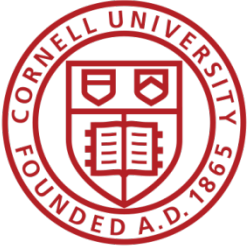


Project Management
Professional Development Series –
Project Scheduling – Session 2

Facilities and Campus Services
Engineering and Project Management
May 2019





The Craft of Project Scheduling

“Scheduling provides a basis for management of the work, improves communications, and facilitates coordination.”

(ACE International Skills & Knowledge of Cost Engineering– Scheduling)



The Craft of Project Scheduling

Why is a Schedule Important?

- Key tool for monitoring and controlling projects
- Important and integral part of the planning process

What are some of the Benefits of Scheduling?

- Forecasting tool
- Baseline for recording progress
- Improves communications
- Facilitates coordination



Craft of Project Scheduling

Session 1 – Scheduling Requirements (eBuilder System Reporting; April 2019 PMPD)



- Promote Consistency
- Developing Reporting Structure
- Leverage eBuilder - “As a Power User”

VS

Session 2 – Scheduling Tools & Resources (May 2019 PMPD)

- *Promote Consistency*
- *Promote Best Practices*





The Craft of Project Scheduling – Session II

Tools and Resources

**Project
Schedule
Parts**
(Checklists
& References)

**eBuilder
Scheduling
Module**
(Reporting)

**Stakeholder
Engagement
Scheduling
Meetings**
(Outlook)

**Approval
Schedule**
(Internal & External)

**Construction
Schedule**

