

Project Modeling Kickoff Meeting Agenda

1. Attendees

NAME	COMPANY/ROLE
	Preconstruction Lead
	Project Superintendent
	Self-Perform Superintendent
	Operations Lead
	Project Engineer (if identified)
	VDC Manager?

2. Purpose

To determine 1) the amount of modeling that can be expected and 2) what will be budgeted for this project, both being decided by the project team. The discussion should include the complexity and risks of the project that can be better addressed through the use of modeling. Make a plan then work the plan.

3. Agenda Items

- a. **Introductions**
- b. **Project Model:** Will we receive one from the design team?
 - i. If yes, what can we expect the model will include (architectural, structural, civil)?
 - ii. What level of completeness are we expecting?
- c. **Self-Perform Use of Model:** Accurate and complete information in the hands of our crews can directly influence the planning, quality and time required to put our scope work in place.
 - i. What is the extent of our self-perform work on this project?
 - ii. Are lift drawings desired or required for our field crews?
 - iii. What type and use of building is it? In a 1 or 2-story school that has a masonry structure, detailing for the roof or detailing of stair connections could be put in the mason's scope. In a multi-story building with



curtainwall cladding, there will be many embeds/connection points to coordinate whether it is a concrete or steel structure.

d. General Project Use of Model:

- i. Will the model be used for generating point layouts for use by the layout and survey crews?
- ii. Is this a renovation where laser scanning after demo would be prudent?
- iii. Is there any pre-fab consideration in the building plan for the project?
- iv. Is there a shoring component for this project where modeling will benefit coordination with the surrounding underground utilities?
- v. Are there logistical concerns such as overhead power lines, in-ground vaults, light poles, neighboring facilities or buildings that may require an as-built effort to support better coordination?
- vi. Are there areas of complexity within the project to address? – Roof with a lot of mechanical curbs, penetrations, davits, window washing equipment, etc.
- vii. Are there areas of increased focus such as a lobby and reception, central stair/balustrade, ballrooms, elevator lobbies, etc., that will have a much higher level of finish and coordination necessary?
- viii. Are there rooms or areas that will include a concentration of equipment? Operating rooms, commercial kitchens, manufacturing facilities, laboratories, service and repair facilities, a performance stage, sports facilities, laundry facilities, etc.
- ix. What will the relationship/responsibilities be between our modeling manager and the M & E Coordinator who has the scope of clash detection and avoidance?

e. Client Expectations for model:

- i. Is there an owner expectation of utilizing BIM for future operations and maintenance?
- ii. Is the client one who focuses on technology and would like to see technology used in presentations or communicating the phasing and sequencing of a project?

f. Budget:

- i. Has a budget been discussed for VDC?
- ii. *Action: VDC Manager to develop estimate for the project based on scoping discussion above, including breakdown by scope item with hours.*
- iii. When complete the scope and budget for detailing should be retained in the project records for reference later when needed.

g. Lift Drawing Review:

- i. Time will be required of all the affected parties to review the documents produced from the model for use by the field. The extent of those reviews is directly relational to the accuracy of the information contained in those documents and should be considered in how much scope is assigned to each individual on the project staff.

Design Team VDC Meeting Agenda

1. Attendees

NAME	COMPANY/ROLE
	Skanska VDC Representative, Meeting Leader
	Skanska PE
	Skanska PM
	Skanska Precon Lead
	Design Team Lead Architect
	Design Team Model Manager

2. Purpose

To facilitate preliminary conversations between the design team and Skanska surrounding design and construction model standards, and to discuss how early collaboration will positively affect downstream VDC processes.

3. Agenda Items

- a. Design software and version
- b. File origin / project base point / model elevation
- c. Model mapping
- d. Consultant models
- e. Frequency of uploading design files
- f. Method of file sharing
- g. Design CD Model LOD
- h. Units and tolerances
- i. Design delivery schedule
- j. Post CD modeling plan
- k. Design team involvement in Trade Coordination meetings
- l. Are walls designated interior / exterior
- m. Design entities that are modeled to true representation



4. GC Produced Shop Drawings (Lift Drawings)

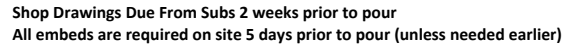
- a. The following is a list of potential GC, VDC deliverables that may be applicable to the project. Team to determine which, if any VDC deliverables will be submitted to the Architect for review. **These VDC deliverables are being provided to the design team for informational purposes only, and are not part of the construction contract.**

