Advantages of Traditional Lump Sum
- Client can select the most appropriate design team, taking advantage of the designers' experience / expertise in addition to capacity.
- Competitive tender for construction
- Contract price established prior to construction.
- Contractor takes on the construction risk (time and cost)
- Responsibility for subcontractor performance remains with the Contractor.
- Quality risk should be reduced by completion of full documentation prior to tendering the works (including coordination).
- The client maintains the maximum control over all phases of the design and is able to ensure their requirements are incorporated into the design (during the design stage) – should provide desired quality standards and functional requirements.

Disadvantages of Traditional Lump Sum
- Need to complete design before tender and site commencement
- Client outlaying consultant fees prior to any construction
- Client is reliant on the consultant's skills and knowledge of construction.
- Client take on design risk; Items missing on the drawings are the basis of claims for extras and possible disputes.
- All subcontractor prices must be obtained at the time of tender. This process takes time – may be months prior to when the work is actually going to take place (i.e. that particular trade on site). The prices obtained may not reflect best value for money.
- The selected contractor has no direct experience with the consultant team and therefore is without an appreciation of the design philosophy.
- Any changes to the design (after award) invariably result in variations (extra cost and often extra time)
- The client, in placing all responsibility with the contractor has no direct control over any subcontractor. Payments are made to the contractor. Should problems arise, the client has no means of redirecting payments to subcontractors.
- Client can lack motivation to make decisions as firmly or as early as they possibly should do – leading to changes which are costing after agreed the lump sum.
- Designers may not pay enough attention to saving and controlling cost (through less experience with the building process).... Tenders too high....
- If architect's fees/ scope are too narrow, documentation quality may suffer.

What type of projects are typically Tradition Lump Sum?
- Small projects – relatively simple, can document up front – e.g. residential projects (new, alterations and additions), primary and secondary schools, often where <$10m.
- Government projects (capital works) e.g. Department of Health (Victoria), Department of Human Services, University projects, Local Government.
- Projects where design is an important factor in the project (e.g. Public / Civic Buildings).

<u>Construction Manager</u>
Key features
- Traditional builder is replaced by a construction manager (typically an organisation).
- Client directly engages the design team who develops full design and contract documentation in documentation group packages format.
- The Client is responsible for the performance inherent in the design and the cost consequences of documentation errors.
- The Client engages / contracts with each of the trade contractors, although the CM manages and administers the contracts.
- The CM tenders to manage the process of tendering the trade packages, then coordinating construction.
- The CM serves as a consultant to advise the nature and make-up of the trade packages, and manages the cost plan, construction method and program.

Appropriate when
- When client wishes to start construction early of some bits with design of later packages still being done.
- Can defer some design decisions
- Client needs control over the construction works – through the CM. e.g. hospitals
- Complex projects where not possible to design some elements without starting parts of the construction

- Client is experience and knowledgeable to be 'hands on

Disadvantages
- CM does not take on any risk (cost or design).'No clear single point of responsibility.
- Can have interface issues (between packages / trades)
- Do not know the end cost.... Cost is revealed package by package.
- Client is taking on performance risk of subbies
- Client needs to have the time to be hand on (often more work than the expect).

Managing Contractor (CM)

Key features
- The Client engages design team to prepare design up to a point, say, Schematic Design. Again 'packages'
- The MC tenders for preliminaries and profit to manage the entire process of construction, similar to CM. The variation to the CM is that the MC manages the finalisation of the remaining design documentation and the consultant contracts are usually, although not always novated to the MC.
- The Client warrants that the schematic design / design development report satisfies the functional performance requirements.
- The MC generally warrants to complete documentation and construct, within an agreed program (time) and for a cost agreed at the end of schematic design / design development.
- The MC contract may include for sharing of any cost under-runs, and/or bonus for early completion.
- MC does not do any of the work – they engage subcontractors.
- MC is responsible for preliminaries (i.e. site sheds, security, insurances, managing the work, monitoring, reporting, supervision).
- MC does the tendering of the trade packages
- MC is responsible for the quality of design and construction and making sure the building is fit for purpose

Appropriate when
- Early input from contractor is beneficial
- When industry innovation during design is desirable e.g. specialist subcontractors and architect work together
- Complex or high risk projects with scope uncertainties, risks or technologies (needing interface of contractors and designers).

Design and Construct

Key features
- The Client prepares a brief and broad costing for the required facilities.
- Client enter a single contract with a construction company
- Typically tender for construction company who provides a lump sum to complete the documentation and construct the building, warranting that it meets the requirements of the Brief.
- The Contractor then completes the design and documentation to meet the requirements of the brief. Contractor engages their preferred design team.
- Contactor constructs and commissions the building.
- The Client usually engages advisers to review the design at nominated hold points and inspects the works and monitors quality during construction.

