								0	0	0	\$ -	\$ -	0.00%			
23		Assume rest of project	SF	10,000	\$165.00	\$110.00	\$12.00	1,650,000	1,100,000	120,000	\$ -	\$ 2,870,000.00	98.77%			
24								0	0	0	\$ -	\$ -	0.00%			
25								0	0	0	\$ -	\$ -	0.00%			
26								0	0	0	\$ -	\$ -	0.00%			
27								0	0	0	\$ -	\$ -	0.00%			
28								0	0	0	\$ -	\$ -	0.00%			
29								0	0	0	\$ -	\$ -	0.00%			
30								0	0	0	\$ -	\$ -	0.00%			
31								0	0	0	\$ -	\$ -	0.00%			
32								0	0	0	\$ -	\$ -	0.00%			
33								0	0	0	\$ -	\$ -	0.00%			
34								0	0	0	\$ -	\$ -	0.00%			
35								0	0	0	\$ -	\$ -	0.00%			
36								0	0	0	\$ -	\$ -	0.00%			
37								0	0	0	\$ -	\$ -	0.00%			
38								0	0	0	\$ -	\$ -	0.00%			
39								0	0	0	\$ -	\$ -	0.00%			
40								0	0	0	\$ -	\$ -	0.00%			
41								0	0	0	\$ -	\$ -	0.00%			
42	312513	Erosion and Sediment Control						0	0	0	\$ -	\$ -	0.00%			
43		1000 Silt Fence	LF	1,200	\$0.34	\$0.29		408	348	0	\$ -	\$ 756.00	0.03%			
44		Total										1,681,395	1,104,270	120,096	\$ 2,905,760.17	100.00%
45																
46																

