

CPCCBC4053

Apply building codes and standards to the construction process for Class 2 to 9 Type C buildings

Assessment 3 of 4

Project 1

Assessor Guide



Assessment Instructions

Task overview

This assessment task requires you to complete **nine (9) tasks** in the context of a fictitious workplace, UP Building and Construction Pty Ltd.

This Project consists of **nine (9)** tasks as it follows:

- Task 1: Classification and type of building
- Task 2: Structure analysis
- Task 3: Fire Safety analysis
- Task 4: Access and egress
- Task 5: Services and equipment
- Task 6: Health and amenity
- Task 7: Ancillary provisions
- Task 8: Energy efficiency
- Task 9: Communication with stakeholders.

Read the scenario provided, review the plan included, then complete the project tasks by typing your response in the spaces provided.

To complete this assessment, you will need to access NCC 2019 Volume One and Two that is explained in the learning and is available upon free registration on <u>ABCB's website</u>. Information regarding site classification can be found in NCC Volume Two.



Assessment Information

Submission

You are entitled to three (3) attempts to complete this assessment satisfactorily. Incomplete assessments will not be marked and will count as one of your three attempts.

All questions must be responded to correctly to be assessed as satisfactory for this assessment.

Answers must be typed into the space provided and submitted electronically via the LMS. Hand-written assessments will not be accepted unless previously arranged with your assessor.

Reasonable adjustment

Students may request a reasonable adjustment for assessment tasks.

Reasonable adjustment usually involves varying:

- the processes for conducting the assessment (e.g. allowing additional time)
- the evidence gathering techniques (e.g. oral rather than written questioning, use of a scribe, modifications to equipment)

However, the evidence collected must allow the student to demonstrate all requirements of the unit.

Refer to the Student Handbook or contact your Trainer for further information.

Please consider the environment before printing this assessment.

Student Name: Click or tap here to enter text. Student Number: Click or tap here to enter text.

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SCENARIO: STUDENT ACCOMMODATION

You have been asked by UP Building and Construction Pty Ltd to assess a set of plans to ensure they comply with relevant building codes and standards. Based on the set of plans provided you need to work through the following documentation that is specifically structured and designed to ensure the proposed construction covers the relevant building codes and standards.

In circumstances where you find the plans and specifications do not meet the minimum requirements, you will need to provide solutions to overcome these issues. You will also need to provide other sources of information to assist in supporting the advice you have provided.

Project brief:

- Client: Strand University
- The proposed construction is to occur in Lot 1 Circuit Avenue, Hervey Bay Queensland
- The proposed construction will house up to 20 students, each unit containing four [4] rooms with shared bathroom, laundry, and kitchen facilities
- It is a brick veneer construction with Colourbond roof
- The site is classified as commercial by the local council
- The soil is mostly sand and rock with little or no ground movement from moisture changes
- The structural engineer has confirmed that a slab on ground will be suitable due to the soil type
- All external windows are laminated and made from glass that meets the requirements of AS 2047
- The building has a path for walking traffic planned at the front and back.
- The bathroom, laundry and kitchen floor areas will be tiled.

Note: Proposed floor plan is provided below.



Proposed Floor Plan:



Task 1: Classification and type of building

Based on the plans and specifications provided as part of the scenario, complete the following table with relevant supporting information. Supporting information may come from the specifications provided or from the NCC.

Instructions to the assessor:

This is an example of a competent response:

PROJECT	INFORMATION	SUPPORTING EVIDENCE (5-25 WORDS)
Project name [2-4 words]	Strand University Student Accommodation	As provided in the project brief (included in the scenario)
Project location (2-7 words)	Lot 1 Circuit Avenue Hervey Bay Queensland	As provided in the project brief (included in the scenario)
NCC building class and subclass [1-2 words]	Class 3	As per the guidance provided in the NCC Volume 1 A6.3
Types of building construction [1-2 words]	Туре С	As per the guidance provided in the NCC Volume 1 C1.5
Class of soil [1-2 words]	Class A	Based on the description provided in the project brief and the NCC Volume 2 Part 3.2.4.1 Site classification and Table 3.2.4.1
Type of concrete slab [3-5 words]	Slab on ground	As provided in the project brief, (recommended by NCC to source professional advice)
Nature of the building (5-10 words)	Free standing, single storey 5x4 units for student accommodation	As provided in the project brief (included in the scenario)
Is there a change in level throughout the construction? [2-5 words]	One level throughout construction	As provided in the plan

Task 2: Structure analysis

Through the discussion with the client, it was revealed that an accident occurred 4 years ago in another student accommodation area where a student fell through a window which caused severe injuries. After further investigations it was found that the large windows used in the older accommodation buildings did not meet the appropriate standards and were in a large part blamed for the accident.