Deliverable	Yes	No
Foundation Detail Drawings	<input type="checkbox"/>	<input type="checkbox"/>
Deck Placement Drawings	<input type="checkbox"/>	<input type="checkbox"/>
Embed Placement Drawings	<input type="checkbox"/>	<input type="checkbox"/>
Concrete Lift Drawings	<input type="checkbox"/>	<input type="checkbox"/>
Masonry Detail Drawings	<input type="checkbox"/>	<input type="checkbox"/>
MEP Coordination Drawings	<input type="checkbox"/>	<input type="checkbox"/>

5. Project Contacts

Name	Role	Email	Phone
	Skanska VDC		
	Skanska Project Engineer		

Updated:
Project Name:
Embed Champion Field:
Embed Champion Office:

[illegible]

Internal Lift Drawing Kickoff Meeting Agenda

1. Stop the line:

- a. Are the Superintendent, PM/ PE, VDC, and General Foreman present?
- b. Have the Pour Zones been finalized?
- c. Has a master construction schedule been created, identifying pour zones?

2. Roll call:

Name		

3. Review Project Zoning Plan:

4. Project Roles:

- a. VDC manager will be responsible for creating and updating the lift drawing log.
- b. Establish a QA/QC person, discuss role and expectations.
- c. Establish Field Embed "Champion," This person will be responsible for receipt and confirmation of embeds on site.
- d. Establish Office Embed "Champion." This person will be responsible to update the Embed Tracking Log and pursue information from other PE's to populate that log.



5. Establish Anticipated Lift Drawing Delivery Schedule

- a. Complete Lift Drawing Schedule (reference template on Sharepoint site).
- b. Review the Bluebeam Studio team review process and identify necessary participants (Superintendent, PE's, PM's, General Foreman, Subcontractors)
- c. Discuss roles and expectations of reviewers: all project team members review and sign-off. 100% participation required.
- d. Discuss congested zones and review schedule extension risks and opportunities.
- e. Review Lift Drawing Standards (reference document on Sharepoint site).

6. Project Schedule

- a. Confirm project buyout dates, shop drawings/submittal dates, material delivery dates, embed install date and pour dates.
 - i. Review against procurement and Lift Drawing Schedule.

7. Review Subcontract Exhibit "PS-# Embed Supply Requirements"

- a. Exhibit is a template, edit as a team to make project specific

8. Project Embed Types Overview:

- a. Discuss the project structure type(s)
- b. Identify all types of embeds, sleeves, anchor bolts, and other items embedded in concrete supplied by both Skanska and subcontractors/ vendors
- c. Assign responsibility for completing and tracking the Embed Tracking Spreadsheet.

Scope Type	Embed Type	Sub/ Vendor <i>(if known)</i>

9. Embed Delivery Plan

- a. Establish embed delivery method
 1. Palletized by floor, by zone?
 2. Frequency of delivery: just-in-time (1-week, 2-weeks,...) before pour, all at one time?
 3. Any special packing requirements which need to be added to the PS-# Embed Supply Exhibit (offloading by a crane instead of a forklift, for example)
 4. Determine on-site embed storage or staging location.

Embed Colors to be displayed on Lift Drawings

• Curtainwall	Cyan
• Precast	Green
• Structural Steel	Red
• Elevators	Gray
• Mech/Elec/Fire/Others	Yellow
• Stairs	Orange
• Fall Protection	Dark Green

- Utilizing the zones created for the specific job, Lift drawings will be broken up per pour zone.
- The amount of embeds shown on a drawing (ie Curtainwall and Precast on the same or separate drawings) to be determined by the VDC Specialist and Field.
- Each drawing specific to embeds will include a schedule showing the type and amount of embeds on the specific pour zone Lift Drawing.
- Dimensional annotations to be pulled to a grid line, or a layout offset coordinated with VDC/Field.
- Top of concrete element pour need to be noted on the drawings. Depending on construction method, this can be modified as necessary.
- VDC and Field must be communicating on the latest drawings available. Each drawing update will include a date and time stamp on it. VDC will communicate with Field the changes that occurred in any update. Field Supervision to ensure the Carpenters have the latest drawings.
- VDC will manage the Lift Drawing file management. The folder will be in a designated location and will always contain the most up to date files. Any files that are replaced with a newer version will be moved to an Archive folder set up in a different location.
- VDC and Field to determine what details are shown on the Lift Drawings. ie – What is the connection onto the embed? Is there a tolerance? Determine the amount of detail to be shown per zone.
- All sloped concrete should have top and bottom elevations. No percent slopes should be specified.
- Other items of discussion
 - Architectural reveals
 - Blockouts and openings
 - Trench drains
 - Compound slopes

Subcontractor Pre-Detailing Meeting Agenda

1. Attendees

NAME	COMPANY/ROLE
	Skanska VDC Representative, Meeting Leader

2. Purpose

To communicate detailing and file transfer standards to our subcontractors and explain the lift drawing process.