Your task today,
 Individually make a schedule of values for this takeoff...organize
 by CSI Divisions, breakdown into major work tasks...email to
mjobrien@vt.edu by 1:00 today.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	
1	Account code	Description	Quantity	Units	Unit cost	Unit labor cost	Unit equip cost	Total unit cost	Total labor cost	Total equip cost	Crew daily	Production	Crew description	Total cost	System SF Cost
2	Div 1														
3	1430 9 sqg formwork*		514	LF	1.88	1.32		\$966.32	\$678.48	\$0.00	640.0	C1	1644.8		
4	0200 10'x12'x12' 100psi		1133	CF	15.4	21.5		\$17,771.50	\$2,361.00	\$0.00	310.0	2 ROOM	4115.47		
5	0411 9 sqg concrete p1* 6000psi		5468	CF				\$0.00	\$0.00	\$0.00	0				
6	4300 9 sqg concrete p2*		5499	CF	1.2			\$1,760.00	\$0.00	\$0.00	165.0	C6	19760		
7	1430 9 sqg concrete p3*		153	CF	130			\$19,890.00	\$0.00	\$0.00	165.0	C6	19890		
8	9 sqg plating*		1106	SF				\$0.00	\$0.00	\$0.00	0				
9	4650 9 sqg plating*		137	CF	10.75	4.06		\$0.00	\$1,472.75	\$502.42	185.0	C20	2028.97		
10	0250 9 sqg finishing*		11550	SF	0.99			\$0.00	\$11,434.50	\$0.00	550.0	1 CEF	11434.5		
11	1030 24'x30'x12' 100psi		2430	LF	0.18	0.35	0.07	\$431.00	\$11.00	\$0.00	165.0	C27	144.4		
12	1400 2 toping formwork*		46	LF	0.84	0.93		\$0.00	\$38.84	\$42.78	1200.0	C1	6142		
13	0200 2 toping formwork*		1108	SF	1.2			\$172.48	\$26.80	\$0.00	310.0	2 ROOM	413.28		
14	0411 2 toping formwork*		1092	SF	7			\$0.00	\$0.00	\$0.00	0				
15	4350 2 toping paving*		1094	SF	13.2	0.39		\$1,019.00	\$0.00	\$0.00	130.0	C20	910		
16	0100 2 toping finishing*		1090	CF	0.99			\$0.00	\$0.00	\$0.00	165.0	C6	14881.00		
17								0	0	0	550.0	1 CEF	1079.1		
18								0	0	0	0				
19								0	0	0	0				
20	2100 24' footree count		30	EA	2450	183	116	\$72,000.00	\$5,490.00	\$3,480.00	16.0	C11	80970		
21	1350 24' footree area		1116	SF				\$0.00	\$0.00	\$0.00	0				
22	24' footree count		3	EA	3900	173	110	\$11,700.00	\$5,918.00	\$330.00	16.0	C11	12549		
23	28' footree area		1108	SF				\$0.00	\$121,860.00	\$0.00	16.0	C11	313564		
24	wall ginder		1	EA	4900	300	184	\$0.00	\$0.00	\$0.00	16.0	C11	6450.83		
25	wall panel count		45	EA				\$0.00	\$0.00	\$0.00	0				
26	wall panel area		22829	SF	23.99	1.32		\$547,667.71	\$47,772.61	\$30,14.28	1400.0		625514.6		
27	1000 wall panel area		244	EA				\$0.00	\$0.00	\$0.00	0				
28	weld 6x6		486	FT	0.79	9.15	3.03	\$0.00	\$7,474.00	\$7,474.00	38.0	e14	8329.00		
29								0	0	0	0				
30								0	0	0	0				
31								0	0	0	0				
32								0	0	0	0				
33	1725 roof insul		10967	SF	1.93	0.25		\$21,168.31	\$2,741.75	\$0.00	1000.0	1 nfc	23908.06		
34	3600 roof membrane and ballast		108.99	RFSQ	68.5	22.5	3	\$7,465.82	\$2,452.28	\$326.97	51.0	G5	10245.06		
35	1600 18'x30' roof		254	SF	1.58	0.89		\$151.00	\$15.00	\$0.00	285.0	C10	789.64		
36	3600 18'x6' hatching		178	SF	1.82	0.89		\$323.96	\$158.42	\$0.00	285.0	1 nfc	482.38		
37	0100 metal cap fashing (x 8 bends)		420	LF				\$0.00	\$0.00	\$0.00	0				
38	1030 10'x12' hatching		103	SF	1.18	3.5		\$1,220.00	\$3,618.00	\$0.00	145.0	2 nfc	4839.72		
39	0120 treated 2x6 nailing (061110-0360) x 0.206667 msf		860	450				\$177.73	\$39.00	\$0.00	13.2	carp	270,733333		
40	5400 4x6 downspout		2023	LF	0.77	2.84		\$172.31	\$14.00	\$0.00	105.0	1 shee	2999.66		
41	2800 wall paint sealant		253889	SF				\$0.00	\$0.00	\$0.00	0				
42	0140 20'x10' hatching		2427	IN				\$1,507.71	\$5,746.32	\$0.00	130.0	1 bric	7303.03		
43	0140 10'x10' hatching		2427	IN				\$0.00	\$0.00	\$0.00	0				
44	1100 Roof Hatch (0723310-1100)		ea	1475	145			\$1,475.00	\$14,650.00	\$0.00	8.0	g3	1620		
45								0	0	0	0				
46								0	0	0	0				
47								0	0	0	0				
48								0	0	0	0				
49	0840 3071 HM Doors		5	EA	310	34.5		\$150.00	\$15.00	\$0.00	17.0	2 carp	1725		
50	1720 3071 Insul HM Doors		3	EA	375	39		\$1,125.00	\$117.00	\$0.00	15.0	2 carp	1242		
51	0200 8x13 ceiling (2850 insul)		104	sf	77.84	32.5		\$2,074.56	\$3,380.00	\$0.00	10.0	2 carp	639		
52	0100 3070 hm frame		4	EA	132	38.5		\$528.00	\$146.00	\$0.00	16.0	2 carp	11454.66		
53	0140 3070 hm frame		1	EA	150	42		\$1,250.00	\$125.00	\$0.00	14.0	1 shee	674		
54	0140 6070 hm frame		2	EA	150	42		\$300.00	\$84.00	\$0.00	14.0	1 shee	192		
55								\$726,930.88	\$302,675.86	\$158,877.66			\$1,190,504.40		
56															
57															
58															

Organize tasks into a sequence list

...how do you want to build it?

- 1. Put on shoes
- 2. Put on socks
- 3. Pull on pants
- Layout northwest corner
- Base course
- Course 2
- Course 3
- Insulation
- Drainboard
- Veneer course 1
- Veneer course 2
- Veneer course 3
- Horizontal joint reinforcing
- Course 4...