As part of the client's due diligence, they have asked several questions relating the glass used throughout the construction.

Respond to these questions listed in the table below and provide the relevant information regarding how UP Building and Construction Pty Ltd has met the Performance Requirements through the construction



process. In your answer, where possible, you will need to refer to the relevant Australian Standard. To support your answer, copy the relevant clause from NCC where applicable.

Instructions to the assessor:

This is an example of a competent response:

QUESTIONS RAISED	ANSWER [4-35 WORDS]	SUPPORTING CLAUSE FROM THE NCC (5-50 WORDS)
In the unfortunate event of one of the students falling through a window, what is the likelihood that this will cause them an injury?	The windows are made from a safety glass that will break into small pieces opposed to shards. The window glazings are also laminated so the glass may break but very unlikely to fall apart altogether.	NCC Volume 1: BP1.3 (a) if broken on impact, will break in a way that is not likely to cause injury to people; and (b) resists a reasonably foreseeable human impact without breaking; and (c) is protected or marked in a way that will reduce the likelihood of human impact.
The front doors are full glass with a timber frame. What Deemed-to- Satisfy Solution is applicable to this installation?	Compliance with the AS 2047	NCC Volume One Deemed-to-Satisfy Provisions, B 1.4 (h) (i)
The shower doors are frameless. What Deemed-to-Satisfy Solution is applicable to this installation?	Compliance with the AS 1288	NCC Volume One Deemed-to-Satisfy Provisions, B 1.4 (h) (ii)

Task 3: Fire safety analysis

Through the consultation process with local authorities, the fire engineer has raised a concern in relation to the spread of a fire if one occurs. Respond to these questions related to the structure and provide relevant information regarding how UP Building and Construction Pty Ltd has met the relevant Performance Requirements. Answer the stakeholder's questions listed in the table below. To support your answer, copy the relevant clause from NCC where applicable.

Instructions to the assessor:

This is an example of a competent response:

QUESTIONS RAISED	ANSWER (5-20 WORDS)	SUPPORTING CLAUSE FROM THE NCC [5-15 WORDS]
Where should the spread of fire be limited to for this building class?	 Students must list the following: Through exits to exits between sole occupancy 	NCC Volume One, Performance requirements CP2 (i) and (ii)

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	 units Between corridor and sole occupancy units to sole occupancy units and public corridors 	
What Fire Resistance Level (FRL) does the internal walls separating the units need to meet?	Fire resistant materials meeting the specifications of a FRL of 60/60/60	NCC Volume one: Table 5 Type C construction: FRL of building elements
How does UP Building and Construction Pty Ltd intend to meet the expected FRL requirements? A resource to assist in this answer is located <u>here.</u>	Use 6mm villa board lining under 13mm FR plasterboard on both sides	 Students must list any of the following: Page 16 of the resource hyperlinked in the question. Compliance with the Manufacturer's instructions.
Does this construction require a fire sprinkler system?	No, it does not as it is only single level building.	Table E1.5 Requirements for sprinklers
Does this building require an emergency warning or intercom system?	No, it does not as it is only a single level building.	E4.9Emergency warning and intercom systems

Task 4: Access and egress

During a discussion with the local authorities about the proposed construction, you have been asked about the access and egress of the units. Considering the cohort and the increased risks, the ability for safe access and egress is crucial in the construction. Answer the client's questions listed in the table below. To support your answer, copy the relevant clause from NCC where applicable.

