



The American Dream CPM Review Comments Report



**CPM Scheduling Consultant:
HSE Contractors Inc.**

Project

**The American Dream
Developer: CCC
Construction Manager: PCL**

CPM Review Comments Report

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1-General Comments

- 1- It will be helpful to add the following critical milestones to the schedule:
 - a- Paving Access Road “activity type: Milestone” with constrain start or after August 23, 2015
 This activity must be tied with all activities that depend on the finishing on the access road
 - b- Receiving Permit “activity type : Finish Milestone”
 - c- Signing GMP “activity type: Finish Milestone “
- 2- The work package “electrical Switchboard MS-1” is currently tied to water and amusement scope. After reviewing this work package we find that its start date is too late when compared to the activities that logically depend on finishing “electrical Switchboard MS-1” like Elevators for amusement park which will be finished on January 17, 2017. On the other hand, the start of electrical Switchboard MS-1 work page is on December 22, 2016 and it finishes on March 29, 2017, which means that on the schedule this activity is currently not on the longest driving path while we think it will help if it is either on the critical path or the secondary path due to its important impact.

Activity ID	Activity Name	Original Duration	Start	Finish
	[-] Main Electrical Switchboard MS-1	65	22-Dec-16	29-Mar-17
	CVA6160 Complete Conduit Underground	15	22-Dec-16	17-Jan-17
	CVA6162 F/R/P Housekeeping Pads	10	18-Jan-17	31-Jan-17
	CVA6164 Set Electrical Gear	15	01-Feb-17	22-Feb-17
	CVA6166 Pull Wire & Terminate	15	23-Feb-17	15-Mar-17
	CVA6168 Electrical Gear Inspections	10	16-Mar-17	29-Mar-17
	CVA6170 Energize Gear	0		29-Mar-17

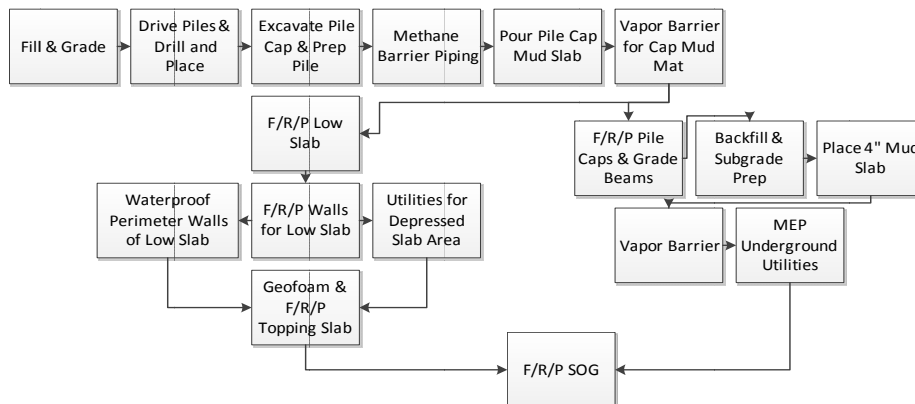
The table above shows the dates of “electrical Switchboard MS-1” and the below one shows the elevator activities for the amusement park

Activity ID	Activity Name	Original Duration	Start	Finish
Elevators		60	14-Feb-17	09-May-17
AFA4EL01	Elevators H4	30	28-Mar-17	09-May-17
AFA4EL03	Elevators H5	30	14-Feb-17	28-Mar-17

2-Construction Sequence Comments for Planning the Project

Amusement Park:

- The logic for the foundations activities should be consistent across the board to follow the sequence below:



- While reviewing the Structural steel sequences it was found that the connection between the concrete activities and Structural activities is not in sequence, Despite the fact that Structural steel activities are linked to its relative concrete activities but not in the same area. Below is an example that illustrates this point:

Activity AFA838 F/R/P SOG for area 8 is connected with Activity ASS101 Erect Columns & Beams which negatively impact the commencement of

Activity ID	Activity Name	Duration	Start	Finish	Resource
ADM-WRK-3.6.1	Amusement Park - Site Work	256	19-Feb-15 A	11-Feb-16	
ADM-WRK-3.6.2	Amusement Park - Foundations	309	01-Sep-15	04-Nov-16	
ADM-WRK-3.6.3	Amusement Park - Structure	110	01-Sep-15	11-Feb-16	AMD w/Holk
A122	Structural Slab on Grade (269,000 @ 10,000sf/wk)	214	06-Jan-16	04-Nov-16	AMD w/Holk
A120	Space Trusses, Steel Erection & Decking (5,400t @ 900t/mo)	86	06-Jan-16	05-May-15	AMD w/Holk
ADM-WRK-3.6.3.1	AP Structure Steel Sequence 1	13	06-Jan-16	22-Jan-16	AMD w/Holk
ASS101	Erect Columns & Beams	15	25-Jan-16	12-Feb-16	AMD w/Holk
ASS103	Plumb & Weld Columns & Beams	15	16-Feb-16	07-Mar-16	AMD w/Holk
ASS105	Detailing & Metal Decking	5	08-Mar-16	14-Mar-16	AMD w/Holk
ASS107	Layout & MEP Sleeves & Blockouts	10	15-Mar-16	28-Mar-16	AMD w/Holk
ASS109	Deck Rebar	8	29-Mar-16	07-Apr-16	AMD w/Holk
ASS1011	Pour Metal Decks	10	08-Apr-16	21-Apr-16	AMD w/Holk
ASS10121	Set MEP Hangers & Clips	15	15-Apr-16	05-May-16	AMD w/Holk
ASS10123	Fireproof Structural Steel	49	25-Jan-16	01-Apr-16	AMD w/Holk
ADM-WRK-3.6.3.2	AP Structural Steel Sequence 2	56	11-Feb-15	23-Apr-16	AMD w/Holk
ADM-WRK-3.6.3.3	AP Structural Steel Sequence 3	59	03-Mar-16	24-May-16	AMD w/Holk
ADM-WRK-3.6.3.4	AP Structural Steel Sequence 4	88	23-Mar-16	27-Jun-16	AMD w/Holk
ADM-WRK-3.6.3.5	AP Structural Steel Sequence 5	49	18-Apr-16	24-Jun-16	AMD w/Holk
ADM-WRK-3.6.3.6	AP Structural Steel Sequence 6	49	05-May-16	14-Jul-16	AMD w/Holk
ADM-WRK-3.6.3.7	AP Structural Steel Sequence 7	49	24-May-16	02-Aug-16	AMD w/Holk
ADM-WRK-3.6.3.8	AP Structural Steel Sequence 8				

Activity	Predecessors	Successors	Relationships	Expenses
Activity ASS101				

Activity ID	WBS	Activity ID	Activity Name	Relatio	Lag	Activity :	Driving	Finish
ADM-WRK-3	ADM-WRK-3.2.4.5.1 Structural Steel Supply & Erect	A504	AP - Steel Erection Start on Site	FS	0	Not Start	<input type="checkbox"/>	20-Oct-15
ADM-WRK-3	ADM-WRK-3.6.2.1.3 SOG	AFA138	F/R/P SOG	FS	0	Not Start	<input type="checkbox"/>	18-Nov-15
ADM-WRK-3	ADM-WRK-3.6.2.1.16 Verticle Concrete Core Walls	AFA152	Geofoam & F/R/P Topping Slab	FS	0	Not Start	<input type="checkbox"/>	15-Sep-15
ADM-WRK-3	ADM-WRK-3.6.2.8.2 SOG	AFA838	F/R/P SOG	FS	0	Not Start	<input type="checkbox"/>	23-Dec-15
ADM-WRK-3	ADM-WRK-3.5.3.5 Core Structural Steel L4 thru Roof Sequence 1	CL4A126	Plumb & Weld Columns & Beams	FS	0	Not Start	<input checked="" type="checkbox"/>	05-Jan-16

the Structural steel activities and consequently the entire activities and project. (See fig above)