You've won the bid

...part 2

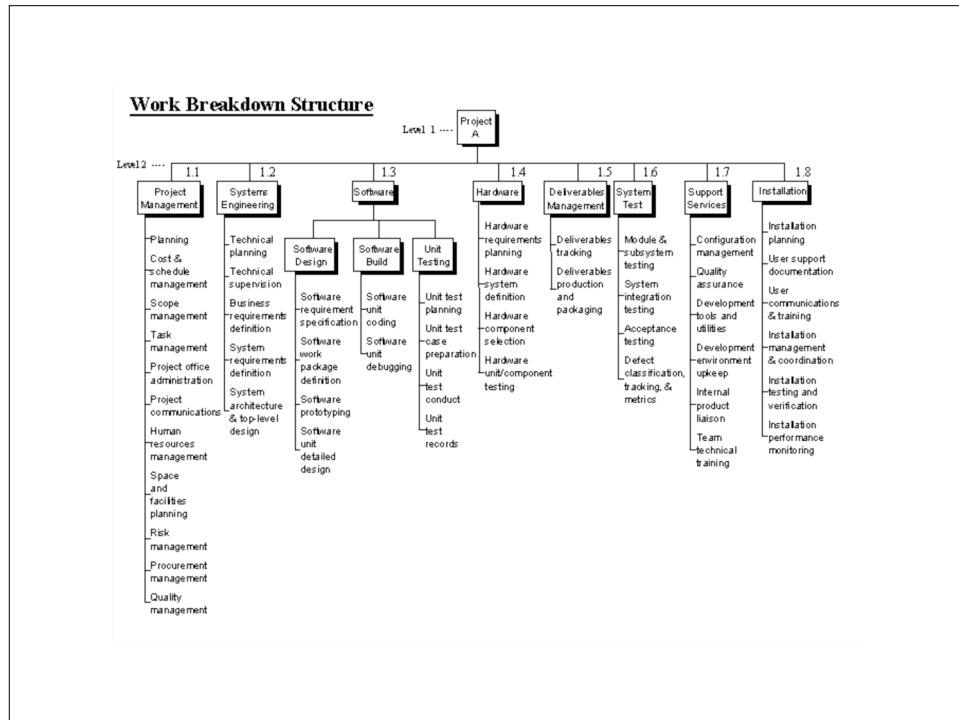
- What work can happen simultaneously?

Project Management Tools: Work Breakdown Structure

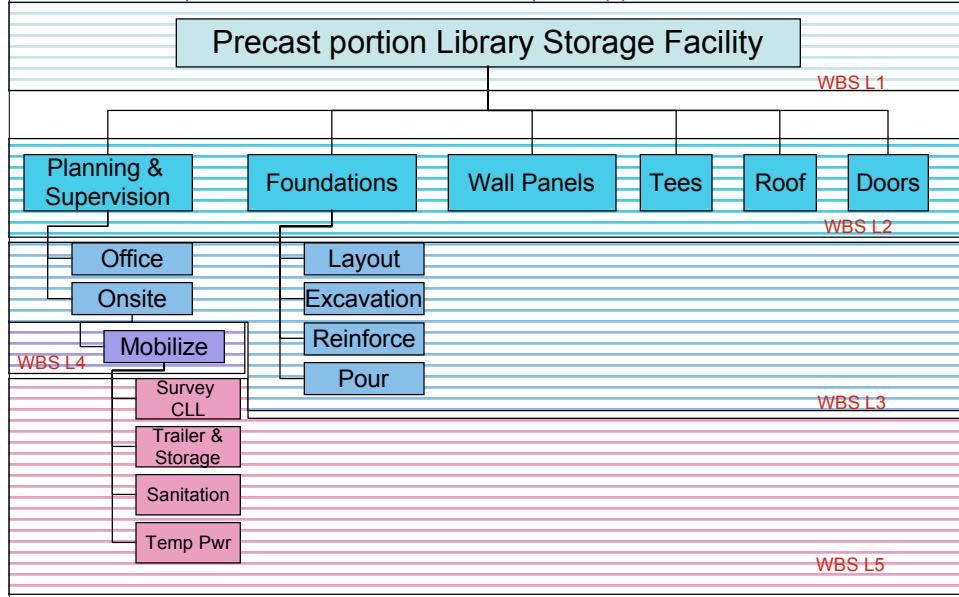
The Practice Standard for Work Breakdown Structures 2nd Edition,
Project Management Institute, Amazon: \$18.11