Instructions to the assessor:

This is an example of a competent response:

QUESTIONS RAISED	ANSWER (25-30 WORDS)	SUPPORTING CLAUSE FROM THE NCC [45-90 WORDS]
The building is currently designed with only one exit out to the street. Does this comply with Volume One: Part D1 Provision for escape?	No, it does not, the exit that is currently provided out the front is more than 6 meters from the doorways of bedrooms in each unit.	 D1.4Exit travel distances (a) Class 2 and 3 buildings— (i) The entrance doorway of any sole-occupancy unit must be not more than— (A) 6 m from an exit or from a point from which travel in different directions to 2 exits is available; (ii) no point on the floor of a room which is not in a sole-



		occupancy unit must be more than 20 m from an exit or from a point at which travel in different directions to 2 exits is available.
What can be done to ensure the building complies with the requirements from Volume One: Part D1 Provision for escape?	Install another exit. Possible location for this is in near the kitchen/terrace, leading to the egress path at the back of the site.	D1.4Exit travel distances (a) Class 2 and 3 buildings— (i) The entrance doorway of any sole-occupancy unit must be not more than— (A) 6 m from an exit or from a point from which travel in different directions to 2 exits is available

Task 5: Services and equipment

It has been established that as part of the building's fire safety, portable fire extinguishers will be installed in each unit.

UP Building and Construction Pty Ltd has engaged a local contractor to supply the fire extinguishers for the construction. Upon delivery of the fire extinguishers, you note the brand and that you have not seen this before. This raises some flags with you.

As per the NCC's guidelines, what information should you look to find before going ahead with this installation. To support your answer, copy the relevant clause from NCC where applicable.

This is an example of a competent response:

QUESTIONS RAISED	ANSWER (25-30 WORDS)	SUPPORTING CLAUSE FROM THE NCC [45-90 WORDS]
What documentation should you ask for from the contractor to ensure fire extinguishers are suitable?	 Various pieces of documentation are required, such as: a current CodeMark Australia or CodeMark Certificate of Conformity a current Certificate of Accreditation a report issued by an Accredited Testing Laboratory a certificate or report from a professional engineer or other appropriately qualified person a Product Technical Statement 	A5.2Evidence of suitability—Volumes One and Two (a) A current CodeMark Australia or CodeMark Certificate of Conformity. (b) A current Certificate of Accreditation. (c) A current certificate, other than a certificate described in (a) and (b), issued by a certification body stating that the properties and performance of a material, product, form of construction or design fulfil specific requirements of the BCA.



	(d) A report issued by an
	Accredited Testing
	Laboratory that—
	(i) demonstrates that a
	material, product or form of
	construction fulfils specific
	requirements of the BCA;
	and
	(ii) sets out the tests the
	material, product or form of
	construction has been
	subjected to and the results
	of those tests and any other
	relevant information that
	has been relied upon to
	demonstrate it fulfils
	specific
	requirements of the BCA.
	(e) A certificate or report
	from a professional
	engineer or other
	appropriately qualified
	person that—
	(i) certifies that a material,
	product, form of
	construction or design
	fulfils specific requirements
	of the BCA;
	and
	(ii) sets out the basis on
	which it is given and the
	extent to which relevant
	standards, specifications,
	rules, codes of practice or
	other publications have
	been relied upon to
	demonstrate it fulfils
	specific requirements
	of the BCA.
	Part A5 Documentation of
	design and construction
	Application 1:
	A5.2 is only applicable to
	the BCA.
	Amendment I Page 25
	Governing Requirements
	Australia - Volume UNE
	uucumentary evidence,
	Such as but not limited to a
	Statement that
	fil demonstrates that a
	material product form of
	materiat, product, 10111 01



	construction or design
	fulfile epocific requiremente
	of the
	BCA; and
	(ii) sets out the basis on
	which it is given and the
	extent to which relevant
	standards, specifications,
	rules,
	codes of practice or other
	nublications have been
	relied upon to demonstrate
	it fulfile specific
	requirements
	of the BCA.
	[2] Evidence to support that
	a calculation method
	complies with an ABCB
	protocol may be in the form
	of any one, or
	any combination of the
	following:
	(a) A certificate from a
	professional engineer or
	other appropriately
	qualified person that
	(i) cortifies that the
	(i) certifies that the
	complies with a relevant
	ABCB protocol; and
	(II) sets out the basis on
	which it is given and the
	extent to which relevant
	standards, specifications,
	rules, codes of practice and
	other publications have
	been relied upon.
	(b) Another form of
	documentary evidence that
	correctly describes how the
	calculation mothod
	Complies with a relevant
	ABUB protocol.