- Generally, we need to clarify the area covered per each sequence and that all the structural steel activities shall be connected to its related predecessor, i.e. concrete activities and to the successor of structural activities in the subsequent area and also to the successor related to external enclosure activities.
- The Amusement Park rides activities sequences need to be checked and revised, the activities' connections need to be reviewed carefully such as:

Activity ALSC01 Erect Coaster Structure & Protect Area 1 is connected to ASS 1116 Deck & Detail Area 11

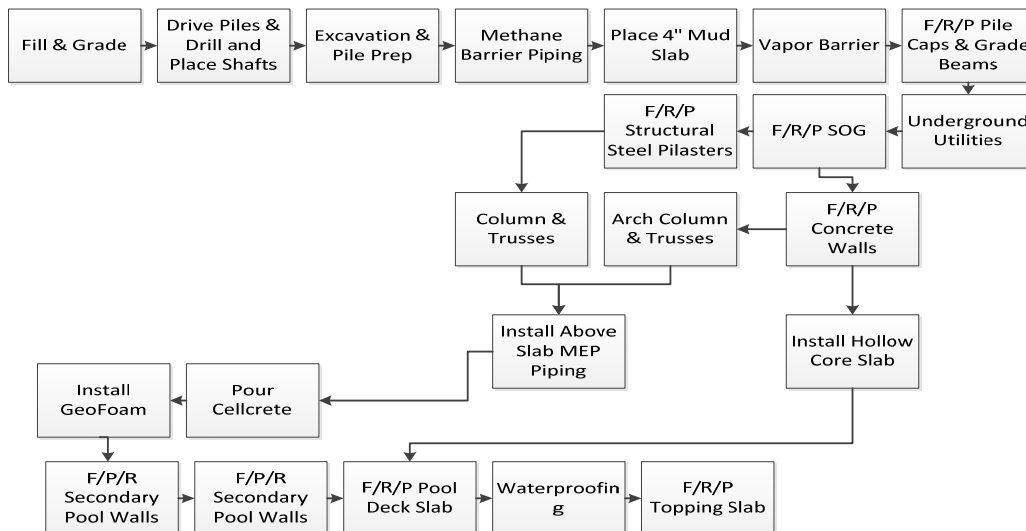
#	Activity ID	Activity Name	Original Duration	Start	Finish	Calendar	Activity % Complete	Total Float
80	AFA6D11	Flooring	15	28-Apr-17	18-May-17	AMD w/Holidays	0%	77
81	AFA6D17	Complete ME Rough-in to Equipment	5	28-Apr-17	04-May-17	AMD2 - Global	0%	90
82	ADM-WRK-3.6.5.10.3	Area 6 Finishes Complete & Punch List	30	17-Jul-17	25-Aug-17	AMD w/Holidays		38
83	ADM-WRK-3.6.6	Amusement Park - Mechanical & Electrical Rooms	0					0
84	ADM-WRK-3.6.7	Amusement Park - Rides	293	20-Jul-16	19-Sep-17			22
85	A154	Erect Ride & Coaster Structures	71	30-Nov-16	08-Mar-17	AMD2 - Global	0%	36
86	A150	Ride & Coaster Installation	140	14-Dec-16	06-Jul-17	AMD w/Holidays	0%	11
87	A152	Final Ride Testing	30	08-Aug-17	19-Sep-17	AMD w/Holidays	0%	-11
88	ADM-WRK-3.6.7.1	Launch & Spinning Coaster	142	30-Nov-16	23-Jun-17	AMD w/Holidays		19
89	ALSC07	Install Carriages	10	15-Mar-17	28-Mar-17	AMD w/Holidays	0%	61
90	ALSC09	Test Coasters	20	26-May-17	23-Jun-17	AMD w/Holidays	0%	19
91	ADM-WRK-3.6.7.1.1	Area 1 Launch & Spinning Coaster	25	30-Nov-16	09-Jan-17	AMD w/Holidays		51
92	ALSC01	Erect Coaster Structure & Protect	10	30-Nov-16	13-Dec-16	AMD w/Holidays	0%	3
93	ALSC03	Install Coaster Rails	5	14-Dec-16	20-Dec-16	AMD w/Holidays	0%	3
94	ALSC05	Electrical & Low Voltage	10	21-Dec-16	09-Jan-17	AMD w/Holidays	0%	51
95	ADM-WRK-3.6.7.1.2	Area 2 Launch & Spinning Coaster	25	21-Dec-16	30-Jan-17	AMD w/Holidays		46
96	ALSC9	Erect Coaster Structure & Protect	10	21-Dec-16	09-Jan-17	AMD w/Holidays	0%	3
97	ALSC11	Install Coaster Rails	5	10-Jan-17	16-Jan-17	AMD w/Holidays	0%	3
98	ALSC13	Electrical & Low Voltage	10	17-Jan-17	30-Jan-17	AMD w/Holidays	0%	46
99	ADM-WRK-3.6.7.1.3	Area 3 Launch & Spinning Coaster	25	17-Jan-17	21-Feb-17	AMD w/Holidays		41
100	ADM-WRK-3.6.7.1.4	Area 4 Launch & Spinning Coaster	25	07-Feb-17	14-Mar-17	AMD w/Holidays		36

Project ID	WBS	Activity ID	Activity Name	Relation	Lag	Activity 1	Driving	Finish	Activity ID	Activity Name
ADM-WRK-3	ADM-WRK-3.6.5.8 AP Area 5 Rough-in & Finishes	AFA503	High Painting	FS	0	Not Start	<input type="checkbox"/>	16-Nov-16	A154	Erect Ride & Coaster
ADM-WRK-3	ADM-WRK-3.6.3.11 AP Structural Steel Sequence 11	ASS1116	Deck & Detail	FS	42	Not Start	<input checked="" type="checkbox"/>	27-Sep-16	ALSC03	Install Coaster Rails
ADM-WRK-3	ADM-WRK-3.6.3.8 AP Structural Steel Sequence 8	ASS812	Erect Columns & Trusses	FS	0	Not Start	<input type="checkbox"/>	10-Jun-16	ALSC9	Erect Coaster Structure
									MS318	Start Erection of Ride

Using the same concept, all the logic between activities in the other buildings shall be reviewed and revised accordingly.

Water Park:

- All the Foundation works general logic shall be revised to match the sequence below:



It is also important to make sure that each activity is connected to the same activity in the subsequent area to maintain the proper flow of work for the available resources.