Appropriate when
- Early commencement on site is required. Can do design and construction in parallel.
- The Client can clearly explain what they want – in the format of a brief.
- The client needs to know total cost up front – design and construction.
- Client control over design quality is not a priority, and or the design requirements can be clearly specified and understood.
- Basic types of buildings and infrastructure (car parks... lengths of road...however moved into apartments etc)

Advantages
- Speed
- Less exposure to risk (design errors, omissions etc are the contractors responsibility)
- Can save month from overlapping design and construction
- The client needs to know total cost up front – design and construction.
- Contractor can influence the design and buildability
- Contractor takes responsibility for obtaining authority approvals (planning permits)

Disadvantages
- Quality can suffer – relies on defining it well in the documents that are used for the 'tender'
- Detailing is left to subcontractors while on site
- Cost cutting by contractor and subcontractors often results
- Client often requires audit design consultants to ensure compliance with the brief
- Indirect relationship between the client and design team
- Contractor decides which architect etc. to appoint.
- Less opportunity for stakeholder input

*Melbourne Apartments - cladding
- Star Architect Variant
- Client use big architect as a marketing (high quality images along with the project brief)
- Project is tendered for remaining design and construction - guarantee max. Price
- Successful contractor completes the design with a new (inferior) architect (less design and technical expertise, reduced fees)
- Construction precedes
- Potentially inferior product of design quality
- Potential mismatch with ultimate end buyer *apartments

<u>Design, Novate, and Construct</u>
Key features
- Novation is the transfer of the architect's contract with the client to the builder / head contractor.
- At point of novation the builder takes responsibility for completion of design.
- Novation occurs at during the design period – might be at end of schematic design or later.
- The Contractor tenders to engage the Client's design team (through novation), then take design development to full documentation and construct to the documentation for a fixed price and programme.
- The fitness for purpose risk is transferred to the Contractor. The Client's advisors reviews the design at nominated hold points and inspects the works and monitors quality during construction.

<u>Design, Document, Novate, and Construct</u>
Key features
- The Client's design team prepares a brief, schematic design, design development and Cost Plan C for the required facilities.
- The Contractor tenders to engage the Client's design team (through novation), then take design development to full documentation and construct to the documentation for a fixed price and programme.
- The fitness for purpose risk is transferred to the Contractor.
- University of Melbourne uses this model (e.g. MSD)
- Introduces an element of design to the contractor's role however retain the design team client side until almost 100% documented.

<u>Novation</u>
Key features
- Client appoints design consultants to prepare the design up to agree point (90% design completion)
- Project is tendered
- Successful contractor takes over the design team - novation
- Contractor takes responsibility for finishing the design with the design team
- Construction precedes
- Handover to client when building completed

Advantages
- In theory, can bring some of the builder smarts into finalising the construction documentation
- Retain the same design consultants (architect throughout the project) which should maintain design standards
- Adds design as a responsibility to the contractor - so it is not just a construction only contract
- Can go to tender slightly earlier

Disadvantages
- No guarantee the novated consultants will be able to establish a good working relationship with the contractor (force marriage) can result in complex litigious problems
- Consultants working to the contractor - client is removed from the design process
- Architect may be crunched on fees by contractor or the contractor and/or the design may load their prices to cover the risk of entering into a contract with an unknown entity
- Architect unlikely to be the role of superintendent (at best an observation role)
- Can result in substandard quality and outcomes, including ongoing defects
- Erosion of design

Can result in substandard outcomes
- Substitution of material is more likely under a novated contract *Spencer Street Apartments - cladding
- Architects conducts few site inspections - often only the statutory required inspections occur (issue covering up poor workmanship - water issues)

How to decide which procurement to use
- Client's needs and priorities
- Level of complexity of the project (size, scope, technology, etc.)
- Community or stakeholder needs and expectations
- Inherent risk of the project
- Risk tolerance of the client and other parties
- The ability of the all parties to define and price the scope and quality of the project requirements
- Market conditions
- Industry trends in procurement

NOTES:

instruction > discussion > review > quote > proceed/ not

Contract Price Adjustment - SW11 - H4, J4, K4
L1- time with cost
L2 - time without cost - adjustment due to weather/ covid19

Quotation and discussion first - invoice and variation comes after

Specifications are written description of a technical nature for material, equipment standard and quality, and are used by architects to communicate the project requirements to the contractor (RAIA Practice Note - AN04.02.01)

Drawings, specifications, and schedule have to work together
Specifications:
- Communicate design decision
- Link drawing to contract
- Complement drawings
- Define quality, not quantity

Roles of Specifications:
- Written record of design decisions and statutory compliance
- A document demonstrating compliance with statutory requirements
- Contract document
- Estimating document
- Tendering document
- A quality control tool
- Project management tool
- On-site working document
- A dispute settlement document

4 Ways of specifying:
- Proprietary: the specification of an item in a construction project by naming manufacturer, supplier, installer, trade name, brand name, catalogue, or reference number.
    Substitution: happens when product is unavailable/ a better solution identified
    - Identified proprietary items: identification of a proprietary item does not necessarily imply exclusive preference for the identified item, but indicates the necessary properties of the item
    - Alternatives: if alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives.

    Products need to be suitable for the location
    * Parliament House - architects failed to specify moth proofed wooden fabric, fabric to be milled in Switzerland. No one vetted the specification before tender. Architects bore rectification costs of $400,000. Because architect didn't put it into the specification

- Reference: where an identifiable printed and published document is incorporated by reference to it. These may be Australian Standards or other industry references.
    Lock and latch classification
    Rating systems: AS 4145.1 Section 4.
    Performance requirements: AS 4145.2 Section3

    Australian Standards
    Materials and products are to comply to the AS and reference documents as documented in the construction specification.
    Conformance certificates should be issued by a Conformance Assessment Body recognised by JAS-ANS (Joint Accreditation System of Australia and New Zealand)
    Testing should be conducted by a laboratory accredited by NATA (National Association of Testing Authorities) for that test