Task 6: Health and amenity

In the past, the client has had water issues in relation to moisture, mainly in regard to the bathroom areas within the accommodation units. This has resulted in mould and expensive repair works.

As such, the client has a number of questions in relation to this. Answer the client's questions listed in the table below. To support your answer, copy the relevant clause from NCC where applicable.

Instructions to the assessor:

Student Name: Click or tap here to enter text. Student Number: Click or tap here to enter text.



This is an example of a competent response:

QUESTIONS RAISED	ANSWER (25-30 WORDS)	SUPPORTING CLAUSE FROM THE NCC [45-90 WORDS]
In the other accommodation buildings, there is a constant issue in relation to water ponding in the bathrooms. Does a floor waste need to be installed to meet the standard?	No, a floor waste is not required. A floor waste is only required when a bathroom or laundry is located above a sole-occupancy unit.	NCC Volume One: F1.11 Provision of floor wastes <i>SA F1.11</i> In a Class 2 or 3 building or Class 4 part of a building, a bathroom or laundry located at any level above a sole-occupancy unit or public space must have— [a] a floor waste; and [b] the floor graded to the floor waste to permit drainage of water.
How will the design prevent the ponding water from getting into the building structure?	To ensure water does not access the subframe the water proofing and water resistance requirements specified in table F1.7. need to be met.	 NCC Volume One: F1.7Waterproofing of wet areas in buildings <i>SA F1.7[a]</i> [a] In a Class 2 and 3 building and a Class 4 part of a building, building elements in wet areas must— [i] be water resistant or waterproof in accordance with Table F1.7; and [ii] comply with AS 3740. [b] In a Class 5, 6, 7, 8 or 9 building, building elements in the bathroom or shower room, a slop hopper or sink compartment, a laundry or sanitary compartment must— [i] be water resistant or waterproof in accordance with Table F1.7; and [ii] comply with AS 3740, as if they were in a Class 2 or 3 building or a Class 4 part of a building. [c] Where a slab or stall type urinal is installed— [i] the floor surface of the room containing the urinal must— [A] be an impervious material; and

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	(B) where no step is
	installed-
	(aa) be graded to the urinal
	channel for a distance of
	1.5 m from the urinal
	channel: and
	(bb) the remainder of the
	floor be graded to a floor
	waste: and
	(C) where a step is
	installed
	(aa) the step must have an
	impervious surface and be
	araded to the uripal
	chappel: and
	(bb) the fleer behind the
	stop must be graded to a
	floor wooto: and
	(ii) the iunction between the
	floor surface and the uripal
	abappal must be
	imponyique
	(d) Where a well bung uring
	(u) where a wait nung unnat
	(i) the well must be
	(I) the wall must be
	surfaced with impervious
	the fleer to not less then 50
	the floor to not less than 50
	top of the uripel and not
	Lop of the unnat and hot
	eide of the writed
	Side of the unital.
	surfaced with impervious
	floor wooto
	(a) In a rear with timber or
	etaal framed wells and
	(i) the well must be
	(I) the wall must be
	imporvious metorial
	impervious material
	externaling from the floor to
	the fleer ourfeest and
	(ii) the junction of the floor
	(ii) the junction of the floor
	surface and the Wall
	Surface must de
	impervious.



Task 7: Ancillary provisions

In the past, hot water services were installed within the student accommodation areas. This worked well in most respects apart from having one occurrence where a hot water service leaked and caused damage to the bedroom next to it. Answer to the questions listed in the table below to clarify the client's concerns regarding hot water services. To support your answer, copy the relevant clause from NCC where applicable.