**Communication
Schedule**
(Pincello)

Session I – April 2019 PMPD



Tools and Resources

Scheduling Tools and Apps



Word



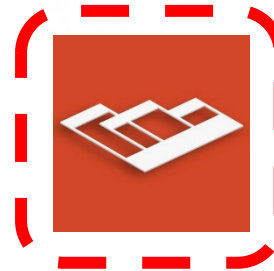
Excel



eBuilder



Project



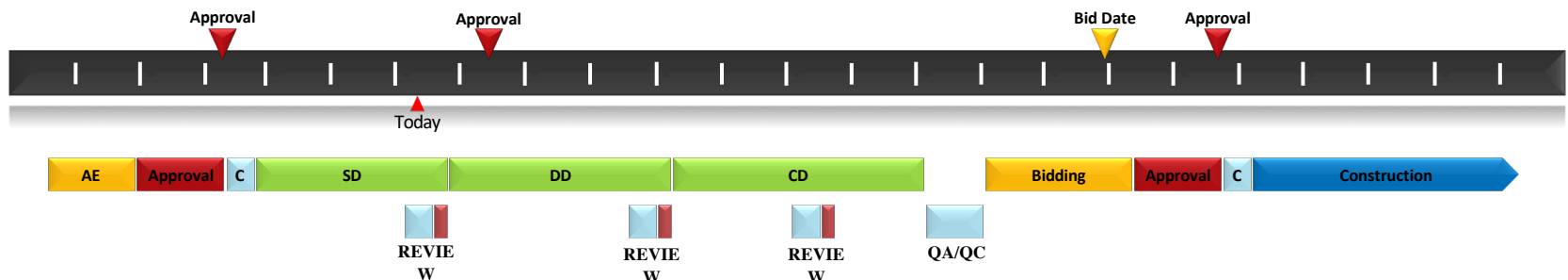
**Office Timeline
Pincello**



Basic Schedule Model

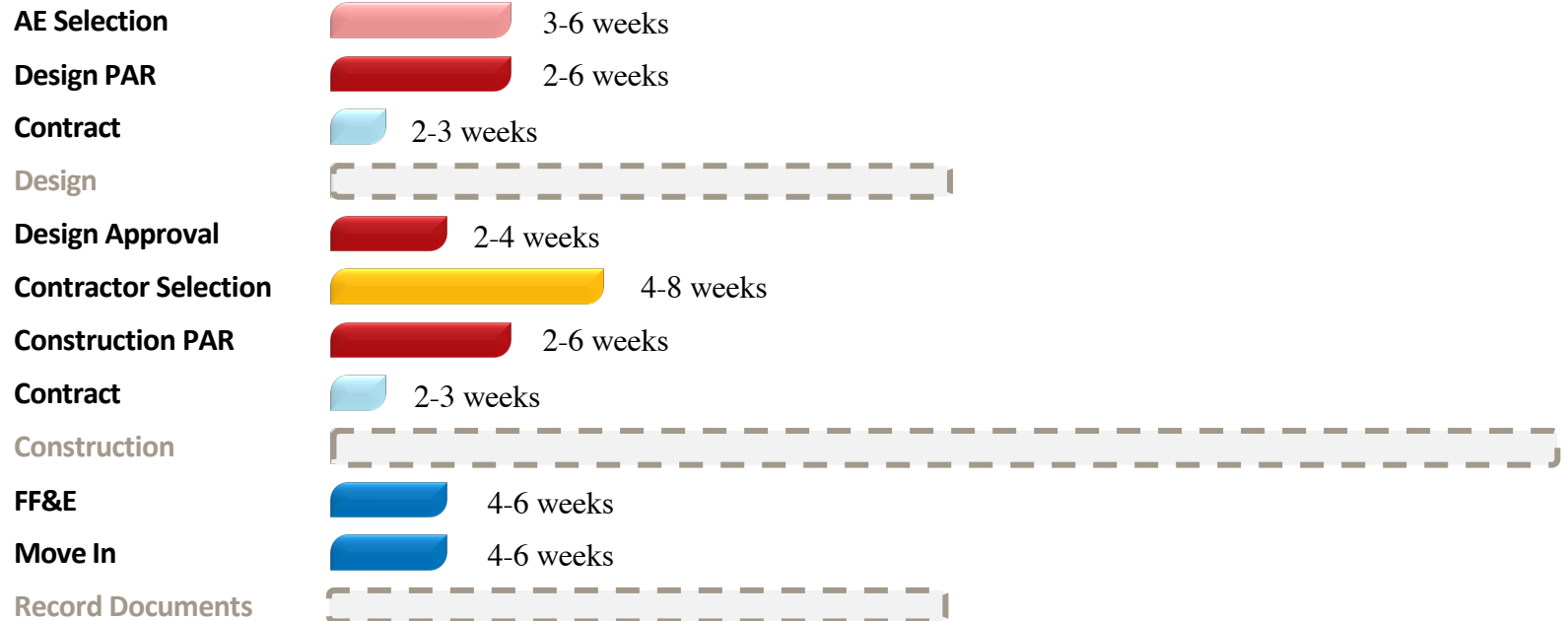
Generally Known Scheduling Parts

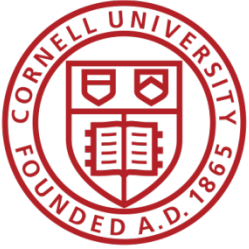
- Consultant Selection
- Design and Cost Reviews
- Contractor Selection
- Approvals
- Contracts





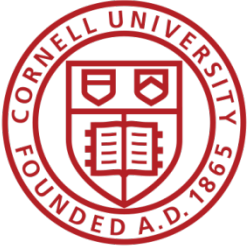
Generally Known Scheduling Parts





Variable Scheduling Parts

- Scope
- Budget
- Start and end dates
- Project delivery approach (typically DBB, GMC?, IPD?)
- Unit representatives and stakeholders
- Known lead-times



Approach

- Engage Units, E&PM, E&S and OUA
- Confirm known durations (PAR, selection, closeout)
- Establish level of stakeholder engagement
- Develop meeting groups
- Establish design and construction duration
- Draft ideal schedule with information in-hand



Sample Schedule Assumptions

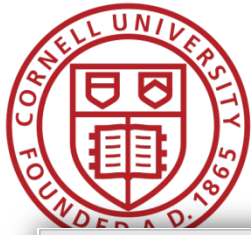
- 100,000GSF
- \$80M project budget
- Multi-college
- Design-bid-build
- All approvals required (site selection, AE selection, budget)
- AE selection required
- Known durations (PAR 6wks, AE/GC selection 6/9wks, closeout 3m+)
- 1yr design and 2yr construction duration