Work Breakdown Structures are project planning tools

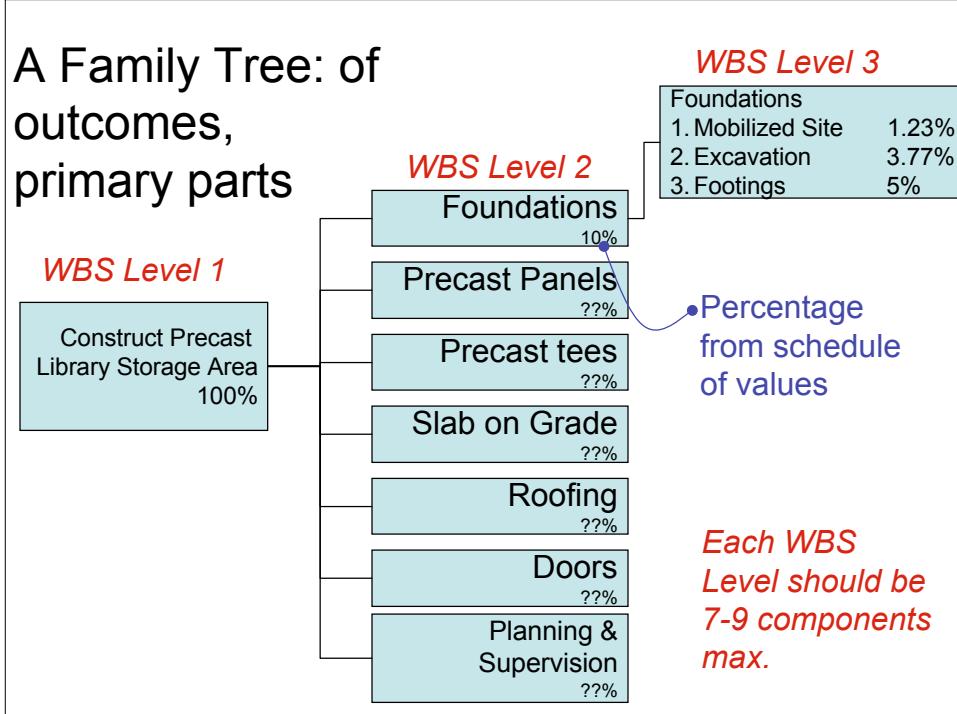
- Provokes the team to think through the work to capture *all* deliverables
- Internal
 - Out of the ground
 - Dried-in
- External
 - foundation inspection
 - Framing inspection
 - Certificate of occupancy
 - Final closeout



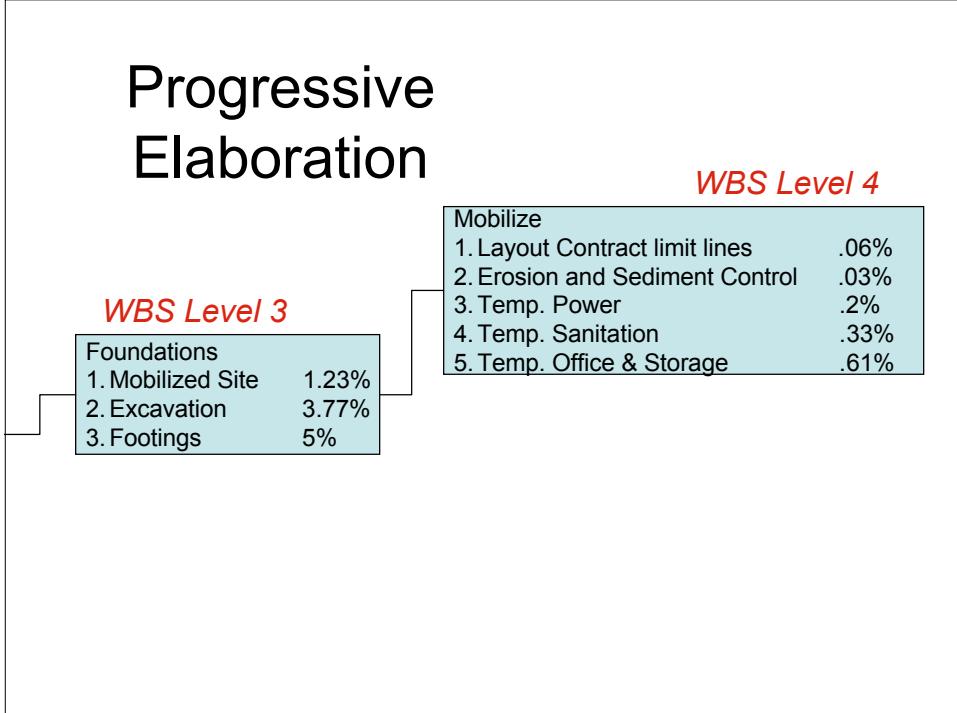
Military Standard (MIL-STD) 881B (25 Mar 93) as follows: "A work breakdown structure is a product-oriented family tree composed of hardware, software, services, data and facilities [it] displays and defines the product(s) to be developed and/or produced and relates the elements of work to be accomplished to each other and to the end product(s)."