Instructions to the assessor:

This is an example of a competent response:

QUESTIONS RAISED	ANSWER (25-30 WORDS)	SUPPORTING CLAUSE FROM THE NCC
		[45-90 WORDS]
Where is the location of the intended hot water service (HWS) in these buildings?	In the storage cupboard as indicated on the plan.	As per the floor plans provided
What steps will be taken to ensure the HWS does not leak into the storage cupboard?	A safe tray will be installed below the HWS to drain any water out of the building in the eventuation it starts leaking or raptures.	 NCC Volume One, Part G2 2.2Floors and drainage [a] Floor surfaces beneath boilers and pressure vessels shall be water resistant and formed to drain away from supports and structural building elements. [b] Where a safe tray is provided to trap liquids, it must be manufactured from a material resistant to corrosion from the contents of the boiler or pressure vessel.
The plumber is installing the gas hot water services and has reported they are unable to meet the clearance requirements from an internal wall specified in the manufacturer's installation manual, due to this there is risk of the plasterboard wall heating up and potentially catching fire. A proposed Performance Solution is to install a fireproof cement sheeting with a 25mm air gap before the plasterboard wall.	 f^{*t} step Part G2 specifies the Performance requirements for combustion appliances. GV2 prescribes a verification method that can be undertaken by an authorised trained person. All components within the enclosure must be tested. 2 nd step: A Performance based design brief, the analysis undertaken as detailed within the verification method, an evaluation of results and a final report documenting the results will need to be completed and 	 f^t step Volume One: GP2.1Combustion heating appliances Where provided in a building, a combustion appliance and its associated components, including an open fireplace, chimney, flue, chute, hopper or the like, must be installed— (a) to withstand the temperatures likely to be generated by the appliance; and (b) so that it does not raise the temperature of any



Performance Solution, what	stakeholders	build
two (2) steps should be		
undertaken in relation to		GV2 Combustion
verifying the installation		appliances
and recording the results of		Compliance with GP2.1(a)
the verification process?		and GP2.1(b) is verified
		when—
		(a) components used within
		an appliance and its
		installation are constructed
		from—
		(i) heat-resistant materials
		for maximum operating
		temperatures not less than
		600°C, where the material
		complies
		with (c); or
		(ii) heat-tolerant materials
		for maximum operating
		temperatures more than
		150°C and less than 600°C,
		where the
		material complies with [c];
		and
		(b) the building elements
		surrounding the appliance
		maintain their designed
		nunction and material
		of a full range of thermal
		or a ruit range or thermal
		to the best offects of the
		appliance: and
		(c) a sample of the material
		is tested to the maximum
		operating temperature.
		specified in (a)(i) or (a)(ii) for
		a minimum
		of 96 hours and the tested
		sample complies with the
		following:
		(i) When allowed to cool,
		the tested sample must be
		free from—
		(A) visible cracks and
		fractures; and
		(B) visible indication of de-
		lamination; and
		(C) linear distortion in
		excess of the equivalent of
		10 mm per metre, and
		(D) deterioration of the
		appearance of any surface
		finish, when compared to



an unheated sample.
2 nd step Should be completed in line with the approved ABCB <u>Performance</u> solution <u>process</u>

Task 8: Energy efficiency

The older accommodation units are not very energy efficient, and cost more than they should on an annual basis. Answer to the questions listed in the table below to clarify the client's concerns regarding the building's energy efficiency.

Instructions to the assessor:

This is an example of a competent response:

QUESTIONS RAISED	ANSWER (25-30 WORDS)	SUPPORTING CLAUSE FROM THE NCC
We cannot isolate the heating in individual units in the existing accommodation units. This is not ideal, especially during holiday periods. Will we be able to do this in the new construction?	Yes, you will be able to isolate units as required, this is a requirement of the NCC.	 [45-90 WORDS] [a) An air-conditioning system— (i) must be capable of being deactivated when the building or part of a building served by that system is not occupied; and (ii) when serving more than one air-conditioning zone or area with different heating or cooling needs, must— (A) thermostatically control the temperature of each zone or area; and (B) not control the temperature by mixing actively heated air and actively cooled air; and (C) limit reheating to not more than— (aa) for a fixed supply air rate, a 7.5 K rise in temperature; and (bb) for a variable supply air rate, a 7.5 K rise in temperature at the nominal supply air rate but increased or decreased at the same rate that the supply air rate is respectively decreased or

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		increased; and
What is meant by the "Green star"	Green Star means the building sustainability rating scheme managed by the Green Building Council of Australia.	As per the glossary of terms Green Star means the building sustainability rating scheme managed by the Green Building Council of Australia.

Task 9: Communication with stakeholders

An important part of any construction project is to formally document discussions that have occurred between stakeholders during the design and construction process.