Stakeholder	General Design Topics	AE Selection	Design PAR	SD	SD Design Review	SD Cost Review	SD Cost VE	DD	DD Design Review	DD Cost Review	DD Cost VE	CD	CD 50% Design Review	CD 50% Cost Review	CD 50% Cost VE	CD Design Review	Bidding	Construction PAR	Construction	Submittal Review	Substantial Completion	Turnover	Record Drawings
PM	All topics	Participates in all meetings																					
CM	Cost, Site Logistics, Constructability				x	1	1		x	1	1		x	1	1	x	x	x	x	x	x	x	x
UAO	Site, Building, Landscape, Sustainability, Furnit	2	x	4	x	x	1	2	x	x	1	2	x	x	1	x							
FE	A, S, C, M, E, P, FA, FP, LEED, EUI, Sustainability	x	x	2	x	x	1	3	x	x	1	4	x	x	1	x				x			
E&S	EUI, Sustainability, Utilities		x	2	x		1	2	x		1	2	x		1	x		x					
PreCon Contractor	Cost, Site Logistics, Constructability							2	x	1	1	2	x	1	1								
Commissioning	HVAC, Envelope, Acoustics							2	x	x	1	2	x	x	1	x			x	x	x	x	
EH&S	Hazmat, Lab safety, Site logistics, Generator, FA			1	x			1	x			2	x			x			x				
CIT	IT, AV			1	x			2	x			2	x			x			x		x		
FM	Maintenance, Operations, ADA, Bldg Care, Recycling	x	1	x				1	x			2	x			x		x				x	x
CUPD	Security, Access control							1	x			1	x			x					x		
Transportation	Roadways, Parking, Site logistics, Walkways			1	x			1	x			1	x			x			x				
Shops	Lock shop, Controls, FA							1	x			1	x			x				x			
Contracts																							
Community Relations																							
Counsels Office																							
AHJ	Cornell, City/Town				1				1				1			1			x				x
IFD	Cornell, City/Town				1				1				1			1			x				x
FIG	Room numbers				x				x				x			x							x
FM Global	Insurance Provider				x				x				x			x							

x Represents PM engagement with Stakeholder

Represents minimum number of meetings between Architect and Stakeholder



SD Phase Meeting Groups with LFA	
EXECUTIVE	
FCS DIRECTORS	
BUILDING COMMITTEE	Site/Building Design & Program Group, furniture, lighting, AV
LAB: CB+I and CB	
1 ST FLOOR: ACSF+MPH	
FOOD	Food Service, Café, Kitchenettes, Catering Design Group
BIRD	Bird friendly design group
SITE	Site & Land
UTILITIES	
SERVICE	
SUSTAINABILITY	
LEED	
COMMISSIONING	HVACx and
STRUCTURE	
ENERGY MODEL	
MEP SYSTEMS	
LIGHTING	
PLUG LOADS	
IT	
AV	
SECURITY	
CODE	
LIFE SAFETY	Life Safety,
FIRE TRUCK	
CONSTRUCTION	
COST	
MUNICIPAL APPROVALS	