3. Agenda Items

- a. **Introductions**
- b. **Project Roles and Responsibilities**
- c. **Contact List**
- d. **BIM Execution Plan:** Skanska to share their BEP with subcontractors
- e. **Model Mapping:** Skanska to explain the current structure of the reference models
- f. **Box file transfer:** Skanska to present the Box folder structure and file sharing / syncing process.
- g. **BIM 360 Glue:** If Glue is to be leveraged, Skanska to present to Subcontractor and gather email addresses requiring access.
- h. **Reference Files:** Skanska generated geo-referenced files
- i. **File compatibility:** What software(s) will be used by the subcontractor? All software needs to be compatible with Revit and Navisworks. All object enablers that are needed will be shared.
- j. **Schedule:** Discussion of detailing schedule and deliverable dates for subcontractor shop drawings / digital files.



- k. **Skanska lift drawings:** Review Submittal Schedule and Lift Drawing Schedule.
- l. **Lift drawings review responsibilities:** Subcontractor will be responsible for reviewing their scopes in Skanska lift drawings
- m. **Embeds:** Each embed labelled by type with color, each sheet includes embed type and quantity schedule.
- n. **Design Deliverable Dates:** Review Lift Drawing Schedule
- o. **Design Team Software**
- p. **True Representation:** All elements must be modeled to scale and shall be a true representation of what is to be installed in the field in all three dimensions, and shall be correct and coordinated with all disciplines
- q. **File Origin:** File origin will be defined and be used throughout the detailing phase. All subcontractor/sub consultant models shall have a common file origin and be created according to correct elevations.
- r. **Coordinate System:**
- s. **Units:** Working units, unless otherwise specified, shall be in feet and inches. Tolerances to be set at 1/16".
- t. **Project specific elements:** Discuss unique features of the project that require modeling

4. Project Contacts

Name	Role	Email	Phone
	Skanska VDC	First.last@skanska.com	###-###-####
	Skanska Project Engineer	First.last@skanska.com	###-###-####
	Subcontractor PM		
	Subcontractor Detailer		

Design Model Review Checklist

1.1 SUMMARY

- A. Purpose:** To ensure designer model(s) received by Skanska USA Inc. are complete and meet the standards set forth in the preliminary design team meeting.

ITEM	YES	NO	NA
ARCHITECTURE			
Design Software: Model has been delivered in the agreed upon version	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
True Representation: All elements are modeled to scale and are a true representation of what is to be installed in the field in all three dimensions, and are correct and coordinated with all disciplines	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
File Origin: File origin is defined. All subcontractor/sub consultant models have a common file origin and are created according to correct elevations.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Object Parameters / Attributes: Intelligence/information is associated with geometric objects.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Units: Specified working units are followed. Dimensions set to 1/8".	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross square footage of floor plate: Area (SF) is measured outside-to-outside of walls and no take-outs for stairwells, shafts, etc. Separate Area Plan sheets, by level, are developed along with an Area Plan schedule. Each area plan sheet contains the area plan view for each level with all areas being shaded and labeled that constitute the quantified gross building area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Room Areas and Perimeters: Measured inside-of-wall to inside-of-wall. Area (SF) quantity is scheduled, along with perimeter of each room area.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interior Partitions: Interior partitions are quantified by length (LF), by type and by level. Multi-level partitions are avoided unless they are used in multi-story spaces. Wall height is derived from wall types as defined by the designer. Gross square footage is determined by calculated linear length (from Revit) by wall height as shown in wall schedule or wall type details. Revit wall type name are defined in a way that easily identifies the wall type.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exterior Wall Area: Each exterior wall element is modeled separately to allow an area (SF) quantity to be scheduled including parapet, mechanical penthouse, and any other exterior cladding elements	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Design Model Review Checklist

Curtain wall: Type names are appropriate to the material type.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Exterior wall modelling: New wall objects are created where materials change (e.g. stone or brick transitions to glazing or storefront).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Parapets: Able to establish both a length (LF) quantity and parapet height (LF)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Interior Glazing: Area (SF) scheduled by type.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Doors: All doors are modeled and distinguished by type.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Roof area: Area (SF) scheduled by roof construction/roof type.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ceilings: Area (SF) scheduled by type	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