Draft an email for the following stakeholders in the project as follows:

- To the **Contractor that has provided the fire extinguishers:** Confirm the requirements to ensure they meet the requirements of the NCC.
- To the **Plumber:** confirm the performance solution suggested is being verified by a qualified person.
- To the **Engineer:** confirm with them the verification requirements stipulated in NCC Volume One GV2.

Through Tasks 1-8 you have already found the required information. This information needs to be put into a formal email. The following templates can be used for this purpose

Ensure that your communication is effective, concrete, clear and courteous, using a professional language.

Instructions to the assessor:

A competent answer must include relevant subject. This is an example of a competent response:

Email 1 (Approximate word count: 100-110 words)

To: Fire equipment supplier

Subject: Fire extinguishers

Draft email must have:

- an appropriate greeting (for example: 'Good morning Mr Smith')
- The aspects identified relating to the installation
- an appropriate closure and signature (for example: Looking forward to hearing back from you. Kind regards, John Citizen.)

This is an example of a draft email:

Hi John,



In relation to the fire extinguishers planed for installation at the Circuit Avenue Student Accommodation construction is to occur in Lot 1 Circuit Avenue, Hervey Bay Queensland:

After some internal discussions with the team, there have been some concerns raised with the brands of fire extinguishers you have put forward for supply.

To ensure the equipment meets the NCC standards required, can you please provide information as stipulated in the **NCC A5.2Evidence of suitability–Volume One?**

The supplier you have engaged should be able to assist in providing this information.

If you have any questions, please let me know,

Thanks

Email 2 (Approximate word count: 110-120 words)

To: Plumber

Subject: Performance solution re HWS clearances

Draft email must have:

- an appropriate greeting (for example: 'Good morning Mr Smith')
- The aspects identified relating to the installation
- an appropriate closure and signature (for example: Looking forward to hearing back from you. Kind regards, John Citizen.)

This is an example of a draft email:

Hi John

In relation to the Hot water service installation at the Circuit Avenue Student Accommodation construction that is to occur in Lot 1 Circuit Avenue, Hervey Bay Queensland:

After discussions with the various stakeholders, we have decided to trial the performance solution you have put forward in relation to the installation of heat proof material and air gap in the HWS enclosures.

Can you please work with the carpenter in unit one to install these materials and a HWS. We will then organize an engineer to test the installation as per the GV2 verification method outlined in the NCC Volume One

If you have any questions, please let me know,

Thanks



Email 3 (Approximate word count: 150-160 words)

To: The Engineer

Subject: Performance solution re HWS clearances

Draft email must have:

- an appropriate greeting (for example: 'Good morning Mr Smith')
- The aspects identified relating to the installation
- an appropriate closure and signature (for example: Looking forward to hearing back from you. Kind regards, John Citizen.)

This is an example of a draft email:

Hi John,

In relation to the Hot water service install at the Circuit Avenue Student Accommodation" construction that is to occur in Lot 1 Circuit Avenue, Hervey Bay Queensland

The plumber has identified that there is not enough clearance from walls to install the HWS as per the plans and manufacturer's instructions. To circumvent this issue, he has proposed a performance solution of installing a fireproof cement sheeting with an air gap against the plaster wall to protect the plaster and timber frame beneath.

The NCC Volume One section GV2 details the verification process that can be undertaken to ensure compliance with the code.

We are in the process of making these modifications and installing one of these HWS now for testing. Can you please attend site with the appropriate personal to undertake the verification process as stipulated in the section GV2?

If you have any questions, please let me know,

Thanks



Assessment checklist

Students must have completed all tasks and questions within the assessment before submitting. This includes:

Project tasks				
Task 1: Classification and type of building				
Completed table				
Task 2: Structure analysis				
Completed table				
Task 3: Fire Safety analysis				
Completed table				
Task 4: Access and egress				
Completed table				
Task 5: Services and equipment				
Completed table				
Task 6: Health and amenity				
Completed table				
Task 7: Ancillary provisions				
Completed table				
Task 8: Energy efficiency				
Completed table				
Task 9: Communication with stakeholders				
Drafted 3 emails				

Congratulations, you have reached the end of Assessment 3!



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