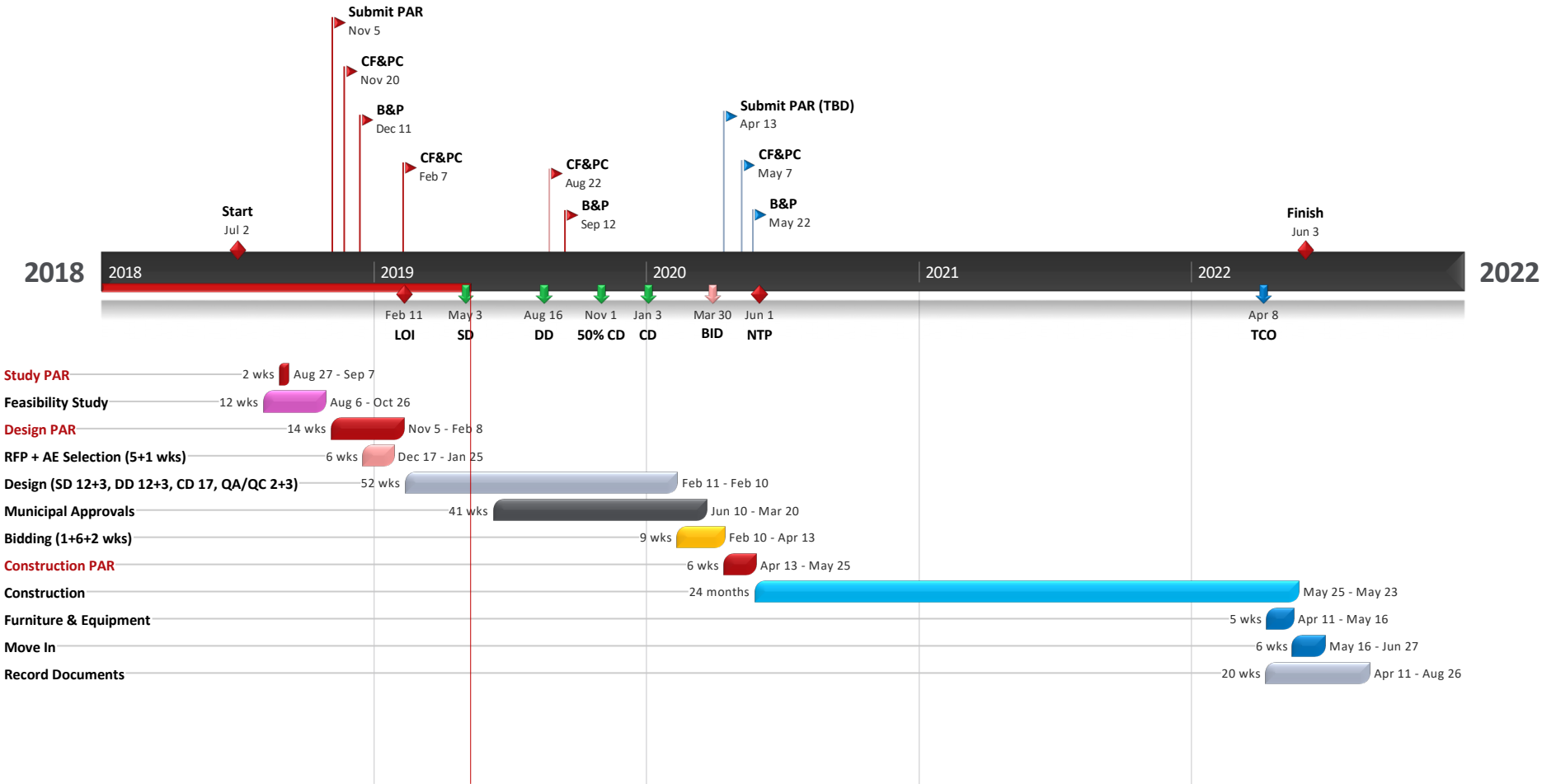
SD Phase Meeting Groups with LFA	Participants	Suggested meetings
BUILDING COMMITTEE Site/Building Design & Program Group (includes site design & program) (includes furniture design) (includes lighting and AV design)	Ram Venkat, Project Manager Margaret Carney, University Architect J Shermeta, Associate University Architect David Lodge, ACSF Graham Kerslick, ACSF Alex Travis, MPH Paula Cohen, Cancer and Immunology Gary Koretzky, Cancer and Immunology Andrew Clark, Computational Biology Phillip Messer, Computational Biology TBD, Facility Manager (CALs, OVPR, CVM) Architecture Core	As needed -higher level, overall
LAB: CB+I and CB Lab Design Group	Ram Venkat, Project Manager Margaret Carney, University Architect J Shermeta, Associate University Architect Paula Cohen, Cancer and Immunology Gary Koretzky, Cancer and Immunology Andrew Clark, Computational Biology Phillip Messer, Computational Biology TBD, Facility Manager (CALs, OVPR, CVM) Vince Knapp, FE Liz Kolacki, FE Ellen Sweet, EH&S Paul Jeannette, CVM Biosafety	3-4 for each wet and dry lab types Topics include layout, equipment, program and systems Can have FE+EHS as separate groups or subjects Homework at each for users to prepare for following meeting