- While reviewing the Structural steel sequences in different areas, it was determined that the connection between the concrete activities and Structural activities is not in sequence, despite that Structural

#	Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Total Float
232	ADM-WRK-3.7.3	Water Park - Structure	403	17-Aug-15	29-Mar-17		6
233	ADM-WRK-3.7.3.4	Structure East End Outside Pool (KG - K0)	119	11-Feb-16	29-Jul-16		10
234	ADM-WRK-3.7.3.4.1	WP Structural Steel Sequence 1	44	11-Feb-16	13-Apr-16		12
235	WSS1224	Erect Columns & Beams	9	11-Feb-16	24-Feb-16	0%	-4
236	WSS1226	Plumb & Weld Columns & Beams	10	25-Feb-16	09-Mar-16	0%	12
237	WSS1228	Detailing & Metal Decking	10	08-Mar-16	21-Mar-16	0%	12
238	WSS1230	Layout & MEP Sleeves & Blockouts	4	16-Mar-16	21-Mar-16	0%	12
239	WSS1232	Deck Rebar	6	17-Mar-16	24-Mar-16	0%	12
240	WSS1234	Pour Metal Decks	4	24-Mar-16	29-Mar-16	0%	12
241	WSS1236	Set MEP Hangers & Clips	5	29-Mar-16	04-Apr-16	0%	12
242	WSS1238	Fireproof Structural Steel	10	31-Mar-16	13-Apr-16	0%	12
243	ADM-WRK-3.7.3.1.2	WP Structural Steel Sequence 2	20	25-Feb-16	23-Mar-16		10
244	WSS2224	Erect Columns & Beams	10	25-Feb-16	09-Mar-16	0%	-4
245	WSS2226	Plumb & Weld Columns & Beams	10	10-Mar-16	23-Mar-16	0%	10
246	ADM-WRK-3.7.3.1.3	WP Structural Steel Sequence 3	57	10-Mar-16	27-May-16		8
247	WSS3312	Erect Columns & Trusses	14	10-Mar-16	23-Mar-16	0%	-4
248	WSS3313	Erect Secondary Steel	20	28-Mar-16	22-Apr-16	0%	8
249	WSS3315	Plumb, Weld & Bolt Up	15	21-Apr-16	11-May-16	0%	8
250	WSS3316	Deck & Detail	12	12-May-16	27-May-16	0%	8
251	ADM-WRK-3.7.3.4.4	WP Structural Steel Sequence 4	79	09-Apr-16	29-Jul-16		2
252	ADM-WRK-3.7.3.4.5	WP Structural Steel Sequence 5 - Cabana Steel	54	03-May-16	19-Jul-16		11
253	WSS5224	Erect Columns & Beams	11	03-May-16	17-May-16	0%	-4
254	WSS5226	Plumb & Weld Columns & Beams	12	18-May-16	03-Jun-16	0%	2
255	WSS5228	Detailing & Metal Decking	12	02-Jun-16	17-Jun-16	0%	7
256	WSS5230	Layout & MEP Sleeves & Blockouts	5	14-Jun-16	20-Jun-16	0%	11

Project ID	WBS	Activity Name	Relation	Finish
ADM-WRK-3	ADM-WRK-3.7.2.4	WP Foundations Area 4	WFA4	F/RP Concrete Walls
ADM-WRK-3	ADM-WRK-3.7.3.1.2	WP Structural Steel Sequence 2	WSS2	Erect Columns & Beams

steel activities is linked to its correct concrete activities but not in the same area as shown above.

- The Relationships of the Water Park-Themed Elements activities

#	Activity ID	Activity Name	Original Duration	Start	Finish	Activity % Complete	Total Float
252	ADM-WRK-3.7.8	Water Park - Pool	25	07-Jun-17	12-Jul-17		1
253	ADM-WRK-3.7.7	Water Park - Themed Elements	346	29-Apr-16	13-Sep-17		8
254	W162	Tower & Slide Install	205	05-Oct-16	01-Aug-17	0%	-8
255	W164	Slide Testing	30	02-Aug-17	13-Sep-17	0%	-8
256	ADM-WRK-3.7.7.4	Complex 1 - Speedslides	151	05-Oct-16	15-May-17		46
257	WSC101	Erect Structure & Platforms	15	05-Oct-16	25-Oct-16	0%	57
258	WSC109	Install High Flume Sections	15	26-Oct-16	16-Nov-16	0%	57
259	WSC103	Install Flumes	50	16-Jan-17	27-Mar-17	0%	21
260	WSC105	Install Water Piping	20	28-Mar-17	24-Apr-17	0%	46
261	WSC107	Install Electrical & Data	15	25-Apr-17	15-May-17	0%	46
262	ADM-WRK-3.7.7.9	Surf Rider	51	22-Feb-17	09-Jul-17		11
263	WSC111	Set Surf Rider Equipment	5	27-Feb-17	03-Mar-17	0%	77
264	WSC113	Install Surf Rider Finishes & Equipment Startup	20	07-Jun-17	05-Jul-17	0%	11
265	ADM-WRK-3.7.7.2	Complex 2 - Pro Bowl & Plummet Complex	110	14-Sep-16	24-Feb-17		77
266	ADM-WRK-3.7.7.3	Complex 3 - Kiddie Slide Complex	233	22-Jul-16	27-Jun-17		16
267	ADM-WRK-3.7.7.4	Complex 4 - Family Rft Complex	265	23-Apr-16	16-Jun-17		23
268	ADM-WRK-3.7.7.5	Complex 5 - Water Coaster	145	03-Nov-16	09-Jun-17		23
269	WSC501	Erect Structure & Platforms	30	03-Nov-16	19-Dec-16	0%	-1
270	WSC503	Install Flumes	60	20-Dec-16	20-Mar-17	0%	-1
271	WSC505	Install Water Piping	25	21-Mar-17	24-Apr-17	0%	1
272	WSC507	Install Electrical & Data	30	25-Apr-17	06-Jun-17	0%	1
273	ADM-WRK-3.7.7.6	Water Play Structure	99	14-Mar-17	01-Aug-17		-8
274	ADM-WRK-3.7.7.7	Aqua Course	35	23-Mar-17	08-May-17		21
275	ADM-WRK-3.7.7.8	Zip Line	30	09-May-17	20-Jun-17		21
276	ADM-WRK-3.5	Core Construction	601	13-Feb-15 A	02-Jun-17		101

Project ID	WBS	Activity Name	Relation	Finish
ADM-WRK-3	ADM-WRK-3.7.3.3.5	WP Structural Steel Sequence 10	WSS11	Erect Secondary Steel
ADM-WRK-3	ADM-WRK-3.7.3.2.7	WP Structural Steel Sequence 17	WSS11	Plumb, Weld & Bolt Up

need to be reviewed carefully because most of the activities are linked to Structural activities are not in the same area as shown in the snapshot above

With the same concept all the logic between the activities in the other building shall be reviewed and revised accordingly.

3-Calendar

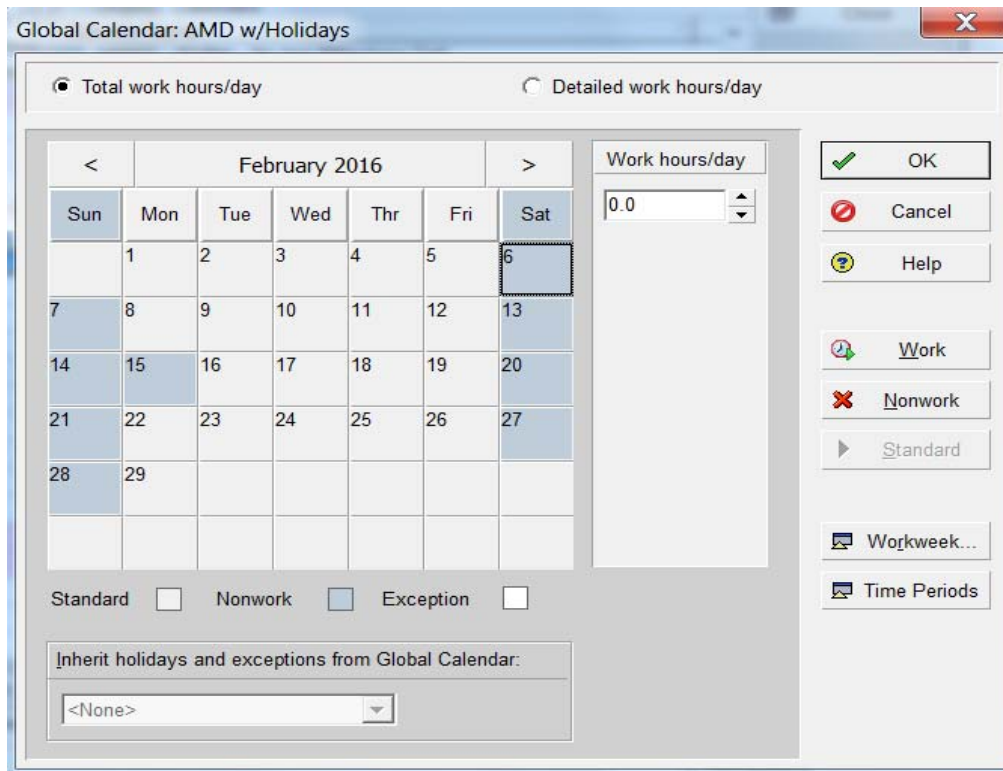
- 1- The point below in regards to the calendar issue has already been taken into consideration and rectified by PCL. HSE has checked and we are confirming that this has already been corrected on the revised schedule.