A Family Tree: of outcomes, primary parts



Progressive Elaboration



Base on Schedule of Values

	A	B	C	D	E	F	G	H	I	J	K	L	M	
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11	CSI	Means Cost	Code	DESCRIPTION	UM	QTY	UNIT	UNIT	UNIT	Total	Total	Total	SCHEDULED	
12	015113			Temporary Facilities						Material	Labor	Equip.	VALUE	
13		0305		Temp lighting	CSF	100	\$2.63	\$10.35	263	1,035	0	0	\$ 1,298.00	
14		0800		Temp Power	CSF	100	\$41.00		4,700	0	0	0	\$ 4,700.00 0.16%	
15		0020		Jobsite Trailer	EA	1	\$7,975.00	\$610.00	7,975	610	0	0	\$ 8,585.00 0.30%	
16		1200		Storage Boxes	EA	2	\$4,175.00	\$340.00	8,350	680	0	0	\$ 9,030.00 0.31%	
17	015433			Portable Toilets 24 months	EA	4	\$2,400.00		9,600	0	0	0	\$ 9,600.00 0.33%	
18	022113			Boundary and Survey Markers					0	0	0	0	\$ - 0.00%	
19		0320		Contract Limit Line Survey	ACRE	2	\$48.00	\$775.00	\$46 50	99	11,597	96	\$ 1,791.17 0.05%	
20									0	0	0	0	\$ - 0.00%	
21									0	0	0	0	\$ - 0.00%	
22									0	0	0	0	\$ - 0.00%	
23				Assume rest of project	SF	10,000	\$165.00	\$110.00	\$12 00	1,650,000	1,100,000	120,000	\$ 2,870,000.00 98.77%	
24									0	0	0	0	\$ - 0.00%	
25									0	0	0	0	\$ - 0.00%	
26									0	0	0	0	\$ - 0.00%	
27									0	0	0	0	\$ - 0.00%	
28									0	0	0	0	\$ - 0.00%	
29									0	0	0	0	\$ - 0.00%	
30									0	0	0	0	\$ - 0.00%	
31									0	0	0	0	\$ - 0.00%	
32									0	0	0	0	\$ - 0.00%	
33									0	0	0	0	\$ - 0.00%	
34									0	0	0	0	\$ - 0.00%	
35									0	0	0	0	\$ - 0.00%	
36									0	0	0	0	\$ - 0.00%	
37									0	0	0	0	\$ - 0.00%	
38									0	0	0	0	\$ - 0.00%	
39									0	0	0	0	\$ - 0.00%	
40									0	0	0	0	\$ - 0.00%	
41									0	0	0	0	\$ - 0.00%	
42	312513			Erosion and Sediment Control					0	0	0	0	\$ - 0.00%	
43		1000		Silt Fence	LF	1,200	\$0.34	\$0.29	408	348	0	0	\$ 756.00 0.03%	
44				Total							1,681,395	1,104,270	120,096	\$ 2,905,760.17 100.00%
45														
46														

WBS - a connector between estimator and superintendent

- Estimators usually don't build the building
- Superintendents usually don't do the estimating
- Project Managers and Engineers are between the office and site
- Work Breakdown Structures are a management tool to get the production team all on the same page.
 - What work will be done in what sequence?
 - What materials will be needed when?
 - What equipment and tools will be needed?
 - What people will be needed?