Multidisciplinary Building

Project Schedule

5/14/19 FINAL

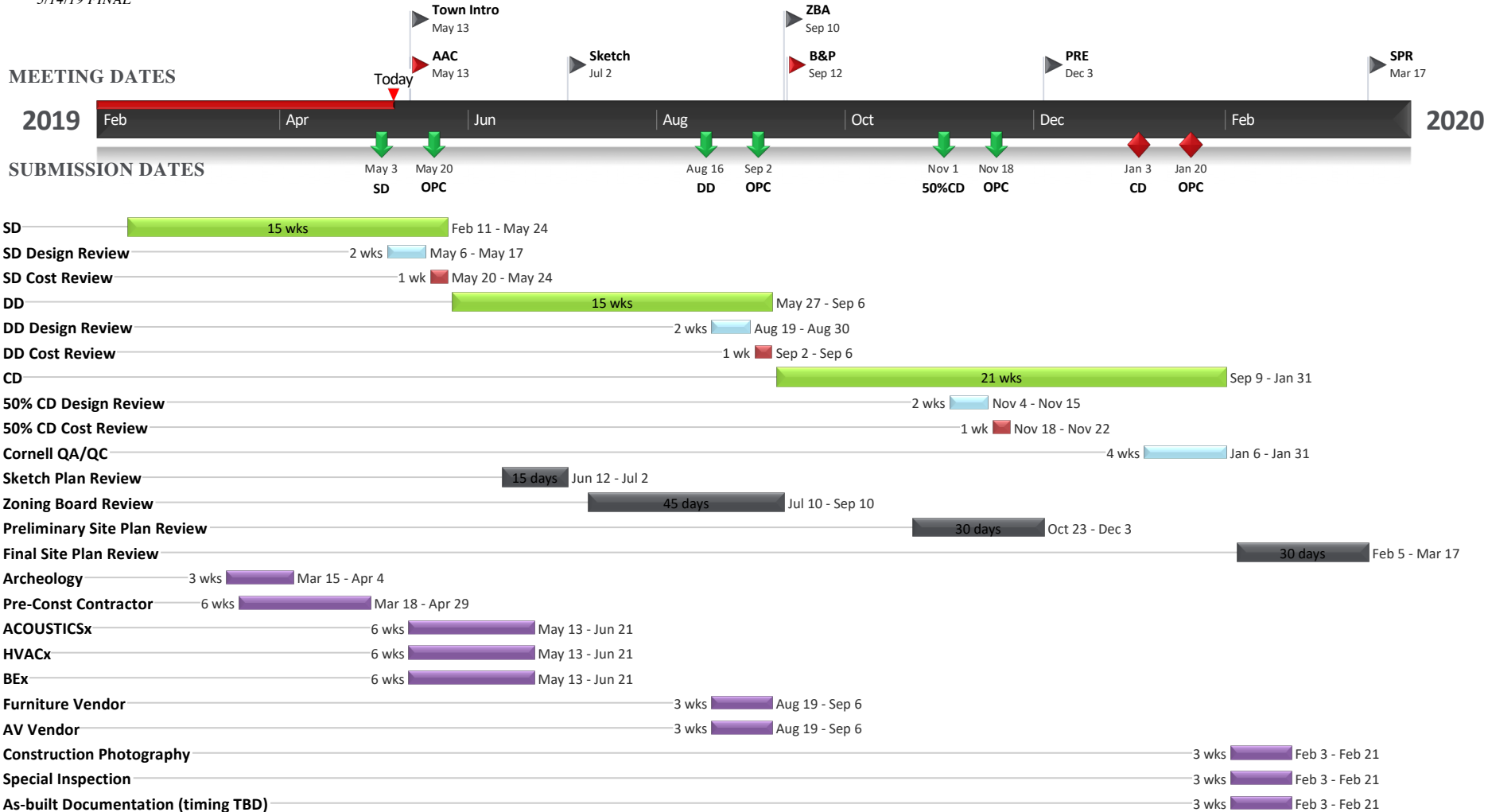




Multidisciplinary Building

Design Phase Schedule

5/14/19 FINAL





The Craft of Project Scheduling – Session II

Tools and Resources

**Project
Schedule
Parts**
(Checklists
& References)

**eBuilder
Scheduling
Module**
(Reporting)

**Stakeholder
Engagement
Scheduling
Meetings**
(Outlook)

**Approval
Schedule**
(Internal & External)

**Construction
Schedule**

**Communication
Schedule**
(Pincello)

Session I – April 2019 PMPD

Approvals Schedule:

PROJECT APPROVALS CALENDAR FOR 2018-2019

	Monday	Tuesday	Wednesday	Thursday	Friday
July	2	3 PAR Meeting	University Holiday	5	6
	9	10	11 PARs due in F&CS	12	13 Presentation Drafts
	16	17	18 CF&PC Materials Due	19	20
	23	24	25 Provost CPG	26 CF&PC (Sept B&P)	27
	30 B&P Items Due-Sept		31 PAR Meeting		
Aug	6	7	8 PARs due in FCS	9	10 Presentation Drafts
	13	14	15 CF&PC Materials Due	16	17
	20	21	22 Status Rprts Due	23 CF&PC (Sept B&P)	24 Trustee Map Due
	27	28	29 Provost CPG	30	31 B&P Post Date
Sept	University Holiday	4 PAR Meeting	5	6	7
	10	11	12 PARs due in FCS	13 B&P - NYC	14 Presentation Drafts
	17 B&P Items Due-Oct	18	19 CF&PC Materials Due	20	21
	24	25 PAR Meeting	26 Provost CPG	27 CF&PC (Nov B&P)	28
Oct	1	2	3 PARs due in FCS	4	5 Presentation Drafts
	8	9	10 CF&PC Materials Due	11 Status Rprts Due	12
	15 Trustee Map Due	16	17	18 CF&PC (Nov B&P)	19
	22 B&P Post Date	23	24 Provost CPG	25	26
	29 B&P Items Due-Dec	30 PAR Meeting	31		
Nov	5 PARs due in FCS	6	7 Presentation Drafts	8	9
	12 CF&PC Materials Due	13	14	15	16
	19	20 CF&PC (Dec B&P)	21 Status Rprts Due	University Holiday	University Holiday
	26 Trustee Map Due	27 PAR Meeting	28 Provost CPG	29	30
Dec	3 B&P Post Date	4 PARs due in FCS	5	6 Presentation Drafts	7 B&P Items Due-Jan
	10 CF&PC Materials Due	11 B&P - NYC	12 PAR Meeting	13	14
	17	18 Provost CPG (12/19)	19 CF&PC (Jan B&P)	20 PARs due in FCS	21
	24	University Holiday	University Holiday	University Holiday	University Holiday

	Monday	Tuesday	Wednesday	Thursday	Friday
Jan	University Holiday	University Holiday	2	3	4 Presentation Drafts
	7 CF&PC Materials Due	8	9	10 Trustee Map Due	11 Status Rprts Due
	14 PAR Meeting	15 CF&PC (Jan B&P)	16	17	18 B&P Post Date
	University Holiday	22	23 PARs due in F&CS	24	25 Presentation Drafts
	28	29	30 CF&PC Materials Due	31 B&P - NYC	
Feb	4 B&P Items Due-March	5 PAR Meeting	6	7 CF&PC (March B&P)	8
	11	12	13	14 PARs due in FCS	15 Presentation Drafts
	18	19	20	21 F&PC Materials Due	22
	25	26	27	28 Status Rprts Due	
					1 Trustee Map Due
March	4 CF&PC (March B&P)	5	6	7	8
	11 B&P Post Date	12	13	14	15
	18	19 PAR Meeting	20	21 B&P - Ithaca	22
	25	26	27 PARs due in FCS	28	29 Presentation Drafts
April	1	2	3 CF&PC Materials Due	4	5
	8 B&P Items Due-May	9 PAR Meeting	10	11 CF&PC (May B&P)	12
	15	16	17 PARs due in FCS	18	19 Presentation Drafts
	22	23	24 CF&PC Materials Due	25	26
	29 B&P Items Due-June	30			
May	6 Trustee Map Due	7	8 PAR Meeting	9	10
	13 B&P Post Date	14	15 PARs due in FCS	16	17 Presentation Drafts
	20	21 Status Rprts Due	22 CF&PC Materials Due	23 Trustee Map Due	24 B&P - Ithaca
	University Holiday	28	29	30 CF&PC (June B&P)	31
June	3	4	5	6	7
	10	11	12	13	14
	17	18	19	20	21
	24	25	26	27	28