NOAA days are not included in the calendar which required by SPECS

According the below point of the contract “2.2.11 Project Schedule” , NOAA days is required to be included in the schedule

account that all Project “float” as contained therein shall be for the joint benefit of the Owner and the Construction Manager. The Construction Manager will utilize and include current NOAA data for anticipated ordinary weather delays in the East Rutherford, New Jersey area in the scheduling of the Work.

By reviewing the Calendar which are assigned to the schedule, we found that NOAA days are not as off Days



2- Assigned Calendars in the schedule

There are 3 assigned calendars for the schedule as the following

- AMD2 – Global : contains only the weekends “Saturday and Sunday” as non-working days
- AMD w/Holidays: contains the weekends and US National Holidays as non-working days
- Standard 7 day Workweek / No Holidays: it doesn't contains any off days

By reviewing the calendars and its assigned activities we get the following recommendation

- 1- The all calendars are assigned to the schedule need to be revised , the AMD2 – Global and AMD w/Holidays for all work break down structures “ Contract Administration, Procurement, Construction”
- 2- Calendar “AMD2 – Global” without US holidays is assigned for construction activities with duration less 20 days which means any activities of these may be affected by the holidays if they are in the same period below list shows these activities

Activity ID	Activity Name	Original Duration	Start	Finish	Calendar
	American Dream - Meadowlands	594	17-Jul-15 A	25-Oct-17	AMD2 - Global
	American Dream - Contract Administration	589	24-Jul-15	25-Oct-17	AMD2 - Global
	Procurement	202	17-Jul-15 A	26-Apr-16	AMD2 - Global
	Amusement Park Construction	200	2-Aug-16	8-May-17	AMD2 - Global
	Amusement Park - Ext. Enclosure	114	2-Aug-16	6-Jan-17	AMD2 - Global
	AP Roof Area 1 - Lower Flat Roof	15	2-Aug-16	22-Aug-16	AMD2 - Global
AERA595	Set Air Handlers 5 & 6	15	2-Aug-16	22-Aug-16	AMD2 - Global
	AP Roof Area 6	25	30-Sep-16	3-Nov-16	AMD2 - Global
AERA61	Set Roof Drains	5	30-Sep-16	6-Oct-16	AMD2 - Global
AERA65	Set Air Handlers 1, 2 & 3	15	14-Oct-16	3-Nov-16	AMD2 - Global
AERA67	Set Exhaust Fan 11H	10	14-Oct-16	27-Oct-16	AMD2 - Global
	AP Roof Area 7	21	4-Nov-16	2-Dec-16	AMD2 - Global
AERA703	Set Roof Drains	5	4-Nov-16	10-Nov-16	AMD2 - Global
AERA705	Set Exhaust Fan 9H	10	21-Nov-16	2-Dec-16	AMD2 - Global
	AP Roof Area 8	15	19-Dec-16	6-Jan-17	AMD2 - Global
AERA805	Set Air Handlers 4	15	19-Dec-16	6-Jan-17	AMD2 - Global
	Amusement Park - Interior RI & Finishes	198	4-Aug-16	8-May-17	AMD2 - Global

Activity ID	Activity Name	Original Duration	Start	Finish	Calendar
	AP Area 3 Rough-in & Finishes	20	4-Aug-16	31-Aug-16	AMD2 - Global
	AP Dark Room	20	4-Aug-16	31-Aug-16	AMD2 - Global
AFA6DT31	Pour Housekeeping Pads	5	4-Aug-16	10-Aug-16	AMD2 - Global
AFA6DT33	Set Mechanical Equipment	10	11-Aug-16	24-Aug-16	AMD2 - Global
AFA6DT35	Complete ME Rough-in to Equipment	5	25-Aug-16	31-Aug-16	AMD2 - Global
	AP Area 6 Rough-in & Finishes	20	11-Apr-17	8-May-17	AMD2 - Global
	AP Drop Tower Control Room & Mechanical Room	20	11-Apr-17	8-May-17	AMD2 - Global
AFA6DT13	Pour Housekeeping Pads	5	11-Apr-17	17-Apr-17	AMD2 - Global
AFA6DT15	Set Mechanical Equipment	10	18-Apr-17	1-May-17	AMD2 - Global
AFA6DT17	Complete ME Rough-in to Equipment	5	2-May-17	8-May-17	AMD2 - Global
	Amusement Park - Rides	14	23-Mar-17	11-Apr-17	AMD2 - Global
	#9 Air Race	7	23-Mar-17	31-Mar-17	AMD2 - Global
ADT03	Install Air Race	7	23-Mar-17	31-Mar-17	AMD2 - Global
	#16 Kiddie Train	7	3-Apr-17	11-Apr-17	AMD2 - Global
AFR03	Install Kiddie Train	7	3-Apr-17	11-Apr-17	AMD2 - Global
	Water Park Construction	268	2-Mar-16	10-Mar-17	AMD2 - Global
	Water Park - Structure	73	2-Mar-16	10-Jun-16	AMD2 - Global
	Structure East End Outside Pool (KG - K0)	20	8-Apr-16	5-May-16	AMD2 - Global
	WP Structural Steel Sequence 4	20	8-Apr-16	5-May-16	AMD2 - Global
WSS5240	Set Temp. Shoring Towers	20	8-Apr-16	5-May-16	AMD2 - Global
	Structure West End (KA - KG)	73	2-Mar-16	10-Jun-16	AMD2 - Global
	WP Structural Steel Sequence 7	10	2-Mar-16	15-Mar-16	AMD2 - Global
WSS7317	Deck & Detailing	10	2-Mar-16	15-Mar-16	AMD2 - Global
	WP Structural Steel Sequence 8	10	18-Mar-16	31-Mar-16	AMD2 - Global