STRUCTURAL

Structural Framing: All structural framing is modelled accurately in the structural Revit model.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structural Decks: All concrete decks are modelled completely and accurately in the structural Revit model. Deck openings are identified.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Structural Footings: All footings are modelled accurately and mark numbers are included in parameters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Concrete Columns: All columns are modelled accurately and broken at pour joints. Column mark numbers are included in parameters	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Lift Drawing Review Guidelines

The following individuals are required to participate in this lift drawing review:

1. Project Superintendent / Assistant Superintendent
2. General Foreman Responsible for the Scope
3. All Project Engineers
4. Self Perform Manager

In addition to ensuring that the lift drawing is in conformance with the contract documents, the following items need to be reviewed:

1. The lift drawing is broken up by zone per the project lift drawing schedule.
2. Embed color assignments are correct.
3. All embeds are dimensioned to the centerline unless predetermined otherwise
4. All embeds are dimensioned back to gridlines and dimension strings closed.
5. Embed mark number nomenclature match zone breakdown
6. Top of slab/bottom of slab elevations are identified
7. If possible, off-grid dimensions to embeds should be less than 30'
8. Embed count for the zone is identified on lift drawing and is accurate.
9. Color legend is on lift drawing.
10. Where complex areas exist, additional details and descriptions have been provided.
11. Review in conjunction with other systems and structural components.
12. North arrows are associated with plan views.
13. Mounting method is identified and correct.
14. Embed finishes and galvanizing extents are correct.
15. Review for congestion with other trades and structure.



Typical Embedded Item Cheat Sheet

- Embeds (Precast, curtain wall, storefront, mechanical equipment, canopies, elevators, spreader beams, structural steel, anchor bolts, doors, tie-off points, window washing anchors, stairs, handrails, bollards, davits, signage, partition supports, counter top supports)
- PT heads
- Stud rails
- Block-outs (structural, MEP, placement boom, slick line, stressing, delay strips)
- Rebar, post-tensioning, mesh, form savers, rebar dowels, smooth dowels, dowel baskets
- Sleeves (vertical and horizontal)

Embed Tracking Spreadsheet

Updated: 10/30/2017

Project Name: _____

Embed Champion Field: _____

Embed Champion Office: _____

SKANSKA

LIFT DRAWING NUMBER	SUBCONTRACTOR	EMBED MARKING	QTY	DATE REQD	DATE RCVD	STAGE LOCATION	NOTES
	Mechanical	M12	2	xxxx	xxxx	Yard	
	Plumbing	P02	4				
	Structural Steel	S13	5				
	Fire	F14	3				
	Electrical	E01	2				
	Curtain Wall	C04	3				
	Elevator	EL05	4				
	Precast	PC10	5				
	Stairs	ST12	6				
	Fall Protection	FP09	7				
	Misc	MI14	8				



Pour Card #: _____

Project #:	_____	Date:	_____
Prepared By:	_____		_____
Copies To:	_____		_____

Description & Location of Placement: _____

Method of Placement: _____

Design Mix # :	_____	Scheduled Start:	_____
Required Strength:	_____	Actual Start:	_____
Estimated Quantity:	_____	Actual Finish:	_____
Actual Quantity:	_____	Location:	_____

Tasks Requiring Check-off / Sign-off:

Pour Card Reviewed Against Lift Drawing: _____	Precast Embeds: _____
Lift Drawing Number / Version: _____	Structural Steel Embeds: _____
Roughen Surface Prep: _____	Curtain Wall Embeds: _____
Roughen Surface Prep: _____	Fall Protection Embeds: _____
Layout Skanska: _____	Mechanical Embeds: _____
Grid / Grade: _____	Electrical Embeds: _____
Form Grade Skanska: _____	Fire Protection Embeds: _____
Reinforcing / Column Dowels: _____	Elevator Embeds: _____
Rebar / Clearance: _____	Swing Stage Embeds: _____
PT Anchors / Sleeves: _____	Stair Embeds: _____
Waterproofing / Waterstop: _____	Erection Aid Embeds: _____
Beam / Wall Keyways: _____	Formsavers: _____
Expansion Joint: _____	Blockouts: _____
Isolators: _____	Formsavers: _____
Weld Inspections: _____	
Form or Deck Clean: _____	Final Lift Drawing Version _____

Release for Placement:

Subcontractors:	Skanska / 3rd Party:
Mechanical: _____	Skanska Superintendent: _____
Plumbing: _____	Skanska QAQC: _____
Fire Sprinkler: _____	Skanska Embed "Champion" (office): _____
Electrical: _____	Skanska Embed "Champion" (field): _____
Reinforcing / PT: _____	3rd Party Inspector: _____
	Geotech Engineer: _____
Remarks: _____	