Capital Funding and Priorities Committee (CF&PC) Deadlines	
PAR Meeting	Meeting to collect and formulate what projects will be on the CF&PC/B&P agenda
PARs due in FCS	3:00pm SUBMISSION DEADLINE for PAR's needing committee approval (PAR administrator step of eB PAR process)
Presentation Drafts	CF&PC Powerpoint presentation Drafts Due to AVP of E&PM for review (F&CS Managed Projects)
CF&PC Materials Due	Final PARs and Presentations must be placed in Box folder by COB
CF&PC	CF&PC Committee Meeting
Provost CPG	Provost Capital Planning Group

Status Rprts Due	Trustee Status Reports due to Jessie Dimick
Trustee Map Due	Trustee Map Update Due
B&P Items Due	Submission deadline of Agenda items for the B&P meeting to Carin Clark
B&P Post Date	Posting of Agenda, Trustee Reports, Trustee Map and Supporting materials to the Trustee Secure Site
B&P Meeting	Date of Buildings and Properties meetings

As of 8/22/18 - ljj8

Project Approvals Calendar – CF&PC, B&P

- Schedule Milestones

April	1	2	3 CF&PC Materials Due	4	5
	8 B&P Items Due-May	9 PAR Meeting	10	11 CF&PC (May B&P)	12
	15	16	17 PARs due in FCS	18	19 Presentation Drafts
	22	23	24 CF&PC Materials Due	25	26
	29 B&P Items Due-June	30			
May		1	2 CF&PC (May B&P)	3 Status Rpts Due	
	6 Trustee Map Due	7	8 PAR Meeting	9	10
	13 B&P Post Date	14	15 PARs due in FCS	16	17 Presentation Drafts
	20	21 Status Rpts Due	22 CF&PC Materials Due	23 Trustee Map Due	24 B&P - Ithaca
	University Holiday	28	29	30 CF&PC (June B&P?)	31

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Capital Funding and Priorities Committee (CF&PC) Deadlines

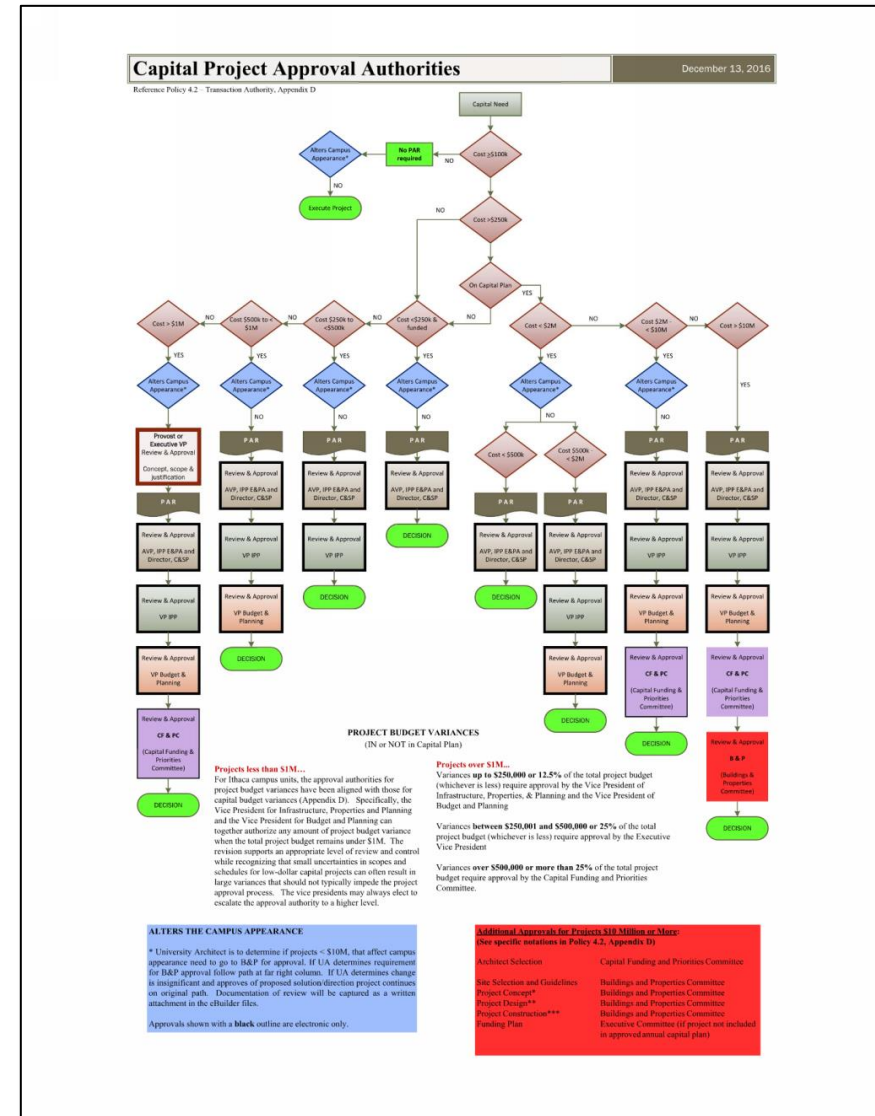
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Capital Project Approval – Flow Chart