Activity ID	Activity Name	Original Duration	Start	Finish	Calendar
					Global
WSS8317	Deck & Detailing	10	18-Mar-16	31-Mar-16	AMD2 - Global
	WP Structural Steel Sequence 9	10	14-Apr-16	27-Apr-16	AMD2 - Global
WSS917	Deck & Detailing	10	14-Apr-16	27-Apr-16	AMD2 - Global
	WP Structural Steel Sequence 10	10	30-May-16	10-Jun-16	AMD2 - Global
WSS1017	Deck & Detailing	10	30-May-16	10-Jun-16	AMD2 - Global
	Water Park - Ext. Enclosure	217	12-May-16	10-Mar-17	AMD2 - Global
W178	Precast Ext Wall Panels SE Elev (67 @ 4/day)	20	13-Feb-17	10-Mar-17	AMD2 - Global
W182	Precast Ext Wall Panels North Elev (75 @ 4/day)	20	16-Jan-17	10-Feb-17	AMD2 - Global
	WP South Elevation Exterior Envelope	15	18-Oct-16	7-Nov-16	AMD2 - Global
WESE11	Vertical Steel Gutters 74' Tall @ Column Lines K, E, F & G	15	18-Oct-16	7-Nov-16	AMD2 - Global
	WP Roof Area 1	46	14-Jun-16	16-Aug-16	AMD2 - Global
WERA102	Set Roof Drains	5	10-Aug-16	16-Aug-16	AMD2 - Global
WERA103	Set Air Handlers K1 & K3	15	14-Jun-16	4-Jul-16	AMD2 - Global
	WP Roof Area 2	20	4-Jul-16	29-Jul-16	AMD2 - Global
WERA203	Set Roof Drains	5	25-Jul-16	29-Jul-16	AMD2 - Global
WERA205	Set Air Handlers K2, K1 & K3	15	4-Jul-16	22-Jul-16	AMD2 - Global
	WP Roof Area 3	25	13-May-16	16-Jun-16	AMD2 - Global
WERA301	Set Roof Drains	5	13-May-16	19-May-16	AMD2 - Global
WERA303	Roofing	20	20-May-16	16-Jun-16	AMD2 - Global
	WP Roof Area 4	166	12-May-16	29-Dec-16	AMD2 - Global
WERA403	Set Roof Drains	5	23-Dec-16	29-Dec-16	AMD2 - Global
WERA405	Set Air Handlers K4, K2 & K5	15	12-May-16	1-Jun-16	AMD2 - Global
	Water Park - Interior RI & Finishes	92	25-Jul-16	29-Nov-16	AMD2 - Global

Activity ID	Activity Name	Original Duration	Start	Finish	Calendar
	WP Area 1 Interstitial Space - Wave Fan Room	15	9-Nov-16	29-Nov-16	AMD2 - Global
WFA1WP29	Complete Electrical Conduit RI to Equipment	15	9-Nov-16	29-Nov-16	AMD2 - Global
	WP Area 3 East Waterpark Pump Room	20	25-Jul-16	19-Aug-16	AMD2 - Global
WFA3NP07	Complete Electrical Conduit RI to Equipment	20	25-Jul-16	19-Aug-16	AMD2 - Global
	Ferris Wheel Installation	91	30-Sep-16	3-Feb-17	AMD2 - Global
FW01	Install Base Plates on Foundations	3	30-Sep-16	4-Oct-16	AMD2 - Global
FW03	Assemble Frame Legs on Ground	8	5-Oct-16	14-Oct-16	AMD2 - Global
FW05	Pull Cables through Legs on Ground	8	17-Oct-16	26-Oct-16	AMD2 - Global
FW07	Erect Frame Legs	3	27-Oct-16	31-Oct-16	AMD2 - Global
FW09	Install Axle	7	1-Nov-16	9-Nov-16	AMD2 - Global
FW15	Turn Wheel to Check Alignment	8	25-Jan-17	3-Feb-17	AMD2 - Global
	Mall Connector Construction	20	24-Jul-15	20-Aug-15	AMD2 - Global
	Mall Connector - South Connector Summary Road Work	20	24-Jul-15	20-Aug-15	AMD2 - Global
C158	Place Curbs, Pave Road & Stripping	20	24-Jul-15	20-Aug-15	AMD2 - Global
	ERC Construction	424	24-Jul-15	8-Mar-17	AMD2 - Global
	Exterior Envelope - Demolition, Paint & Vinyl	60	15-Sep-15	7-Dec-15	AMD2 - Global
	East Elevation Building	60	15-Sep-15	7-Dec-15	AMD2 - Global
D		10	24-Nov-15	7-Dec-15	AMD2 - Global
EEEDPV05	Demolition of Exterior Panels Building	10	24-Nov-15	7-Dec-15	AMD2 - Global
E		10	15-Sep-15	28-Sep-15	AMD2 - Global
EEEEPV07	Demolition of Exterior Panels	10	15-Sep-15*	28-Sep-15	AMD2 - Global
	Building A	15	27-Jul-15	14-Aug-15	AMD2 - Global
	Hub Area	15	27-Jul-15	14-Aug-15	AMD2 - Global
	Erect Scaffold	15	27-Jul-15*	14-Aug-15	AMD2 - Global

Activity ID	Activity Name	Original Duration	Start	Finish	Calendar
EBAL32127					Global
	Anchor Building B	20	9-Feb-17	8-Mar-17	AMD2 - Global
	Anchor B Interior RI & Finishes	20	9-Feb-17	8-Mar-17	AMD2 - Global
	Anchor B - Triple 5 Office Floors	20	9-Feb-17	8-Mar-17	AMD2 - Global
EABB35	Equipment Start-up & Pre-Commissioning	20	9-Feb-17	8-Mar-17	AMD2 - Global
	Building F	20	24-Jul-15	20-Aug-15	AMD2 - Global
	Building F Site Work	20	24-Jul-15	20-Aug-15	AMD2 - Global
EABA27	Remove Surcharge	20	24-Jul-15	20-Aug-15	AMD2 - Global

3- Calendar “Standard 7 day Workweek / No Holidays” is assigned for only 5 activities which are already completed, so it doesn’t important to be included in the schedule

Activity ID	Activity Name	Original Duration	Start	Finish	Calendar
C172	MetLife Stadium - Taylor Swift Concert	2	09-Jul-15 A	10-Jul-15 A	Standard 7 day Workweek / No Holidays
C184	MetLife Stadium - EDC	2	23-May-15 A	24-May-15 A	Standard 7 day Workweek / No Holidays
C186	MetLife Stadium - Gold Cup Quaterfinal	0		19-Jul-15 A	Standard 7 day Workweek / No Holidays
C188	Monster Jam	0		13-Jun-15 A	Standard 7 day Workweek / No Holidays
C190	Hot 97	0		07-Jun-15 A	Standard 7 day Workweek / No Holidays

Recommendations

- 1- NOAA days should be included in the schedule as off days in the calendar because it's the perfect way to evaluate its potential impact.
- 2- All construction activities should be assigned the following calendar "AMD w/Holidays" to clearly illustrate the impact of holidays.
- 3- Calendar "Standard 7 day Workweek / No Holidays" should be deleted because it's not used.

4-Hard Logic Relationships

To build a realistic schedule you need both the hard and preferential logic ties relations to be considered in order to distribute the manpower and build grouping sequence for the activities.

By reviewing the schedule we find that the schedule is created based on work areas being broken down as highlighted on the dwgs and reasonable movement for manpower, but in several cases it doesn't consider the hard logic relationships which are mandatory to be included in the schedule

For example

Building "f" is divided into 6 areas for foundation and only 3 sequence for structure

By tracking this line according to the above table "F/R/P Pile Caps & Grade Beams" has 411 float days with only 30 float day for the Logic Successor "Sequence 3 Erect Columns & Beams"

This relationship is hard logic should be included in the schedule to be considered in the update.