What type of Project do we have?

- >\$100K (No PAR)
 - Alters Campus Appearance?
- Is it on the Capital Plan?
 - Yes / No
 - Alters Campus Appearance?
- Approvals:
 - Signature Level
 - Capital Funds & Priorities Committee (CF&PC)
 - Buildings & Properties (B&P)



Construction Schedule: Contractual Requirements

013216 Construction Schedule:

(General Requirements)

Contractual Requirements:

- Projects <\$2M vs. >\$2M
- Definitions
- Form & Content of Schedules
- Submissions Requirements

Milestones & Constraints:

- Summer Wonders
- Scheduled Milestones
- Working Hours

PROJECT	CONSTRUCTION SCHEDULE	01 32 16-1 DATE
<p>CORNELL UNIVERSITY SECTION 01 32 16 Ithaca, New York CONSTRUCTION SCHEDULE</p> <p style="text-align: center;">SECTION 01 32 16 CONSTRUCTION SCHEDULE</p> <p>1.0 GENERAL</p> <p>USE FOR RENOVATIONS AND PROJECTS LESS THAN \$2M</p> <p>1.1 SUMMARY</p> <p>A. The Contractor shall, within fourteen (14) calendar days of Notice to Proceed, prepare and submit to the Owner estimated construction progress schedules for the entire Work, with sub-schedules of related activities which are essential to the progress of the Work.</p> <p>B. Conferences will be held with the Architect, Owner and Contractor at the start of the project to agree mutually on a progress schedule which must be diligently followed.</p> <p>C. Submit revised progress schedules periodically and when requested to do so by Owner.</p> <p>D. Submit to Owner and Architect a cash flow projection in accordance with Schedule of Values.</p> <p>E. Submit electronic versions of all schedules, including updates, as well as all back-up to the submitted schedules.</p> <p>1.2 FORM OF SCHEDULES</p> <p>A. Prepare Network Analysis system, or prepare schedules in the form of a horizontal bar chart.</p> <ol style="list-style-type: none"> 1. Provide separate horizontal bar for each trade or operation. 2. Horizontal time scale: Identify the first work day of each week. 3. Scale and spacing: To allow space for notations and future revisions. <p>B. Format of listings: The chronological order of the start of each item of work.</p> <p>C. Identification of listings: By specification section numbers.</p> <p>1.3 CONTENT OF SCHEDULES</p> <p>A. Construction Progress Schedule:</p> <ol style="list-style-type: none"> 1. Show the complete sequence of construction by activity. 2. Show the dates for the beginning, and completion of, each major element of construction. Specifically list: <ol style="list-style-type: none"> a. Site clearing 		
<p>1. Problem areas, anticipated delays, and the impact on the schedule.</p>		
PROJECT	CONSTRUCTION SCHEDULE	01 32 16-2 DATE
PROJECT	CONSTRUCTION SCHEDULE	01 32 16-1 DATE

Construction Schedule:

Design Phase:

- Constructability within Constraints
- Phasing Work
 - Scheduled Shutdowns
 - Lead times
- Communication Plans

Construction Phase:

- Review “Shake it Out”
- Submittals (Timely)
- Shutdowns
- Updated Communication Plans