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Free Float
+	Building F Foundations Area 4	435	21-Sep-15	16-Jun-17	34	0
+	Building F Foundations Area 5	437	01-Oct-15	30-Jun-17	34	0
-	Building F Foundations Area 6	439	13-Oct-15	17-Jul-17	34	0
	FFA246 Piles	8	20-Oct-15	29-Oct-15	411	0
	FFA248 F/R/P Pile Caps & Grade Beams	14	30-Oct-15	19-Nov-15	411	0
	FFA250 Underground Utilities	14	10-Oct-16	27-Oct-16	192	0
	FFA252 Backfill	5	18-Nov-15	24-Nov-15	411	1
	FFA254 Pavement & Stripping	10	20-Jun-17	03-Jul-17	34	0
	FFA256 Signage & Parking Equipmet	10	03-Jul-17	17-Jul-17	34	52
	FFA258 Subgrade Prep	6	30-Nov-15	07-Dec-15	417	383
	FFA260 Grade	4	13-Oct-15	19-Oct-15	420	9
-	Buildng F Structure	165	30-Oct-15	29-Jun-16	332	0
+	Building F Structural Steel Sequence 1	132	30-Oct-15	12-May-16	-18	0
+	Building F Structural Steel Sequence 2	128	20-Nov-15	26-May-16	-3	0
-	Building F Structural Steel Sequence 3	137	14-Dec-15	29-Jun-16	-6	0
	MSS9272 Erect Columns & Beams	14	14-Dec-15	06-Jan-16	30	2
	MSS9274 Plumb & Weld Columns & Beams	15	11-Jan-16	29-Jan-16	28	0
	MSS9276 Detailing & Metal Decking	20	01-Feb-16	29-Feb-16	28	0
	MSS9278 Layout & MEP Sleeves & Blockouts	8	24-Feb-16	04-Mar-16	28	34
	MSS9280 Deck Rebar	15	22-Apr-16	12-May-16	-6	0
	MSS9282 Pour Metal Decks	10	11-May-16	24-May-16	-6	0
	MSS9284 Set MEP Hangers & Clips	10	25-May-16	08-Jun-16	-6	0
	MSS9286 Fireproof Structural Steel	15	09-Jun-16	29-Jun-16	-6	0
+	Steel Stairs	25	11-Jan-16	12-Feb-16	428	0

Recommendations

For every activity there should be a minimum of one predecessor and one successor given that some of them will be shared. Therefore an indicator that there is a major problem with missing logic ties on the schedule is that the fact that the schedule shows 6241 activities with only 8002 relationship which means that the number of logic ties is not enough and in the same time there is hard logic relations that are not included in the schedule

So the logic ties should be reviewed carefully to insure that all relationships are included and tied properly in the schedule.

5-Grouping Relationships Standardization.

The Schedule breaks down the work packages to several smaller packages to be able to track the progress. In order to take advantage of this concept we need to show that all these groups and areas have the same durations and relationship pattern, which helps with consistency unless the quantity of work is very different.

By reviewing the project grouping and areas it was clearly determined that the durations and relationships have changed from one group to another and from one floor to another which means that the schedule logic is not very consistent.

For example

1- Core Construction Consists of 2 Foundation areas

In the first area activity “Waterproof Perimeter Lower Slab Wall” is tied to “Backfill & Subgrade Prep” with relation make the first activity finish first and the second one starts after that

So the first activity finishes on 8/17/2015 and the second activity starts on 8/18/2015

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
▢ Core - Foundations		227	13-Feb-15 A	12-Jan-16	47
C100	Piles & Drilled Shaft Foundations (218 ea @16/day)	30	02-Mar-15 A	10-Apr-15 A	
C114	4' dia Micro Piles (12ea)	15	13-Apr-15 A	07-May-15 A	
C108	Methane Barrier & Slab on Grade	227	14-Jul-15 A	21-Sep-15	-7
C102	Pile Caps & Footings (80ea @ 2/Day)	40	16-Jul-15 A	22-Jul-15 A	
C103	CIP Foundation Walls & Shafts	9	03-Aug-15	13-Aug-15	-4
▢ Core Foundations Area 1		217	13-Feb-15 A	23-Dec-15	50
CFA123	Fill & Grade	4	13-Feb-15 A	19-Feb-15 A	
CFA115	Drive Piles & Drill and Place Shafts	20	02-Mar-15 A	03-Apr-15 A	
▢ Lower SOG		158	08-May-15 A	23-Dec-15	50
CFA119	Excavate to Lower Slab	7	08-May-15 A	01-Jun-15 A	
CFA125	Pour Mud Slab & Waterproof Elevator Pit Slab	5	02-Jun-15 A	08-Jun-15 A	
CFA129	Design Change - Demo Mud Mat for Elevator Pits	10	02-Jun-15 A	08-Jun-15 A	
CFA131	F/R/P Elevator Pits	10	09-Jun-15 A	13-Jul-15 A	
CFA121	Place 4" Mud Slab - Lower Slab	2	14-Jul-15 A	14-Jul-15 A	
CFA127	Vapor Barrier - Lower Slab	5	15-Jul-15 A	15-Jul-15 A	
CFA117	F/R/P Low SOG	8	16-Jul-15 A	31-Jul-15	-11
CFA116	F/R/P Pile Caps & Perimeter Wall	7	03-Aug-15	11-Aug-15	-11
CFA122	F/R/P Core Walls & Columns	8	03-Aug-15	12-Aug-15	-3
CFA118	Waterproof Perimeter Lower Slab Wall	4	12-Aug-15	17-Aug-15	-11
CFA120	Above Slab Utilities	10	20-Nov-15	07-Dec-15	47
CFA124	Geofoam	10	01-Dec-15	14-Dec-15	50
CFA126	F/R/P Topping Slab	7	15-Dec-15	23-Dec-15	50
▢ Upper SOG		17	18-Aug-15	10-Sep-15	-11
CFA128	Backfill & Subgrade Prep	2	18-Aug-15	19-Aug-15	-11

In the second area the relationship changed to be that the second activity start before finish the first activity by 2 days, so the first activity finishes on 8/13/2015 and the second activity starts on 8/12/2015.

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
▢ Core Foundations Area 2		222	23-Feb-15 A	12-Jan-16	47
CFA223	Fill & Grade	4	23-Feb-15 A	27-Feb-15 A	
CFA214	Drive Piles & Drill and Place Shafts	19	25-Mar-15 A	07-May-15 A	
▢ Lower SOG		152	26-May-15 A	12-Jan-16	47
CFA258	Excavate to Lower Slab	5	26-May-15 A	03-Jun-15 A	
CFA316	Pour Mud Slab & Waterproof Elevator Pit Slab	10	04-Jun-15 A	02-Jul-15 A	
CFA318	F/R/P Elevator Pit	10	04-Jun-15 A	06-Jul-15 A	
CFA262	Backfill Elevator Pit Area	5	11-Jun-15 A	30-Jun-15 A	
CFA260	Place 4" Mud Slab - Lower Slab	2	01-Jul-15 A	02-Jul-15 A	
CFA264	Vapor Barrier - Lower Slab	5	06-Jul-15 A	10-Jul-15 A	
CFA256	F/R/P Low SOG	8	13-Jul-15 A	22-Jul-15 A	
CFA240	F/R/P Pile Caps & Perimeter Wall	9	24-Jul-15 A	07-Aug-15	-7
CFA244	F/R/P Core Walls & Columns	13	27-Jul-15 A	13-Aug-15	-4
CFA268	Waterproof Perimeter Lower Slab Wall	4	10-Aug-15	13-Aug-15	-7
CFA270	Above Slab Utilities	10	08-Dec-15	21-Dec-15	47
CFA272	Geofoam	10	15-Dec-15	30-Dec-15	47
CFA274	F/R/P Topping Slab	7	04-Jan-16	12-Jan-16	47
▢ Upper SOG		28	12-Aug-15	21-Sep-15	-7
CFA246	Backfill & Subgrade Prep	3	12-Aug-15	14-Aug-15	-7

2- Building DE consists of Ground and 3 levels, by reviewing level “1” sequence, we find that activity “Flooring” start before finishing the activity “Tape, Finish & Paint Drywall” with 15days so that activity “Tape, Finish & Paint Drywall” finished on 2/16/2015 and activity “Flooring” starts on 1/26/2015.

Activity ID	Activity Name	Original Duration	Start	Finish	Tl Fl
[-] Buildings DE		735	29-Sep-14 A	30-Aug-17	
Early Works		0			
[-] Ground Level		518	29-Sep-14 A	24-Oct-16	1
[-] Level 1		718	03-Oct-14 A	28-Aug-17	
EEL132101	Safety Improvements	10	03-Oct-14 A	15-Oct-14 A	
EEL132109	Soft Demolition	10	03-Oct-14 A	14-Oct-14 A	
EEL132127	Cut & Cap Utilities	20	12-Nov-14 A	11-Dec-14 A	
EEL132129	Demo Walls & Ceilings	55	26-Jan-15 A	12-Mar-15 A	
EEL132321	Construct Temp. Exterior Wall for Dry-in	10	28-Aug-15*	11-Sep-15	2
EEL132103	Structural Demolition	40	07-Dec-15*	04-Feb-16	
EEL132105	Structural Rework	35	18-Feb-16	06-Apr-16	
EEL132144	Install OH Plumbing	35	07-Apr-16	25-May-16	
EEL132147	Install OH Mechanical	80	07-Apr-16	29-Jul-16	
EEL132150	Install OH Electrical	55	26-May-16	12-Aug-16	
EEL132153	Install OH Fire Protection	35	10-Jun-16	29-Jul-16	
EEL132113	Wall & Ceiling Framing	55	01-Aug-16	17-Oct-16	
EEL132115	MEP In-Wall Rough-in	40	04-Oct-16	01-Dec-16	
EEL132117	Hang Drywall	25	23-Nov-16	04-Jan-17	
EEL132119	Tape, Finish & Paint Drywall	35	23-Dec-16	16-Feb-17	
EEL132121	Flooring	40	26-Jan-17	23-Mar-17	

In level “2” the relationship changed to show the following “Flooring” starts before finishing the “Tape, Finish & Paint Drywall” with 5 days so that activity “Tape, Finish & Paint Drywall” finished on 2/27/2015 and activity “Flooring” starts on 1/23/2015.

Activity ID	Activity Name	Original Duration	Start	Finish
[-] Level 2		718	16-Oct-14 A	30-Aug-17
EEL232109	Soft Demolition	10	16-Oct-14 A	29-Oct-14 A
EEL232101	Safety Improvements	10	16-Oct-14 A	29-Oct-14 A
EEL232127	Cut & Cap Utilities	20	19-Nov-14 A	21-Nov-14 A
EEL232129	Demo Walls & Ceilings	35	06-Feb-15 A	12-Mar-15 A
EEL232321	Construct Temp. Exterior Wall for Dry-in	10	14-Sep-15	25-Sep-15
EEL232103	Structural Demolition	35	14-Dec-15	04-Feb-16
EEL232105	Structural Rework	35	29-Jan-16	18-Mar-16
EEL232153	Install OH Plumbing	35	14-Mar-16	29-Apr-16
EEL232156	Install OH Mechanical	80	14-Mar-16	05-Jul-16
EEL232159	Install OH Electrical	55	02-May-16	19-Jul-16
EEL232162	Install OH Fire Protection	35	16-May-16	05-Jul-16
EEL232113	Wall & Ceiling Framing	55	06-Jul-16	21-Sep-16
EEL232115	MEP In-Wall Rough-in	40	15-Sep-16	09-Nov-16
EEL232117	Hang Drywall	25	03-Nov-16	12-Dec-16
EEL232119	Tape, Finish & Paint Drywall	35	06-Dec-16	27-Jan-17
EEL232121	Flooring	45	23-Jan-17	27-Mar-17

So there is no standard methodology for tying the activities which need to be changed and reviewed carefully.

Recommendations

All groups and levels in the schedule should have the same relationships and durations if possible

6-Preconstruction Controlling Efficiency

There are lot of open ends activities which really need to be fixed such as fabrication activities which are currently open ended.

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float	Free Float
ERC Building BC		687	24-Nov-14 A	05-Sep-17	36	0
Div 02		242	24-Nov-14 A	24-Nov-15	481	0
Div 03		117	12-Oct-15	01-Apr-16	394	0
Div 05		687	05-Dec-14 A	05-Sep-17	36	0
Div 07		155	17-Jul-15 A	02-Mar-16	416	0
EPMD Roofing		155	17-Jul-15 A	02-Mar-16	416	0
MPRF27	ERC - Award	20	07-Aug-15	04-Sep-15	536	0
MPRF29	ERC - Shop Drawings Submittal	20	04-Sep-15	05-Oct-15	516	0
MPRF31	ERC - Shop Drawings Approval	20	05-Oct-15	02-Nov-15	496	0
MPRF33	ERC - Material Procurement	20	02-Nov-15	03-Dec-15	476	0
MPRF35	ERC - Fab & Deliver For First Shipment on Site	10	03-Dec-15	17-Dec-15	466	0
MPRF37	ERC - EPDM Roofing Start on Site	0	17-Dec-15		416	0
MPRF39	ERC - Continued Fab & Delivery	50	17-Dec-15	02-Mar-16	416	416
MPRF41	ERC - Bid Award	15	17-Jul-15 A	07-Aug-15	556	556

The fabrication and Bid Award activities are not tied to the Construction activities which creates an unrealistic total float values that are misleading

Activity ID	Activity Name	Original Duration	Start	Finish
+	Ferris Wheel Installation	170	30-Sep-16	25-May-17
+	Mall Connector Construction	678	09-Feb-15 A	19-Oct-17
-	ERC Construction	769	02-Sep-14 A	28-Sep-17
+	Parking Deck E	57	15-Sep-14 A	15-Jan-15 A
+	Exterior Envelope - Demolition, Paint & Vinyl	537	02-Sep-14 A	24-Oct-16
+	Building A	708	03-Sep-14 A	31-Jul-17
-	Building BC	750	29-Sep-14 A	28-Sep-17
+	Ground Level	522	29-Sep-14 A	28-Oct-16
+	Level 1	722	03-Oct-14 A	31-Aug-17
+	Level 2	712	14-Oct-14 A	21-Aug-17
+	Level 3	702	28-Oct-14 A	21-Aug-17
+	Level 4	713	18-Nov-14 A	26-Sep-17
+	Level 5	704	05-Dec-14 A	28-Sep-17
+	Skylight Hub Area	238	07-Dec-15	15-Nov-16
-	Roof	155	17-Dec-15	29-Jul-16
	ECRL01 Demo Roof	20	17-Dec-15	19-Jan-16
	ECRL03 Structural Rework	40	20-Jan-16	16-Mar-16
	ECRL05 Skylight Structure & Finish	60	10-Mar-16	02-Jun-16
	ECRL07 Complete Roof Work	45	26-May-16	29-Jul-16

By tracking the construction activities for Building BC, it was determined that it is concurrent with the Fab & Delivery activities. Assigning logic ties will change the forecasted dates for those construction activities and show more realistic start and finish dates. Without assigning those logic ties any delay on the fabrication and delivery activities will never show any impact on the Construction work which needs to be corrected.

The schedule contains 175 fab & delivery activities without successor which need to be fixed and reviewed carefully.

7-Break Down Details that affect the critical Path

- 1- Activities that have duration more than 100 days should be broken down to several activities to be able to manage and monitor their progress accurately

For example the following activities have duration more than 100 days and also they are critical

Activity ID	Activity Name	Original Duration	Start	Finish	Total Float
	Water Park Construction	273	20-Jun-16	21-Jul-17	-28

Water Park - Interior RI & Finishes		273	20-Jun-16	21-Jul-17	-28
W147	MEP Rough-Ins	240	20-Jun-16	5-Jun-17	-28
W148	Finishes, Pool Deck & Theming	200	3-Oct-16	21-Jul-17	-28

2- There a lot of lags that are not justifiable with great lags especially ones that over -150 days which obviously appear in tenant Finishing activities

All of tenant finishing activities are tied with negative lag with completion dates and they are critical according to this relationship, HSE highly recommends not to use those relationships as they should be replaced with realistic activities which once finished then the tenants can start their work

8-Contract Administration Improvement

Contractors milestones are not included in the schedule which are required by SPECS

§ 2.1.3 The Construction Manager will develop and submit to Owner, for its review and approval, within thirty (30) days after the Effective Date, a base line schedule. The base line schedule will indicate the projected completion dates for all Owner and Architect responsibilities, including, but not limited to, design and construction milestones, as well as, for delivery of the Initial GMP Proposal and GMP proposal as set forth pursuant to Section 2.2.1.1 below. Upon Owner’s approval of such proposed baseline schedule, such schedule shall then be incorporated by reference and shall otherwise govern the pre-construction phase activities prior to the Owner’s and Construction Manager entering into any GMP Amendment. The Construction Manager shall obtain the Architect’s approval for the portion of the Project schedule relating to the performance of the Architect’s services. The Project schedule shall coordinate and integrate the Construction Manager’s services, the Architect’s services, other Owner consultants’ services, and the Owner’s responsibilities and identify items that could affect the Project’s timely completion. The updated Project schedule shall include the following: submission of the Guaranteed Maximum Price proposal; components of the Work; times of commencement and completion required of each Subcontractor; ordering and delivery of products, including those that must be ordered well in advance of construction; and the occupancy requirements of the Owner.

Recommendations



The schedule should include responsibility code for potential subcontractors by grouping the work packages to separated packages for Buildings and trades as per the Project manager vision and tie these packages for start and finish milestones to be able to fulfill the contract terms and also track how the actual work match the plan.

9-Out of Sequence activities

In that stage of creating baseline we should solve all of out of sequence activities to consider them through the schedule and their impact

The following is the list of out of sequence activities which needs to be reviewed and corrected to accurately track progress otherwise delays and impacts will be misleading.

Out-of-sequence activities.....53

Activity:	A1084	Drill Rig West
Activity:	A1086	Pile Rig West
Activity:	A482	AP - Award
Activity:	A638	AP - Award
Activity:	A650	AP - Award
Activity:	A662	AP - Award
Activity:	A698	AP - Award
Activity:	A722	AP - Award
Activity:	A820	AP - Bid Period
Activity:	AFA3388	Excavate Pile Cap & Prep Pile
Activity:	AFA3394	Excavate Pile Cap & Prep Pile
Activity:	C103	CIP Foundation Walls & Shafts
Activity:	C103248	SOG Area 11 - Review & Approve Lift Drawings
Activity:	C103250	SOG Area 12 - Review & Approve Lift Drawings
Activity:	C103252	SOG Area 13 - Review & Approve Lift Drawings
Activity:	C103270	SOG Area 9 - Review & Approve Lift Drawings
Activity:	C103272	SOG Area 10 - Review & Approve Lift Drawings
Activity:	C150	Relocate Utilities
Activity:	C152	Piles & Drilled Piers
Activity:	C154	Pile Caps & Grade Beams
Activity:	C156	F/R/P Shear Walls & Shafts

Activity:	C470	Core - Award
Activity:	C482	Core - Award
Activity:	C498	Core - Shop Drawings Approval
		Install Crushed Stone 4" Layer & Catenary
Activity:	CVA2106	Reinforcement
Activity:	EAPE104	ERC Building A - Award
Activity:	EPDM28	ERC Building DE - Shop Drawings Submittal
Activity:	EPMP108	Core - Bid Period
Activity:	EPS13	ERC Building A - Scaffolding Start on Site
Activity:	M102	Pile Caps & Footings
Activity:	M104	Underground Utilities
Activity:	M106	CIP Fnd Walls & Shafts
Activity:	M470	MC - Award
Activity:	M482	MC - Award
Activity:	MFA1014	Drive Piles & Drill and Place Shafts
Activity:	MFA1028	Backfill & Subgrade Compaction
Activity:	MFA1130	Underground Utilities @ Roadway
Activity:	MFA1530	Underground Utilities @ Roadway
Activity:	MFA1646	F/R/P Foundation Walls
Activity:	MFA1648	Backfill & Subgrade Compaction @ Roadway
Activity:	MFA1670	Backfill & Subgrade Compaction
Activity:	MFA930	Underground Utilities @ Roadway
Activity:	MPDH01	MC - Award
Activity:	MPEE0104	MC - Award
Activity:	MPGG01	MC - Award
Activity:	MPSL01	MC - Award
Activity:	W156	KF1 Pier Caps @ 4' Dia Shafts (12ea @ 10d - 2 Crews)
Activity:	W470	WP - Award
Activity:	W482	WP - Award
Activity:	W650	WP - Award
Activity:	W662	WP - Award
Activity:	W674	WP - Award
Activity:	W770	WP - Award

10-Water Park Foundation Specific Comments:

Kindly find below additional comments that need to be revised in the area of “ADM-WRK-2.7.2 Water Park Foundation” :

1. All the Fill & Grade Activities shall be connected to all Drive Piles & Drill. Place shafts activities should be tied to them as a predecessor.
2. In regards to the Pour Pile Cap Mud Slab activity, the drawings need to be checked to find out whether or not there are piles in all those areas. Otherwise, Any activities related to caps in the area shall be deleted or renamed.
3. The relationship between F/R/P Concrete wall and Activity WFA403 High Painting shall be checked, consequently it will be implemented for all the foundation areas.

4. Please check the relationship between F/R/P Topping Slab and Activities WFA305 7 WSC403.
5. For ADM-WRK-2.7.2.14 Foundation Area 14
 - a. Activity WFA1476 Pour Pile Cap Mud Slab shall be connected to Activity WFA1480 Excavation Pile Cap & Prep Pile as successor activity with relation type of FS.
 - b. Activity WFA1478 Vapor Barrier for Cap Mud Slab should be connected to WFA147 F/R/P Pile Caps & Grade Beams as predecessor activity with relation type of FS.
6. For ADM-WRK-2.7.2.13 Foundation Area13
 - a. Activity WSS7312 Columns and Trusses should be connected to Activity WFA13450 F/R/P Structural Pilasters as successor with relation type of FS. This to be implemented for all the other areas.
7. For ADM-WRK-2.7.2.12 Foundation Area12
 - a. Activity WSS7312 Columns and Trusses should be connected with Activity WFA12440 F/R/P Structural Pilasters as successor with relation type of FS.
 - b. The relationship between Activity WFA111 F/R/P SOG and Activity WSS8312 Columns and Trusses need to be deleted.
 - c. The relationship between Activity WFA111 F/R/P Concrete walls & Activity WFA 11430 F/R/P Structural Pilasters with Activity WSS1717 Decking & Detailing should be deleted. This need to be implemented for all the work in the foundation areas.

11-Conclusion:

At this point, the evaluation of the actual schedule Primavera file after taking into consideration ten different metrics including criteria that includes but is not limited to assigning proper logic ties, consistency, open ends and out of sequence work, the schedule is only 63% accurate and can't be used to make educated decisions until all of the issue above are revised and reviewed thoroughly. HSE will be more than happy to assist if needed.